



Solana Beach School District

M A R C H 2 3 , 2 0 1 8

Site Work for Modular Classrooms at Solana Ranch School

Bid Number # 18-0305

Bid Walk: April 5, 2018 (3:30 p.m.)	Solana Ranch School
Bid Date: May 4, 2018 (1:00 p.m.)	Solana Beach School District District Office
Submit Bids To:	Solana Beach School District Attn: Caroline Brown 309 North Rios Ave. Solana Beach, CA 92075

PROJECT MANUAL
FOR
SOLANA BEACH SCHOOL DISTRICT
SOLANA RANCH ELEMENTARY SCHOOL
INTERIM MODULAR CLASSROOM BUILDINGS AND SHADE STRUCTURE
LIONAKIS NO. 017282

OWNER:
SOLANA BEACH SCHOOL DISTRICT
309 North Rios Ave.
Solana Beach, CA 92075
(858) 794-7140

ARCHITECT:
LIONAKIS
4000 MacArthur Blvd., Suite 101
Newport Beach, CA 92867
(949) 955-1919



Steven Kendrick

License #C14099

CIVIL ENGINEER:
PASCO LARET SUTER
27127 Calle Arroyo, Ste. 1904
San Juan Capistrano, CA 92675
(949) 661-6695



Gregory W. Lang

License #68075

LANDSCAPE ARCHITECT:
GROUNDLEVEL LANDSCAPE ARCHITECTURE
2605 State Street
San Diego, CA 92103
(619) 325-1993



Brad Lenihan

License # 4470

ELECTRICAL ENGINEER:
JOHNSON CONSULTING ENGINEERS, INC.
12875 Brookprinter Place, Suite 300
Poway, CA 92064
(858) 679-4030



Monica Goese-Hansen

Agency Approval

PROJECT MANUAL
 FOR
 CONTRA COSTA COMMUNITY COLLEGE DISTRICT
 CONTRA COSTA COMMUNITY COLLEGE
 PE & K SWING SPACE

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DIVISION 00
PROCUREMENT AND CONTRACTING REQUIREMENTS

DOCUMENT 00020: NOTICE TO CONTRACTORS CALLING FOR BIDS

NOTICE TO CONTRACTORS CALLING FOR BIDS – Correction notice to ad published on Mar 10 and Mar 17, 2018 (NOTE: Date Corrections)

NOTICE IS HEREBY GIVEN that Solana Beach School District of San Diego County, California, acting by and through its Governing Board, hereinafter referred to as the Owner, will receive up to, but no later than 1:00PM on the fourth (4) of May 2018 separate sealed bids for the award of a contract for construction of the below listed Project:

Site Work for Modular Classrooms at Solana Ranch School
13605 Pacific Highlands Ranch Parkway San Diego, CA 92130

License Required: B

Sealed bids shall be addressed to, and shall be received at the office of the Owner at:

Solana Beach School District Office
309 North Rios Avenue Solana Beach, CA 92075

and shall be opened publicly and read aloud at the above stated time and place.

Each bid must conform and be responsive to the contract documents. Approved Contract Documents will be available on or after April 20, 2018 on the district website (www.sbsd.net) or be obtained at **Mayer Reprographics** online at www.mayer.com, by selecting "Projects Bidding", and then selecting the folder for the project. All printing orders require a minimum of 24 hours to complete. Copies to be purchased at bidder's non-refundable expense.

A NON-MANDATORY PRE-BID CONFERENCE AND SITE VISIT is scheduled for Thursday, April 5, 2018 at 3:30 p.m. at the project site. Although the pre-bid conference and site visit is not mandatory, prospective bidders are encouraged to attend. The bid documents require all bidders familiarize themselves with the project requirements prior to bidding.

Each bid shall be accompanied by the security referred to in the contract documents, the non-collusion affidavit, the list of proposed subcontractors, and all additional documentation required by the Instructions to Bidders.

In contracts involving an expenditure in excess of \$25,000, the successful bidder shall file a payment bond issued by an admitted Surety approved to conduct business in the State of California approved by the Owner in the form set forth in the contract documents^{*}.

* A payment bond must be filed for a contract involving expenditures in excess of \$25,000 (Civil Code section 3247(a)) and may be required for contracts involving smaller expenditures at the option of the Owner.

The Owner reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

The Director of Industrial Relations has determined the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the contracts which will be awarded to the successful bidders. This information can be found on the Department of Industrial Relations website at www.dir.ca.gov. It shall be mandatory upon the Contractors to whom the contracts are awarded, and upon any subcontractor under them, to pay not less than the said specified rates to all workers employed by them in the execution of the contracts. The Project is a "public work" project that is subject to, among other laws, to Labor Code Sections 1720 through 1861, inclusive. Each contractor, including subcontractors, must be registered with the California Department of Industrial Relations ("DIR") in accordance with Labor Code Sections 1725.5, and bidders must provide evidence of registrations for themselves and their subcontractors.

Each Bidder and each of his Subcontractors shall be a licensed contractor pursuant to the Business and Professions Code and shall be licensed in the appropriate classification for the work to be performed. Failure to possess the specified license or licenses at the time of award of the bid shall render the bid non-responsive.

No bidder shall withdraw his bid for a period of sixty (60) days after the date set for the opening of bids.

Holly Lewry
Clerk of the Governing Board
Solana Beach School District
District of San Diego County, California

Dated this 10th day of March 2018.

Publication: North County Times

Date: March 24, 2018

March 31, 2018

DOCUMENT 00100: INFORMATION FOR BIDDERS

1. Preparation of Bid Form

The District invites bids on the attached form to be submitted at such time and place as is stated in the Notice to Contractors Calling for Bids. All blanks in the bid form must be appropriately filled in. All bids must be submitted in sealed envelopes bearing on the outside the name of the bidder, his address, and the name of the Project for which the bid is submitted. All prices must be stated in both words and figures where so indicated, and where there is a conflict in the words and figures, the words shall govern. Prices, wording and notations must be in ink or typewritten. Erasures or other changes shall be noted over by signature of the bidder. It is the sole responsibility of the bidder to see that his bid is received in proper time. All bids received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

2. Bid Security

Each bid shall be accompanied by: (a) cash; (b) a certified check made payable to the District; (c) a cashier's check made payable to the District; or (d) a satisfactory bid bond payable to the District executed by the bidder as principal and an admitted surety approved to conduct business in the State of California as surety, in an amount not less than 10% of the maximum amount of the bid. Personal sureties and unregistered surety companies are unacceptable. The California admitted surety insurer, as defined in California Code of Civil Procedure Section 995.120, shall be a satisfactory corporate surety. The cash, check or bid bond shall be given as a guarantee that the bidder shall execute the Contract if it be awarded to the bidder in conformity with the Contract Documents and shall provide the surety bond or bonds as specified therein within five (5) consecutive calendar days after notification of the award of the Contract to the bidder (which date shall be the day following the Board of Education approval of the award).

In the event the bidder to whom the Notice of Intent to Award Contract is given fails or refuses to post the required bonds, as provided in Section 9 below, and return executed copies of the Contract within three (3) consecutive calendar days from the date of Award of Contract (which date shall be the day following the Board of Education approval of the award), the District may declare the bidder's bid deposit or bond forfeited as damages caused by the failure of the bidder to post the required bonds and execute such copies of the Contract, and may award the Contract to the next lowest responsible bidder, or may call for new bids.

3. Faxed and Electronic Mail Bids

All bids must be under sealed cover. The District will not accept any bids or bid modifications submitted by facsimile or electronic mail transmission.

4. Signature

The bid must be signed in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid on behalf of the bidder. All signatures are to be in ink. In the event that the bidder is a joint venture or partnership, there shall be submitted with the bid certifications signed by authorized officers of each of the parties to the joint venture or partnership, naming the individual who shall be the agent of the joint venture or partnership, who shall sign all necessary documents for the joint venture or partnership and who, should the joint venture or partnership be the successful bidder, shall act in all matters relative to the Contract resulting therefrom for the joint venture or partnership.

5. Modifications

Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form that is not specifically called for in the Contract Documents may result in the District's rejection of the bid as not being responsive to the invitation to bid. No oral or telephonic modification of any bid submitted will be considered and a telegraphic modification may be considered only if the postmark evidences that a confirmation of the telegram duly signed by the bidder was placed in the mail prior to the opening of bids. Bids may be rejected if they show any alteration in form, are incomplete, or contain irregularities of any kind.

6. Erasures/Mutilation of Bid Documents

The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction is suitably authenticated by affixing in the margin immediately opposite the correction the surname or surnames of the person or persons signing the bid.

Bidders should not deface or mutilate the bid documents to the extent that they may not be usable for construction purposes.

7. Examination of Site and Contract Documents

At its own expense and prior to submitting its bid, each bidder shall visit the site of the proposed work and fully acquaint himself with the conditions relating to the construction and labor so that the bidder may fully understand the facilities, which include but are not limited to difficulties, and restrictions attending the execution of the work under the Contract. Bidders shall thoroughly examine and be familiar with the drawings and specifications. Each bidder shall also determine the local conditions which may, in any way affect the performance of the work, including the prevailing wages and other relevant cost factors; familiarize itself with all federal, state and local laws, ordinances, rules, regulations and codes affecting the performance of the work, including the cost of permits and licenses required for the work; make such surveys and investigations, including investigations of subsurface or latent physical conditions at the site or where work is to be performed. The failure or omission of any bidder to receive or examine any Contract Documents, form, instrument, addendum, or other document or to visit the site and acquaint himself with conditions there existing shall in no way relieve any bidder from any obligation with respect to their bid or to the Contract. The submission of a bid shall be taken as incontrovertible evidence of compliance with this section.

8. Withdrawal of Bids/Bid Protests

Any bidder may withdraw his bid either personally, by written request, or by telegraphic request confirmed in the manner specified above at any time prior to the scheduled closing time for receipt of bids. Any request to withdraw a bid shall be so worded so as not to reveal the amount of the original bid. Withdrawn bids may be resubmitted until the scheduled time for receipt of bids, so long as the resubmitted bids are in full conformance with the Contract Documents. After the scheduled closing time for receipt of bids, a bidder may not withdraw its bid until the expiration of sixty (60) calendar days, after which time a bid may be withdrawn only in writing and in advance of actual award of the Contract. Any bid protests must comply with, and be filed in accordance with, the District's Bid Protest procedures, on file at the District's Purchasing Department Office.

9. Contracts and Bonds

The Contract form which the successful bidder, as Contractor, will be required to execute, and the form of the Performance Bond equal to 100% of the successful bid,

which the bidder will be required to furnish at the time of execution of the Contract, are included in the Contract Documents and should be carefully examined by the bidder. The required number of executed copies of the Contract and the Performance Bond is as specified in the Special Conditions. The Performance Bond must be executed by an admitted Surety approved to conduct business in the State of California, pursuant to California Code of Civil Procedure Section 995.120. In addition, to the extent required by law, the Payment and Performance Bonds must be accompanied by a certified copy of the certificate of authority of the insurer issued by the Insurance Commissioner of the State of California, a certificate from the Clerk of the County of San Diego that the certificate of authority of the insurer has not been surrendered, revoked, cancelled, annulled, or suspended, or if it has that it has been renewed, and four copies of the insurer's most recent annual statement and quarterly statement filed with the Department of Insurance of the State of California.

10. Interpretation of Plans and Documents

If any person contemplating submitting a bid for the proposed Contract is in doubt as to the true meaning of any part of the drawings, specifications, or other Contract Documents, or finds discrepancies in, or omissions from the drawings and specifications, that person shall submit to the Owner a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by addendum duly issued. Any addenda or bulletins issued by the Owner during the time of bidding or forming a part of the documents furnished to bidders for bid preparation shall be covered in the bid and made part of the Contract Documents. In the event that an addendum or bulletin, setting forth material changes, additions or deletions is issued when there is 72 hours or less to the bid deadline, the District will extend the bidding deadline by at least 72 hours. No person is authorized to make any oral interpretation of any provision in the Contract Documents to any bidder, and no bidder is authorized to rely on any such unauthorized oral interpretation.

11. Bidders Interested in More Than One Bid

No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders or making a prime proposal.

12. Non-Collusion Affidavit

Bidders on all public works contracts are required to submit an affidavit of Non-Collusion with their bid. This form is included with the bid package and must be signed under the penalty of perjury and dated.

13. Reservation

The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding.

14. Award of Contract

The award of the Contract, if made by the District, will be to the lowest responsible bidder therefore whose bid complies with all of the prescribed requirements. If alternate bids are called for, the Contract may be awarded at the election of the

governing board to the lowest responsible bidder on the base bid, or on the base bid and any alternate or combination of alternates, as specifically established in the Notice to Contractors Calling for Bids.

15. Evidence of Responsibility

If bidders were not required to pre-qualify prior to being allowed to bid on the Project, the following information will be required to accompany bids submitted to the District:

Each bid shall be supported by a statement of the bidder's experience as of recent date on the form entitled "INFORMATION REQUIRED OF BIDDER," bound herein. District may also consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the work. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by the District. In this regard, the District may conduct such investigations as the District deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the bidder, proposed subcontractors, and other persons and organizations to do the work in accordance with the Contract Documents to the District's satisfaction within the prescribed time; the District reserves the right to reject the bid of any bidder who does not pass any such evaluation to the satisfaction of the District.

16. Listing Subcontractors

Each bidder shall set forth on the form provided herein, and submit with its sealed bid at the time bids are due the name and address of the place of business of each subcontractor who will perform work, labor, furnish materials, or render service to the bidder on said Contract in excess of one-half (1/2) of one percent (1%) of the total bid. **Bidders are required to submit the phone number, license number and license expiration date of each subcontractor listed in its bid within twenty-four (24) hours of bid opening.** No time extension will be allowed for submission of additional information required by this section.

17. Workers' Compensation

In accordance with the provisions of section 3700 of the Labor Code, Contractor shall secure the payment of compensation to his employees. Contractor shall sign and file with the District the following certificate prior to performing the work under this Contract:

I am aware of the provisions of section 3700 of the Labor Code 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.

The form of such certificate, Contractors Certificate Regarding Workers Compensation, is included as part of the Contract Documents.

18. Substitution of Security

The Contract Documents call for monthly progress payments based upon the percentage of the work completed. The District will retain five percent (5%) of each progress payment as security for completion of the work. At the request and expense of the successful bidder, the District will substitute securities for the amount so retained in accordance with Public Contract Code section 22300 and the Contract Documents.

19. Prevailing Wage

The Director of the Department of Industrial Relations has determined the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the Contract. Bidders are advised that a copy of these rates must be posted at each job site.

Pursuant to Labor Code section 1771.7, the District has implemented and shall enforce a Labor Compliance Program (LCP) for this Project. The successful bidder shall be required to comply with all the requirements of applicable provisions of the California Labor Code. The bidders shall include all costs of compliance with specified requirements in the contract amount.

The successful bidders shall be responsible for complying with the provisions of the District's LCP, including the standard provisions requiring payment of prevailing wages, maintenance and submission of certified payroll at close of project. The successful bidders shall work with the District's staff and consultants to ensure the full compliance with applicable labor law.

20. Debarment of Contractors and Subcontractors

In accordance with the provisions of the California Labor Code, Contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by a contract on the Project shall be returned to the District. The successful bidder, as Contractor, shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

21. Contractor's License

To perform the work required for this Project, bidders must possess the appropriate Contractor's License for the portion of the work bid upon, and bidders must maintain the license throughout the duration of the Contract. If, at the time the bids are opened, bidder is not licensed to perform the Project in accordance with division 3, chapter 9 of the Business and Professions Code of the State of California and the Notice to Contractors Calling for Bids, the bid will not be considered.

Provided, however, that in all contracts where federal funds are involved, no bid submitted shall be invalidated by the failure of the bidder to be licensed in accordance with the laws of California. The first payment for work or material under any contract shall not be made unless and until the Registrar of Contractors verifies to the District that the records of the Contractor's State License Board indicate that the Contractor was properly licensed at the time the contract was awarded. Any bidder or contractor not so licensed shall be subject to all legal penalties imposed by law, including, but not limited to, any appropriate disciplinary action by the Contractor's State License Board. Failure of the bidder to obtain proper and adequate licensing for an award of a contract shall constitute a failure to execute the contract and shall result in the forfeiture of the security by the bidder.

22. Storm Water Permit for Construction Activity

It shall be the responsibility of the successful bidder to file a Notice of Intent and procure a State Water Resources Control Board (State Water Board) National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (Permit). The successful bidder shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) prior to initiating work. The successful bidder shall be responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions, monitoring and reporting requirements as required by Permit, as provided in the General Conditions. It shall be the responsibility of all bidder responsibility to evaluate and include in the bid the cost of procuring the Permit and preparing the SWPPP as well as complying with the SWPPP and any necessary revisions to the SWPPP. The successful bidder shall also include in his bid the cost of monitoring as required by the Permit.

23. Bid Deposit Return

The District will return the security accompanying the bids of all unsuccessful bidders no later than thirty (30) calendar days after award of the Contract.

24. Insurance

Prior to commencement of the work, the successful bidder shall purchase and maintain insurance as set forth in the General Conditions, in the amounts specified in the Special Conditions to these Contract Documents, and in a form acceptable to the District, from a company or companies lawfully authorized to do business in California as admitted carriers having an "A" policy holders rating and a financial size rating of at least Class VIII in accordance with the most current Best's Key Rating Guide, Property-Casualty. Such insurance shall be adequate to protect themselves from claims under Workers' Compensation Acts, and from claims from damages for personal injury, including death, and damage to property, which may arise from operations under the Contract and from the ownership, maintenance or uses of motor vehicles, or claims involving blanket contractual liability applicable to the successful bidder's obligations under the Contract Documents, and completed operations, independent contractors, and Broad Form Property damage, without exclusion for collapse, explosion, demolition, underground coverage, and excavating. The successful bidder shall be required to file with the District certificates of such insurance, and shall name, by way of endorsement on any policy of insurance, the District as additional insured. Failure to furnish such evidence of insurance may be considered default by the successful bidder.

District reserves the right pursuant to Government Code Section 4420.5 to use an owner controlled insurance program.

25. Request For Substitutions

- a. For purposes of this provision the term "substitution" shall mean the substitution of any material, process or article that is substantially equal or better in every respect to that so indicated or specified in the specifications.
- b. Whenever in specifications any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by words "or equal." Bidders may, unless otherwise stated, offer for substitution any material, process or article which shall be substantially equal or better in every respect to that so indicated or specified. If any

material, process or article offered for substitution by bidders is not, in the opinion of the Owner, substantially equal or better in every respect to that specified, bidders shall furnish the material, process or article specified. The burden of proof as to the equality of any material, process or article shall rest with the bidders. In addition, pursuant to the provisions of Public Contract Code section 3400 (b), the District has made findings that some particular materials, products, things or services, that are designated by specific brand or trade name are required in order to match other products in use. Such Materials, products, things or services are listed in the Special Conditions.

- c. Bidders shall submit requests together with substantiating data for substitution of any "or equal" material, process or article no later than five (5) calendar days prior to the bid opening. Provisions authorizing submission of "or equal" substitution justification data shall not in any way authorize an extension of time for performance of this Contract. Furthermore, if a proposed "or equal" substitution request is rejected, a bidder shall be responsible for including the specified material, process or article in its bid. The District shall not be responsible for any costs of bidders associated with "or equal" substitution requests. The District has the complete and sole discretion to determine if a material, process or article is an "or equal" material, process or article that may be substituted.
- d. For purposes of subdivision (c) above, data required to substantiate requests for substitutions of an "or equal" material, process or article data shall include a signed affidavit from the bidder stating that the substituted "or equal" material, process or article is equivalent to that specified in the specification in every way except as listed on the affidavit. Substantiating data shall also include any and all illustrations, specifications, and other relevant data including catalogue information which describes the requested substituted "or equal" material, process or article and substantiates that it is an "or equal" to the material process or article specified. In addition, the submittal documentation must also include a statement of the cost implications of the substitution being requested stating whether and why the substitution of the "or equal" material, process or article will reduce or increase the Contract Price. The substantiating data must also include information regarding the durability and lifecycle cost of the requested substituted "or equal" material, process or article. Failure to submit all the needed substantiating data, including the signed affidavit, to the Owner in a timely fashion so that the substitution can be adequately reviewed may result in the rejection of the proposed substitution. The Owner is not obligated to review multiple substitution submittals for the same product or item due to the bidder's failure to submit a complete package initially.
- e. Time limitations in this Article must be complied with strictly and in no case will an extension of time for completion be granted because of bidder's failure to request the substitution of an alternative item at the times and manner set forth herein in subdivision (c). Further, the bidder shall bear the costs of all engineering work associated with the review of submittals for substitution of equals.
- f. In event Contractor furnishes material, process, or article more expensive than that specified, the difference in cost of such material, process, or article so furnished shall be borne by Contractor.

26. Anti-Discrimination

It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employees engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age or

marital status. The successful bidder agrees to comply with applicable Federal and California laws including, but not limited to, the California Fair Employment Practice Act, beginning with Government Code 12900, and Labor Code 1735. In addition, the successful bidder agrees to require like compliance by any subcontractors employed on the work by him.

27. Non-Mandatory Pre-Bid Meeting

A Non-Mandatory pre-bid meeting has been scheduled for:

Thursday April 5, 2018 at 3:30 p.m. to review the Project scope, bid requirements, and the Project's existing conditions. The pre-bid meeting will be held at Solana Ranch School at 13605 Pacific Highlands Ranch Parkway, San Diego, CA 92130. Representatives of the Design Team and District will be present to collect and/or answer any questions bidders have.

28. No Telephone Availability

Bidders are advised that on bid date telephones WILL NOT be available at the District Administrative Offices for use by bidders or their representatives.

29. Required Certifications

Bidders, for all projects involving state funds, are required to submit the "Asbestos-Free Materials Certification." This form is included with the bid package and must be signed under the penalty of perjury and dated. The successful bidder shall also execute, under the penalty of perjury and dated, the "Recycled Content Certification" and the "Drug-Free Workplace Certification" included in this package. Further, by law it is the District's responsibility to determine whether a contractor must provide fingerprint certification. Pursuant to Education Code section 45125.2, the District considers the totality of the circumstances in order to determine if fingerprinting of employees of a contractor working on a school site is required. Factors to be considered include the length of time the contractor's employees are on school grounds, whether students are in proximity with the location where the contractor's employees are working, and whether the contractor's employees are working alone or with others. **A determination regarding whether fingerprint certification is required is contained in the Special Conditions.** These forms are included with the bid package and must be signed under the penalty of perjury and dated.

30. Ethics in Bidding

The District expects the bidders to maintain high ethical standards in engaging in the competitive bidding process. The bid amount of one bidder should not be divulged to another before the award of the subcontract or order, nor should it be used by bidders to secure a lower proposal from another bidder on that project (bid shopping). Subcontractors or Suppliers should not request information for the bidder regarding any sub-bid in order to submit a lower proposal on that project (bid peddling). The District will consider any bidder found to be engaging in such practices to be a non-responsible bidder and may reject its bid on that ground.

31. Disabled Veteran Business Enterprises

Compliance with Disabled Veteran Business Enterprise (DVBE) contracting goals is required for this project. In accordance with Education Code section 17076.11 the District has a DVBE participation goal of 3% per year of the overall dollar amount of state funds

allocated to the District pursuant to the Leroy F. Greene School Facilities Act of 1998, and expended each year by the District. The District is seeking DVBE participation in this project.

Bidders must make a good faith effort to contact and utilize DVBE subcontractors and suppliers in securing bids for performance of the contract. Information regarding certified DVBE firms can be obtained from the Office of Small Business Certification and Resources (OSBCR) at (916) 323-5478 or (916) 322-5060 as well as the OSBCR website at www.dgs.ca.gov/osbcr. Verification of DVBE status must be obtained from the OSBCR by receiving an approved certification letter and reference number from that office. Bidders are encouraged to retain documentation of their good faith efforts, in the event such documentation is requested by the District.

Bidders must indicate on the bid form whether they are a certified DVBE and provide a copy of the DVBE Certification Letter issued by OSBCR. Bidders must also certify, under penalty of perjury, that a good faith effort was made to include DVBE subcontractors and suppliers in the bid. In addition, bidders must indicate on the Designation of Subcontractors form whether the subcontractor is DVBE certified, and provide the District a copy of the DVBE Certification Letter issued by OSBCR. Information regarding the DVBE certification of subcontractors must be submitted to the District within 24 hours of the established time for bid opening.

Prior to, and as a condition precedent for final payment under the Contract, the successful bidder shall provide the District with written documentation identifying the amount paid to certified DVBE subcontractors and suppliers in performance of the Contract and provide a copy of the DVBE Certification Letter issued by OSBCR for each DVBE. This documentation will be used by the District to evaluate its success in meeting its DVBE participation goal.

32. Contract Procedures

- a. The Contract Documents contemplate the following procedures upon receipt of bid and the District obtaining an appropriation from the State Allocation Board (SAB) (when required):
- 1) The District will give the successful bidder a notice of award of Contract. The District will be bound to enter into the Contract if the SAB apportions funds for the Project, provided that the Project is not placed on the SAB "unfunded list," and the successful bidder does all acts described in subparagraph (2) below.
 - 2) Following the giving of the notice of award of Contract, the successful bidder shall post the Performance Bond, provide certificates of insurance, and other certificates, and return executed copies of bonds and Contracts.]

END OF DOCUMENT

**DOCUMENT 00200: CONTRACTOR'S CERTIFICATE REGARDING WORKERS'
COMPENSATION**

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, which 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 employees

I am aware of the provisions of section 3700 of the Labor Code 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.

Contractor

By _____
Signature

Title _____

(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 this Contract.)

DOCUMENT 00300: BID FORM

Company

TO: Solana Beach School District, acting by and through its Board of Education, herein called the "District":

1. Pursuant to and in compliance with your Notice to Contractors Calling for Bids and the other documents relating thereto, the undersigned bidder, having thoroughly examined and familiarized himself with the terms of the Contract, the local conditions affecting the performance of the Contract and the cost of the work at the place where the work is to be done, and with the drawings and specifications and other Contract Documents, hereby proposes and agrees to perform, within the time stipulated, the Contract, including all of its component parts, and everything required to be performed, including its acceptance by the District and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all utility and transportation services necessary to perform the Contract and complete in a workmanlike manner all of the work required in connection with the Project described below:

Site Work for Modular Classrooms at Solana Ranch School

BID NUMBER: 14-0514

all in strict conformity with the drawings and specifications and other Contract Documents, including addenda nos. _____, _____, _____, and _____, on file at the office of the said District, for the total sum of (in words) _____
 _____ (\$ _____) Dollars (\$ _____).

Said sum includes all applicable taxes and costs.

2. It is understood that the District reserves the right to reject this bid and that this bid shall remain open and not be withdrawn for the period specified in the Notice to Contractors Calling for Bids.
3. Attached is the required bid security in the amount of not less than 10% of the Bid: \$ _____. Bid bond, certified check, cashier's check or cash (circle one).
4. Non-collusion affidavit is attached hereto.
5. The required list of proposed subcontractors is attached hereto.
6. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a contract in the form attached hereto in accordance with the bid as accepted. The undersigned will submit the executed Contract, Performance Bond and Payment Bond for Public Works,

and Insurance Certificates as specified, all within ten (10) consecutive calendar days after Award of Contract (which date shall be the day following the Board of Education approval of the award). The work under the Contract shall be commenced by the undersigned bidder, if awarded the contract, on the date to be stated in the District's Notice to the Contractor to Proceed, and shall be completed by the Contractor in the time specified in the Contract Documents. The Contractor shall not start work on the Project until all paperwork required herein is timely and correctly submitted to the District. No time extensions shall be granted to Contractor for Contractor's failure to comply with these provisions.

7. Notice of acceptance or requests for additional information should be addressed to the undersigned at the address stated below:

8. The names of all persons interested in the foregoing proposal as principals are as follows:

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual copartners comprising the firm; if bidder or other interested person is an individual, state first and last names in full.)

9. Bidder certifies that he is licensed in accordance with the law providing for the registration of Contractors, License No. , Expiration Date , class of license . If the bidder is a joint venture, each member of the joint venture must include the above information.
10. Bidder certifies that his/her is/is not (circle one) DVBE certified. DVBE reference number assigned by the Office of Small Business Certification and Resources is_____. If bidder is DVBE certified, please attach a copy of the DVBE certification letter.
11. Bidder certifies that a good faith effort was made to include DVBE firms as subcontractors and suppliers in the bid.
12. Pursuant to Section 7103.5 of the Public Contract Code submitting a bid to the District, the bidder offers and agrees that if the bid is accepted, it will assign to District 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. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

Proper Name of Bidder

Address

Signature of Bidder

Date

Note: If bidder is a corporation or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, the bidder's signature shall be placed above. If bidder is a corporation, affix corporation seal.

I, _____, the _____ of the bidder, hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted by the bidder in connection with this bid and all of the representations made herein are true and correct. Executed on this _____ day of _____, at _____ County, California.

Proper Name of Bidder _____

By _____

Signature of Bidder _____

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signatures of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his or her signature shall be placed above.

Business Address: _____

Place of Residence: _____

Telephone: () _____

Bidder must submit the following documents with this Bid Form in order to be considered responsive:

- Contractor's Certification Regarding Workers' Compensation
- Bid Bond
- Designation of Subcontractors
- Information Required of Bidders
- Asbestos-Free Materials Certification
- Non-Collusion Affidavit
- Designation of DVBE Subcontractors.

END OF DOCUMENT

DOCUMENT 00410: BID BOND

KNOW ALL MEN BY THESE PRESENTS: THAT we, _____, as Principal, and _____, as Surety, are held and firmly bound unto the Solana Beach School District, hereinafter called the District, in the penal sum of _____ PERCENT (_____ %) OF THE TOTAL AMOUNT OF THE BID of the Principal submitted to the said DISTRICT for the work described below for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated 20____, for _____.

NOW, THEREFORE. If the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within sixty (60) days after said opening; and, if the Principal be awarded the contract, and shall within the period specified therefore, or if no period be specified, within ten (10) consecutive calendar days after the Award of Contract (which date shall be the day following the Board of Education approval of the award) complete the prescribed forms are presented to him for signature enter into a written contract with the District in accordance with the bid as accepted and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract and for the payment for labor and materials used for the performance of the contract, or in the event of the withdrawal of said bid within the period specified or the failure to enter into such contract and give such bonds within the time specified. If the Principal shall pay the District the difference between the amount specified in said bid and the amount for which the District may procure the required work and/or supplies, if the latter amount be in excess of the former, together with all costs incurred by the District in again calling for bids, then the above obligation shall be void and of no effect, otherwise to remain In full force and virtue.

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 thereunder, or the specifications accompanying the same, shall in anywise 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 the event a lawsuit is brought upon this bond by the District and judgment is recovered, the surety shall pay all litigation expenses incurred by the District in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this ____ day of 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly assigned by its undersigned representative, pursuant to authority of Its governing body.

(Corporate Seal)

Principal
By _____
Title _____

(Corporate Seal)

Surety
By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

DOCUMENT 00430: DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (chapter 4 (commencing at section 4100), part 1, division 2 of the Public Contract Code of the State of California) and any amendments thereof, each bidder shall set forth below: (a) the name and the location of the place of business and (b) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement to be performed under this Contract or a subcontractor licensed by the State of California who, under subcontract to the prime 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 (1/2) of one percent (1%) of the prime contractor's total bid or ten thousand dollars(\$10,000), whichever is greater. The prime contractor shall list only one subcontractor for each such portion as is defined by the prime contractor in this bid. **Bidders are required to submit the phone number, license number and license expiration date of each subcontractor listed in its bid with in twenty-four (24) hours of bid opening.** No time extension will be allowed for submission of information required by this document.

If a prime contractor fails to specify a subcontractor or if a prime contractor specifies more than one subcontractor for the same portion of work to be performed under the Contract in excess of one-half (1/2) of one percent (1%) of the prime contractor's total bid, or ten thousand dollars(\$10,000), whichever is greater, he shall be deemed to have agreed that he is fully qualified to perform that portion himself, and that he shall perform that portion himself.

No prime contractor whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by any one other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the prime contractor's total bid as to which his original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act. Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the prime contractor's total bid 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 authority awarding this Contract setting forth the facts constituting the emergency or necessity.

Portion of Work	Subcontractor	Location of Business	Phone Number	License No. and Exp. Date

Portion of Work	Subcontractor	Location of Business	Phone Number	License No. and Exp. Date

 Proper Name of Bidder

 Address

 By (Print Name)

 Title

 Phone

 Date

DOCUMENT 00450: DESIGNATION OF DVBE SUBCONTRACTORS

Contractor shall identify each subcontractor that is a certified Disabled Veteran Business Enterprise (DVBE). Contractor shall provide the DVBE Reference Number assigned by the Office of Small Business Certification and Resources for each DVBE subcontractor, and shall attach a copy of the subcontractor's certification letter within twenty-four (24) hours of the bid deadline.

Subcontractor	Phone Number	DVBE Reference Number

ASBESTOS-FREE MATERIALS CERTIFICATION

The undersigned declares that he or she is the person who executed the bid for the

Site Work for Modular Classrooms at Solana Ranch School

(hereinafter referred to as the "Project"), and submitted it to the Solana Beach School District (hereinafter referred to as the "District") on behalf of _____ (hereinafter referred to as the "Contractor").

To the best of my knowledge, information and belief, in completing the Contractor's Work for the Project, no material furnished, installed or incorporated into the Project will contain, or in itself be composed of, any materials listed by the federal or state EPA or federal or state health agencies as a hazardous material.

Any disputes involving the question of whether or not material installed with asbestos-containing equipment is settled by electron microscopy; the cost of any such tests shall be paid by the Contractor.

All work or materials installed by the Contractor which is found to contain asbestos, or work or material installed with asbestos-containing equipment, will be immediately rejected and this work shall be removed and replaced by the Contractor at no additional cost to the District.

Decontamination and removal of work found to contain asbestos or work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency.

The ASBESTOS REMOVAL CONTRACTOR shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the Asbestos Consultant who shall have sole discretion and final determination in this matter.

The asbestos consultant shall be chosen and approved by the District who shall have sole discretion and final determination in this matter.

The work will be not accepted until asbestos contamination is reduced to levels deemed acceptable by the Asbestos Consultant.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on this _____ day of _____, 20__ at _____.

Name of Contractor (Print or Type)

By _____

Signature of Contractor

Print Name

Print Title

Subscribed and sworn before me this _____ day of _____, 20 __

_____, Notary Public in and for said County and State

My Commission Expires: _____

DOCUMENT 00480: NON-COLLUSION AFFIDAVIT

(To be executed by Bidder and submitted with bid)

State of California)
County of _____) ss.

I, _____, being first duly sworn, deposes and says that he is _____ of _____ the party making the attached bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that 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, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that 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, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this _____ day of _____, 20__ at _____ California.

Signature of Bidder _____

Print Name and Title _____

Subscribed and sworn to before me this ___ day of _____, 20__

Notary Public In and for said County and State

INFORMATION REQUIRED OF BIDDERS

SOLANA BEACH SCHOOL DISTRICT

309 North Rios

Solana Beach, California 92075

BIDDER INFORMATION

- a. The District expressly reserves the right to reject the bid of any bidder who, upon investigation, has been determined to fail to complete similar contracts in a timely fashion or in a satisfactory manner. Such rejection would, if applicable, be based upon the principle that the bidder is "non-responsible" and poses a substantial risk of being unable to complete the work in a cost-effective, professional and timely manner.
- b. In performing the above-described responsibility determination, the District reserves the right to utilize all possible sources of information in making its determination, including but not limited to: inquiries to regulatory State Boards and agencies; Dun and Bradstreet credit reports, inquiries to companies and public entities for which the contractor has previously performed work, reference checks and examination of all public records.
- c. The bidder must provide the following information:

1) Firm Name and Address:

2) Telephone: _____ Fax: _____

E-Mail Address: _____

3) Type of Firm (check one): Individual _____
Partnership _____
Corporation _____

4) Contractor's License: Primary Class _____
License No. _____
License Expiration Date: _____

5) Names and titles of all officers of the firm:

_____	_____
_____	_____
_____	_____

6) Number of years as a contractor in construction of this type: _____

d. **The bidder must also demonstrate knowledge of school construction techniques and should possess a working ability to perform similarly-sized construction work for a public agency. This knowledge and ability shall be shown by furnishing the names, current phone numbers, address, points of contract and scope of work of at least five (5) customers served within the past three (3) years with requirements similar to the needs of the Solana Beach School District.**

1) FAILURE TO FURNISH THE REFERENCES (*IN THE COMPLETE FORMAT REQUIRED*) MAY CAUSE YOUR BID TO BE REJECTED AS NON-RESPONSIVE.

EXAMPLE: Your references should be listed in the following format (facts are example only)

- (a) **Work for X Y Z Unified school District**
- (b) **Phone # (222) 123-4567**
- (c) **999 Holly Drive, L.A., CA 92000**
- (d) **Contact: J.Q. Jones III at above #**
- (e) **Renovated Hills High in 1990 for \$1.3 Million.**

Bidder's Name:

1. Reference #1

District or Entity: _____

Phone #: _____

Address: _____

Name of Contact: _____

Scope of Work & \$ Amount: _____

Reference #2

District or Entity: _____

Phone #: _____

Address: _____

Name of Contact: _____

Scope of Work & \$ Amount: _____

Reference #3

District or Entity: _____

Phone #: _____

Address: _____

Name of Contact: _____

Scope of Work & \$ Amount: _____

DOCUMENT 00500: CONTRACT

THIS CONTRACT, made this day of _____ in the County of San Diego, State of California, by and between the Solana Beach School District, hereinafter called the District, and _____, hereinafter called the Contractor,

WITNESSETH that the District and the Contractor for the considerations stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK. The Contractor shall perform within the time stipulated the Contract as herein defined, and shall provide all labor, materials, equipment, tools, utility services, and transportation to complete in a worker-like manner all of the work required in connection with the following titled Project and in strict compliance with the Contract Documents as specified in Article 5 below:

Site Work for Modular Classrooms at Solana Ranch School

in strict compliance with the Contract Documents as specified in Article 5 below. The Contractor shall be liable to the District for any damages arising as a result of a failure to comply with that obligation, and the Contractor shall not be excused with respect to any failure to so comply by act or omission of the Owner or representative, unless such act or omission actually prevents the Contractor from fully complying with the Contract Documents and the Contractor protests, in accordance with the Contract Documents that the act or omission is preventing the Contractor from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the District office within five (5) days of the date of occurrence of the act or omission preventing the Contractor from fully complying with the Contract Documents.

ARTICLE 2- TIME FOR COMPLETION. The work shall be commenced on the date stated in the District’s Notice to Proceed, as provided in Section A of the Special Conditions. The work shall be completed within the number of calendar days from specified in the Special Conditions, and in accordance with the target milestones and work element durations shown in the Master Construction Project Schedule, included in the Special Conditions. The calendar days specified herein includes calendar days for anticipated inclement weather, taking into consideration the seasonal weather for the time when construction will be undertaken.

In entering into this Contract, Contractor acknowledges and agrees that the construction duration stipulated herein is adequate and reasonable for the size and scope of the Project.

ARTICLE 3 - CONTRACT PRICE. The District shall pay to the Contractor as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including any applicable sales, use or other taxes or costs, the sum of _____ Dollars (\$ _____), said sum being the total amount stipulated in the bid. Payment shall be made as set forth in the General Conditions.

ARTICLE 4 – LIQUIDATED DAMAGES. It is agreed that the Contractor will pay the District the sum of five-hundred dollars (\$500) per calendar day for each and every day of delay beyond the time prescribed in the Contract Documents for finishing said work, as Liquidated Damages and not as a penalty or forfeiture. In the event the same is not paid, the Contractor further agrees that the District may deduct that amount thereof from any money due or that may become due the Contractor under the Contract. This Article does not exclude recovery of damages under provisions

of the Contract Documents.

ARTICLE 5 - COMPONENT PARTS OF THE CONTRACT. The agreement entered into by this Contract consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto:

Notice to Contractors Calling for Bid
Information for Bidders
Contractor's Certificate Regarding Workers' Compensation
Bid Form, as accepted
Bid Bond
Designation of Subcontractors
Designation of DVBE Subcontractors
Information Required of Bidders
Asbestos-Free Material Certification
Non-collusion Affidavit
Contract
Performance Bond
Payment Bond for Public Works
Recycled Content Certification
Contractor & Subcontractor Fingerprinting Requirements
Drug-Free Workplace Certifications
General, Special, and Supplementary Conditions
Insurance Policies/OCIP
All Contractor Certifications
Addenda Nos. _____, _____, and _____, as issued
Drawings, Plans, and Specifications

All of the above-named Contract Documents are intended to be complementary. Work required by one of the above-named Contract Documents and not by others shall be done as if required by all. This Contract shall supersede any prior agreement of the parties.

ARTICLE 6 – PROVISIONS REQUIRED BY LAW. Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein and this 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 inserted correctly, then upon application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 – SUBSTITUTION OF SECURITIES. It is understood that at the request and expense of the Contractor, the District will pay the amounts retained pursuant to these Contract Documents as security for the completion of the work in compliance with the requirements of Public Contract Code Section 22300.

ARTICLE 8 – LABOR CODE PROVISIONS. Contractor shall comply with the prevailing wage provisions of the California Labor Code and the prevailing wage rate determinations of the Department of Industrial Relations. These rates are on file at the District's Purchasing Department Office located at District, 309 N. Rios Avenue, Solana Beach, California, 92075. Copies may be obtained on request. A copy of these rates shall be posted at the job site. It shall be mandatory upon the Contractor and all subcontractors to comply with all Labor Code provisions, which include but are not limited to prevailing wages, employment of apprentices, hours of labor, and

debarment of Contractors and subcontractors.

Pursuant to Labor Code section 1771.7, the District has implemented and shall enforce a Labor Compliance Program (LCP) for this Project. The Contractor shall be required to comply with all the requirements of the District's LCP and applicable provisions of the California Labor Code. In bidding on this Project, it shall be the Contractor's responsibility to evaluate the cost of complying with the District's LCP. The Contractor shall include all costs of compliance with specified requirements in the contract amount.

Contractor shall be responsible for complying with the provisions of the District's LCP, including the standard provisions requiring payment of prevailing wages, more further explained below, maintenance and submission of certified weekly payrolls, and hiring of apprenticeship as appropriate. Contractor shall be required to attend, and invite subcontractors to attend, a pre-construction meeting at which a representative of the District shall discuss labor law requirements. Contractor shall work with the District's staff and consultants to ensure the full compliance with the District's LCP and applicable labor law.

ARTICLE 9 – RECORD AUDIT. In accordance with Government Code, Section 8546.7, records of both the District and the Contractor shall be subject to examination and audit by the Auditor General for a period of three (3) years after final payment.

ARTICLE 10 – INDEMNIFICATION. The District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof, or for any of the materials or other things used or employed in performing the Work, of for injury or damage to any person or persons, either workers, employees of Contractor or its subcontractors or the public, or for damage to adjoining or other property, from any cause whatsoever arising out of or in connection with the performance of the Work. The Contractor shall be responsible for any damage to adjoining or other property, from any cause whatsoever arising out of or in connection with the performance of the work. The Contractor shall be responsible for any damage or injury to any person or property resulting from defects or obstructions or from any cause whatsoever arising out of or in connection with the performance of the Work; provided, however, that the Contractor shall not be liable for the sole established negligence, willful misconduct or active negligence of the District, its Board members, directors, officers, employees, agents and authorized volunteers who are directly responsible to the District.

- a. Contractor shall indemnify the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers against and will hold and save them and each of them harmless from any and all actions, claims, damages to persons or property, penalties, obligations or liabilities that may be asserted or claimed by any person, firm entity, corporation, political subdivision or other organization arising out of or in connection with the Work, operation or activities of Contractor, its agents, employees, subcontractors or invitees, provided for herein, whether or not there is concurrent passive or active negligence on the part of the District, the District's Representative, or their Board members, directors, officers, employees, agents and authorized volunteers, but excluding such actions, claims, damages to persons or property penalties, obligations or liabilities arising from the sole established negligence, willful misconduct or active negligence of the District, the District's Representative, or those who are directly responsible to them; and in connection therewith:
 - 1) Contractor will defend any action or actions filed in connection with any of said claims, damages, penalties, obligations or liabilities and will pay all costs and expenses, including attorney's fees incurred in connection therewith.

- 2) Contractor will promptly pay any judgment rendered against Contractor, the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers covering such claims, damages, penalties, obligations and liabilities arising out of or in connection with such work, operations, or activities of Contractor hereunder and Contractor agrees to save and hold the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers harmless therefrom.

- 3) In the event the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers are made a party to any action or proceeding filed or prosecuted against Contractor for such damages or other claims arising out of or in connection with the Work, or operation or activities of Contractor hereunder, Contractor agrees to pay to the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers any and all costs and expenses incurred by the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers in such action or proceeding together with reasonable attorney's fees.

- 4) The District may retain, to the extent it deems necessary, the money due to the Contractor under and by virtue of the Contract Documents until disposition has been made of such actions or claims for damages as specified hereinabove.

IN WITNESS WHEREOF, this Contract has been duly executed by the above-named parties, on the day and year first above written.

CONTRACTOR:

DISTRICT:

Contractor Name

Solana Beach School District

License No. _____

By _____

By _____
Signature of Authorized Agent

Its _____

Its _____
Name of Above Agent Types or Printed

(Corporate Seal)

DOCUMENT 00600: PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the Solana Beach School District (hereinafter designated as "Public Entity"), by action taken or a resolution passed, 20_____ has awarded to _____ hereinafter designated as the "Principal," a contract for work described as follows:

Site Work for Modular Classrooms at Solana Ranch School

(the "Project"); and WHEREAS, said Principal is required under the terms of said contract to furnish a bond for the faithful performance of thereof;

NOW THEREFORE, we, the Principal and _____, as Surety, are held and firmly bound unto the Public Entity in the penal sum of _____ Dollars (\$_____) which is one hundred percent (100%) of the total contract amount for the above stated Project. lawful money of the United States of America, to be paid to the District for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the above bounded Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by and well and truly keep and perform, the covenants, conditions, and agreements in the said contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Districts, its officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise, It shall be and 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 anywise affect Its obligation on this bond, 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. In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all litigation expenses incurred by the District in such suit, including attorneys' fees, court costs, expert witness fees and investigation expenses.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the day of _____, 200_, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

(Corporate Seal of Principal,

if corporation)

Principal (Property Name of Contractor)

By _____

(Signature of Contractor)

(Seal of Surety)

Surety

By _____

Attorney in Fact

(Attached Attorney-In-Fact

Certificate and Required Acknowledgements)

*Note: Appropriate Notarial Acknowledgments of Execution by Contractor and surety and a power of Attorney MUST BE ATTACHED.

RECYCLED CONTENT CERTIFICATION

The undersigned declares that he or she is the person who executed the bid for the

Site Work for Modular Classrooms at Solana Ranch School

(hereinafter referred to as the "Project"), and submitted it to the Solana Beach School District (hereinafter referred to as the "District") on behalf of _____ hereinafter referred to as the "Contractor").

Pursuant to Public Contract Code Section 10308.5, all contractors are required to certify in writing under penalty of perjury the minimum (if not exact) percentage of recycled content in materials, goods, or supplies offered or products used in the performance of their contract, regardless of whether the product meets the required recycled product percentage as defined in Sections 12161 and 12200. The recycled content shall include both post consumer material and secondary material as defined in Public Contract Code Sections 12161 and 12200 shall apply.

I declare under penalty of perjury under the laws of the State of California that the following percentages of Postconsumer Material and Secondary Material is in the materials, goods or supplies offered for, or products used in, the performance of the Contract for the Project:

_____ % Postconsumer Material _____ % Secondary Material

Executed on this _____ day of _____, 20__ at _____.

Name of Contractor (Print or Type)

By _____
Signature

Print Name

Title

Subscribed and sworn before me
this _____ day of _____, 20 _____

Notary Public in and for
the State of California

My Commission Expires: _____

CONTRACTOR & SUBCONTRACTOR FINGERPRINTING REQUIREMENTS

CONTRACTOR CERTIFICATION

With respect to the Contract dated _____ 20__ by and between Solana Beach School District ("District") and _____ ("Contractor"), Contractor hereby certifies to the District's governing board that it has completed the criminal background check requirements of Education Code Section 45125.1 and that none of its employees that may come in contact with District's pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

Contractor's Representative

Date

CONTRACTOR EXEMPTION

Pursuant to Education Code sections 45125.1 and 45125.2, the Solana Beach School District ("District") has determined that _____ ("Contractor") is exempt from the criminal background check certification requirements for the Contract dated _____ 20__ by and between the District and Contractor ("Contract") because:

- The Contractor's employees will have limited contact with District students during the course of the Contract;
- Emergency or exceptional circumstances exist; or
- With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor has agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2: _____.

School District Official

Date

CONTRACTOR & SUBCONTRACTOR FINGERPRINTING REQUIREMENTS

SUBCONTRACTOR'S CERTIFICATION

The Solana Beach School District ("District") entered into a Contract for services with _____ ("Contractor") on or about _____, 20____ ("Contract"). This certification is submitted by _____, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"). Subcontractor hereby certifies to the District's governing board that it has completed the criminal background check requirements of Education Code section 45125.1 and that none of its employees that may come in contact with District pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

Subcontractor's Representative

Date

SUBCONTRACTOR'S EXEMPTION

The Solana Beach School District ("District") entered into a Contract for services with _____ ("Contractor") on or about _____, 20____ ("Contract"). Pursuant to Education Code sections 45125.1 and 45125.2, the District has determined that _____, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"), is exempt from the criminal background check certification requirements for the Contract because:

- The Subcontractor's employees will have limited contact with District students during the course of the Contract;
- Emergency or exceptional circumstances exist; or
- With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor and/or Subcontractor have agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2: _____.

School District Official

Date

DRUG-FREE WORKPLACE CERTIFICATION

This Drug-Free Workplace Certification form is part of the Contract made by and between the Solana Beach School District (hereinafter referred to as the "District") and

_____ (hereinafter referred to as the "Contractor") for the

Site Work for Modular Classrooms at Solana Ranch School

(hereinafter referred to as the "Project"). This form is required from all successful bidders pursuant to the Drug-Free Workplace Act of 1990 (Government Code Section 8350 et seq.) The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for procurement of any property or service 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 or grant awarded by a State agency may be subject to suspension of payments or termination, and the contractor or grantee may be subject to debarment from future contracting, if the contracting 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 their 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; and
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 the Drug-Free Workplace Act as it now exists or may hereinafter be amended. Particularly, I shall abide by Government Code Section 8355 when performing the Contract for the Project by:

A. Publishing a statement notifying employees concerning the prohibition of controlled substance at my workplace;

B. Establishing a drug-free awareness program; and

C. Requiring that each employee engaged in the performance of the contract be given a copy of the statement required by Section 8355(a) and agree to abide by the terms of that statement.

I also understand that if the District 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, the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that if I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of the Act.

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.

Executed on this _____ day of _____, 20____ at _____.

Name of Contractor (Print or Type)

By _____
Signature

Print Name

Title

Subscribed and sworn before me
this ____ day of _____, 20____

Notary Public in and for
the State of California
My Commission Expires: _____

DOCUMENT 00700: GENERAL CONDITIONS

Article 1. DEFINITIONS

- a. Acceptable, Acceptance or words of similar import are used, it shall be understood that the acceptance of the District is intended.
- b. Approval means written authorization by District for specific applications within the Contract.
- c. Contract, Contract Documents include all Contract Documents including: Notice to Contractors Calling for Bids, Information for Bidders/Pre-Qualification Documents, Bid Form, Designation of Subcontractors, Certificate Regarding Workers' Compensation, Non-Collusive Bidding Declaration, Designation of DVBE Subcontractors, Drug-Free Workplace Certification, Recycled Content Certification, Asbestos-Free Materials Certification, Contractor Fingerprinting Requirements, Information Required of Bidders, Performance Bond, Payment Bond, Insurance Policies/OCIP Documents, General Conditions, Special Conditions, Supplementary General Conditions, if any, Drawings, Plans, Specifications, the Contract, and all modifications, addenda, and amendments.
- d. Day as used herein shall mean calendar day unless otherwise specifically designated.
- e. District and Contractor are those mentioned as such in the Contract. For convenience and brevity, these terms, as well as terms identifying other persons involved in the Contract are treated throughout the Contract Documents as if they are of singular number and masculine gender. The terms District and Owner are used interchangeably. The terms Contractor, Trade Contractor and Prime Contractor are all references to the other. These terms are used interchangeably in the course of the Contract Documents.
- f. District's Representative or Representative means any representative of the District authorized in writing to act on behalf of the District.
- g. Equal, Equivalent, Satisfactory, Directed, Designated, Selected, As Required and words of similar meaning are used, the written approval, selection, satisfaction, direction, or similar action of the District is required.
- h. Includes and Including do not limit the work to the items following those words.
- i. Indicated, Shown, Detailed, Noted, Scheduled or words of similar meaning shall mean that reference is made to the drawings, unless otherwise noted. It shall be understood that the direction, designation, selection, or similar import of the District is intended, unless stated otherwise.
- j. Locality in which the work is performed means the county in which the public work is done.

- k. Perform shall be understood to mean that the Contractor, at Contractor's expense, shall perform all operations necessary to complete the work, including furnishing of necessary labor, tools, and equipment, and further including the furnishing and installing of materials that are indicated, specified, or required to complete such performance.
- l. Project is the undertaking planned by District and Contractor as provided in the Contract Documents.
- m. Provide shall include "provide complete in place," that is, "furnish, install, test and make ready for use."
- n. Required and words of similar meaning are used, it shall mean "as required to properly complete the work" as required by the District, unless stated otherwise.
- o. Subcontractor as used herein, includes those having a direct contract with Contractor and one who furnishes material worked to a special design according to plans, drawings, and specifications of this work, but does not include one who merely furnishes material not so worked.
- p. Surety is the person, firm, or corporation, admitted as a California admitted surety, that executes as surety the Contractor's Performance Bond and Payment Bond for Public Works. Surety must be an admitted surety insurer pursuant to Code of Civil Procedure section 995.120.
- q. The Work means the entire improvement proposed by the District to be constructed in whole, or in part, pursuant to the Contract Documents.
- r. Work means labor, equipment and materials incorporated in, or to be incorporated in the construction covered by the Contract Documents.
- s. Worker includes laborer, worker, or mechanic, and any supervisors thereto.

Article 2. DRAWINGS AND SPECIFICATIONS

- a. **Contract Documents.** Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intention of documents is to provide the District with complete and fully operational facilities as indicated and specified including all labor and materials, equipment, and transportation necessary for the proper execution of the work. Materials or work described in words, which as applied, have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.
- b. **Interpretations.** Drawings and specifications are intended to be fully cooperative and to agree. However, if Contractor observes that drawings and specifications are in conflict, the Contractor shall promptly notify the Owner in writing and any necessary changes shall be adjusted as provided in contract for changes in work. If such conflict arises, the following

order of precedence shall generally apply, provided, however, that the order of precedence shall not be so rigidly interpreted as to affect an absurd or costly result:

- 1) Special Conditions shall take precedence over General Conditions.
 - 2) Technical Specifications implement, in additional detail, the requirements of the General Conditions. In the event of conflict between the Technical Specifications and the General Conditions, the General Conditions shall take precedence.
 - 3) In the event of a conflict between the Technical Specifications and the drawings, the higher quality, higher quantity and the most stringent requirements shall be deemed to apply and shall govern as to materials, workmanship, and installation procedures.
 - 4) With regard to drawings:
 - (a) Figures govern over scaled dimensions;
 - (b) Larger scale drawings and details govern over smaller scale drawings;
 - (c) Addenda/change order drawings govern over contract drawings;
 - (d) Contract drawings govern over standard drawings.
 - 5) Work not particularly shown or specified shall be the same as similar parts that are shown or specified.
- c. Misunderstanding of drawings and specifications shall be clarified by the Owner/Owner's Rep, whose decisions shall be final, and which shall be communicated to the Contractor by the Owner.
- d. Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these specifications within limits specified.
- e. **Compliance with Applicable Laws.** Drawings and specifications are intended to comply with all laws, ordinances, rules and regulations of authorities having jurisdiction, and where referred to in the Contract Documents, said laws, ordinances, rules and regulations shall be considered as part of said Contract Documents within the limits specified. The Contractor shall bear all expenses correcting work done contrary to said laws, ordinances, rules and regulations and if the Contractor (1) performed same without first consulting the Owner for securing the Owner's instructions regarding said work or (2) disregarded the Owner's instructions regarding said work.
- f. **Provisions of Law Deemed Inserted.** 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,

omission 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.

- g. **Addenda and Deferred Approvals.** Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda only to the extent specified.
- h. **Organization of Work.** Organization of the specification 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.

Article 3. COPIES FURNISHED

Contractor will be furnished, free of charge, the number of copies of drawings and specifications as set forth in the Special Conditions. Additional copies may be obtained at cost of reproduction.

Article 4. OWNERSHIP OF DRAWING

All drawings, specifications, and copies thereof furnished by the District are District property. They are not to be used by Contractor or Subcontractor on other work nor shall Contractor claim any right to such documents. With exception of one signed Contract set, all documents shall be returned to the District on request at completion of work.

Article 5. DETAIL DRAWINGS AND INSTRUCTIONS

- a. **Examination of Drawings and Specifications.** 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 Project requirements. Contractor shall immediately notify District 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 Price, as set forth in Article 3 of the Contract, 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 Price 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.

Additional Instructions. Within ten (10) calendar days of notification of any ambiguity, conflict or lack of information, the District will provide prepared additional instructions, by means of drawings or other written direction, necessary for proper execution of work. All such drawings and instruments shall be consistent with the Contract Documents, true developments thereof, and reasonable inferable therefrom. Work shall be executed in conformity therewith and Contractor shall do no work without proper drawings and instructions. Any necessary additional details furnished by the Owner to more fully explain the work shall be considered as part of the Contract Documents.

- b. **Quality of Parts, Construction and Finish.** All parts of the described and shown construction shall be of the best quality of their respective kinds and the Contractor is hereby advised to use all diligence to inform himself fully as to the required construction and finish, and in no case to proceed with the different parts of the work without obtaining first from the Owner such directions and/or drawings as may be necessary for the proper performance of the work.
- c. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the drawings and/or specifications, in materials, quality, form or finish, or in the amount or value of the materials and labor used, the Owner, shall be at liberty at any time, before or after completion of the work, to order such improper work removed, remade and replaced, and all work distributed by these changes shall be made good at the Contractor's expense, or the Owner shall receive from the Contractor a sum of money equivalent to the difference in value between the work performed and that called for by the drawings and specifications, it being optional with the Owner to pursue either course.

Article 6. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- a. **Time for Completion/Liquidated Damages.** Work shall be commenced on or before the date stated in the District's notice to the Contractor to proceed and shall be completed by Contractor in the time specified in the Special Conditions. The District is under no obligation to consider early completion of the Project and the Contract completion date shall not be amended by the District's acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances receive additional compensation from the District for indirect, general, administrative or other forms of overhead costs for the period between the time of earlier completion proposed by the Contractor and the official Contract completion date. If the work is not completed in accordance with the foregoing, it is understood that the District will suffer damage. It being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to the District as fixed and liquidated damages, and not as a penalty, the sum stipulated in the Special Conditions for each calendar day of delay until work is completed and accepted. Contractor and his surety shall be liable for the amount thereof. Any money due or to become due the Contractor may be retained to cover said liquidated damages. Should such money not be sufficient to cover said liquidated damages, the District shall have the right to recover the balance from the Contractor or his sureties, who

will pay said balance forthwith. Regardless of the schedule submitted by Contractor, no delay claims shall be accepted by the District unless the event or occurrence delays the completion of the Project beyond the contractual completion date.

- b. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor including, but not restricted to: acts of God, or of public enemy, acts of Government, acts of District or anyone employed by him or acts of another Contractor in performance of a contract with the District, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes. Contractor shall within five (5) calendar days of the beginning of any such delay (unless the District grants a further period of time prior to date of final settlement of the Contract) notify the District in writing of causes of delay; thereupon the District shall ascertain the facts and extent of delay and grant extension of time for completing work when, in its judgment, the findings of fact justify such an extension. The District's findings of fact thereon shall be final and conclusive on parties hereto. In case of a continuing cause of delay, only one claim is necessary. Time extensions to the Project should be requested by the Contractor as they occur and without delay. Regardless of the schedule submitted by Contractor, no delay claims shall be accepted by the District unless the event or occurrence delays the completion of the Project beyond the contractual completion date.

- c. **No Damages for Delay.** The District's liability to Contractor for delays for which the District is responsible shall be limited to an extension of time for delays unless such delays were unreasonable under the circumstances involved and were not within the contemplation of the parties when the Contract was awarded. Contractor agrees that the Owner, together, shall determine the actual costs to Contractor of any delay for which Contractor may claim damages from the District. Such costs, if any, shall be directly related to the Project, and shall not include costs that would be borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and ongoing insurance costs. The District shall not be liable for any damages, which the Contractor could have avoided by any reasonable means including, but not limited to, the judicious handling of forces, equipment, or plant.

Article 7. PROGRESS SCHEDULE

- a. **Estimated Schedule.** Within seven (7) calendar days after the effective date of the Notice to Proceed, Contractor shall prepare an estimated progress schedule and shall submit same to District for approval. The schedule shall clearly identify all staffing and other resources, which in the Contractor's judgment are needed to complete the Project within the time specified for completion. The schedule shall include milestones and shall include the "critical path" activities. Such schedule shall be submitted to District for approval. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels, which allow for good quality and timely completion of the Project; the District's approval of the progress schedule does not relieve the Contractor of any such responsibility. Contractor's failure to incorporate all elements of work required

for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all work required for a completed Project within the specified Contract time period, notwithstanding the District's acceptance of the schedule. If the required schedule is not received by the time the first payment request is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the District.

- b. **Schedule Contents.** The schedule shall allow enough time for inclement weather. Such schedule shall indicate graphically the beginning and completion dates of all phases of construction, shall indicate the critical path for all critical, sequential time related activities. All required schedules shall indicate "float time" for all "slack" or "gaps" in the non-critical activities. Submitted construction schedules shall have a duration to match the Contract time. Excess time may be picked up with "float time" if needed or desired by the Contractor. A "bar chart" in reasonably complete detail shall be adequate in contracts over \$1 million and shall show critical path items. All required schedules shall be periodically updated to reflect changes in the status of the job, including weather delays. At a minimum, the Contractor shall be required to provide and keep updated a monthly schedule in order to prevent delay claims.
- c. **State Testing.** In no event shall Contractor conduct any work on the Project on dates on which State Testing of Pupils is conducted. District or District's Representative will provide Contractor with a schedule of test dates concurrent with the District's issuance of notice of award of Contract, or as soon as such test dates are made available to the District.

Article 8. CONTRACT SECURITY

Unless otherwise specified in Special Conditions, Contractor shall furnish a surety bond in an amount equal to one hundred percent (100%) of Contract Price as security for faithful performance of this Contract and shall furnish a separate bond in an amount at least equal to one hundred percent (100%) of the Contract Price as security for payment of persons performing labor and furnishing materials in connection with this Contract. Both the Payment and Performance Bonds must be executed by an admitted Surety, as defined in California Code of Civil Procedure Section 995.120. The Payment and Performance Bonds must be accompanied by the original or a certified copy of the unrevoked power of attorney or other appropriate instrument entitling or authorizing the person who executed the bond to do so. In addition, to the extent required by law, the Payment and Performance Bonds must be accompanied by a certified copy of the certificate of authority of the insurer issued by the Insurance Commissioner of the State of California, a certificate from the Clerk of the County of San Diego that the certificate of authority of the insurer has not been surrendered, revoked, cancelled, annulled, or suspended, or if it has that it has been renewed, and four copies of the insurer's most recent annual statement and quarterly statement filed with the Department of Insurance of the State of California. Aforesaid bonds shall be in form set forth in these Contract Documents. Upon request of Contractor, the District will consider and accepting multiple sureties on such bonds.

Article 9. ASSIGNMENT

Contractor shall not assign, transfer, convey, sublet, or otherwise dispose of this Contract or any part thereof including any claims, without prior written consent of the District. Any assignment without the written consent of the District shall be void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or material supplied for performance of work called for under said Contract in favor of all persons, firms, or corporations rendering such services or supplying such materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure, and/or the Government Code.

Article 10. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the District in order that proper steps may be taken to have the change reflected on the Contract.

Article 11. PROHIBITED INTERESTS

No official of the District, and no District Representative who is authorized in such capacity and on behalf of the District to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the Project, shall be or become directly or indirectly interested financially in this Contract or in any part thereof. No officer, employee, attorney, engineer or Inspector of or for the District who is authorized in such capacity and on behalf of the District to exercise any executive, supervisory or other similar functions in connection with construction of the Project, shall become directly or indirectly interested financially in this Contract or in any part thereof.

Article 12. SEPARATE CONTRACTS

- a. The District reserves the right to let other contracts in connection with this work. Contractor shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly connect and coordinate his work with theirs.
- b. If any part of Contractor's work depends for proper execution or results upon work of any other contractor, the Contractor shall inspect and promptly report to the Owner any defects in such work that renders it unsuitable for such proper execution and results. His failure so to inspect and report shall constitute his acceptance of other contractor's work as fit and proper for reception of his work, except as to defects which may develop in the other contractor's work after execution of contractor's work.
- a. To insure proper execution of his subsequent work, Contractor shall measure and inspect work already in place and shall at once report to the Owner any discrepancy between executed work and the Contract Documents.
- b. Contractor shall ascertain to his own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by the District in prosecution of the

Project to the end that Contractor may perform this Contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of the Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, the District or District's Representative shall decide which Contractor shall cease work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. The District shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on the Project, or caused by any decision or omission of the District or District's Representative respecting the order of precedence in performance of contracts.

Article 13. SUBCONTRACTING

- a. Contractor agrees to bind every subcontractor by terms of the Contract as far as such terms are applicable to subcontractor's work. If Contractor subcontracts any part of this Contract, Contractor shall be as fully responsible to the District for the acts and omissions of his subcontractor and of persons either directly or indirectly employed by his subcontractor, as he is for acts and omissions of persons directly employed by himself. Nothing contained in these Contract Documents shall create any contractual relation between any subcontractor and the District. The District shall be deemed to be the third party beneficiary of the contract between the Contractor and the subcontractor.
- b. The District's consent to or approval of any subcontractor under this Contract shall not in any way relieve Contractor of his obligations under this Contract and no such consent or approval shall be deemed to waive any provision of this Contract
- c. Substitution or addition of subcontractors shall be permitted only as authorized in chapter 4 (commencing at section 4100), part 1, division 2 of the California Public Contract Code.

Article 14. DISTRICT'S RIGHT TO TERMINATE CONTRACT

- a. The District may, without prejudice to any other right or remedy, serve written notice upon Contractor and his surety of its intention to terminate this Contract if the Contractor (i) refuses or fails to prosecute the work or any separable part thereof with such diligence as will insure its completion within the time specified or any extension thereof, or (ii) fails to complete said work within such time, or (iii) if the Contractor should file a bankruptcy petition or be adjudged a bankrupt, or (iv) if he should make a general assignment for the benefit of his creditors, or (v) if a receiver should be appointed on account of his insolvency, or (vi) if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials to complete the work in time specified, or (vii) if he should fail to make prompt payment to subcontractors or for material or labor, or (viii) persistently disregard laws, ordinances or instructions of the District or those of District's Representatives, or (ix)

otherwise be guilty of a substantial violation of any provision of the Contract, or (x) if he or his subcontractors should violate any of the provisions of this Contract. The notice of intent to terminate shall contain the reasons for such intention to terminate. Unless within ten (10) calendar days after the service of such notice, such condition shall cease or such violation shall cease and satisfactory arrangements for the correction thereof be made, this Contract shall, upon the expiration of said ten (10) calendar days, cease and terminate. In such case, Contractor shall not be entitled to receive any further payment until work is finished. In event of any such termination, the District shall immediately serve written notice thereof upon surety and Contractor written notice of termination stating that the contract has ceased and is terminated. Surety shall have the right to investigate, take over and perform this Contract, provided, however, that if Surety, within fifteen (15) calendar days after service upon it of said notice of termination, does not give the District written notice of its intention to take over and perform this Contract and does not commence performance thereof within twenty (20) calendar days from the date of service upon it of such notice of termination, the District may take over the work and prosecute same to completion by contract or by any other method it may deem advisable for the account and at the expense of Contractor. Contractor and his surety shall be liable to the District for any excess cost or other damages occasioned the District thereby. If the District takes over the work as hereinabove provided, the District may, without liability for so doing, take possession of and utilize in completing the work such materials, appliances, plant, and other property belonging to the Contractor as may be on the site of the work and necessary therefore. If Surety does not perform the Project work itself, the Surety shall consult with the District regarding its planned choice of a contractor or contractors to complete the Project, and upon request by District, Surety shall provide District evidence of responsibility of Surety's proposed contractor or contractors. District shall be entitled to reject Surety's choice of contractor or contractors if District determines in its sole discretion that the contractor or contractors are nonresponsible. If Surety provides District written notice of its intention to take over and perform this Contract, within fifteen (15) calendar days of such written notice of intent to take over and perform, Surety or its chosen contractor or contractors (if such contractor or contractor's are approved by District) shall provide District a detailed Progress Schedule as specified in Article 8 above. Contractor and his surety shall be liable to District for any excess cost or other damages occasioned the District as a result of Surety or Surety's contractor or contractors takeover and performance.

- b. If the unpaid balance of the Contract Price exceeds the expense of finishing work, including compensation for additional architectural, managerial, and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to the District.
- c. Should the District determine that environmental considerations mandate that the underlying Project should not go forward, District may notify Contractor that this Contract is terminated due to environmental considerations and District shall only be obligated to pay Contractor for the work that Contractor had performed at the time of notification of termination of this Contract for environmental considerations.

- d. **Termination For Convenience:** The District may terminate performance of the work called for by the Contract Documents in whole or, from time to time, in part, if the District determines that a termination is in the District's interest.

The Contractor shall terminate all or any part of the Work upon delivery to the Contractor of a Notice of Termination specifying that the termination is for the convenience of the District, the extent of termination, and the effective Date of such termination.

After receipt of Notice of Termination, and except as directed by the District, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this Termination for Convenience provision, immediately proceed with the following obligations:

1. Stop Work as specified in the Notice.
2. Complete any Work specified in the Notice of Termination in a least cost/shortest time manner while still maintaining the quality called for under the Contract Documents.
3. Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the Contract Documents is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.
4. Terminate all subcontracts to the extent that they relate to the portions of the work terminated.
5. Place no further subcontracts or orders, except as necessary to complete the continued portion of the Contract.
6. Submit to the District, within ten (10) calendar days from the Effective Date of the Notice of Termination, all of the usual documentation called for by the Contract Documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the Effective Date of the Notice of Termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the District's exercise of its right to terminate this Contract pursuant to this clause, which costs the Contractor is authorized under the Contract Documents to incur, shall: (i) be submitted to and received by the District no later than thirty (30) calendar days after the Effective Date of the Notice of Termination; (ii) describe the costs incurred with particularity; and (iii) be conspicuously identified as "Termination Costs occasioned by the District's Termination for Convenience."

Termination of the Contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the Work performed. In the event that the District exercises its right to terminate this Contract pursuant to this provision, the District shall pay the Contractor, upon the Contractor's submission of the documentation required by this clause and other applicable

provisions of the Contract Documents, all actual reimbursable costs incurred according to the provisions of this Contract.

- e. **Termination of Contract by Contractor:** The Contractor may terminate the Contract upon ten (10) calendar days written notice to the District, whenever: (1) the entire Work has been suspended for ninety (90) consecutive days through no fault or negligence of the Contractor, and notice to resume the Work or to terminate the Contract has not been received from the District within this time period; or (2) the District should fail to pay the Contractor any substantial sums due it in accordance with the terms of the Contract and within the time limits prescribed. In the event of such termination, the Contractor shall have no claims against the District except for Work performed as of the date of termination.
- f. The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the District.
- g. Notwithstanding the foregoing provisions, this Contract may not be terminated or modified where a trustee-in-bankruptcy has assumed the Contract pursuant to 11 U.S.C. section 365 (Federal Bankruptcy Act).

Article 15. GUARANTEE

- a. Besides guarantees required elsewhere, Contractor shall, and hereby does, guarantee all work for a period of two (2) years after date of acceptance of work by the District. Contractor shall repair or replace any or all such work, together with any other work, which may be displaced in so doing, that may prove defective in workmanship and/or materials within a two-year period from date of acceptance without expense whatsoever to the District, ordinary wear and tear, unusual abuse or neglect excepted. The District will give notice of observed defects with reasonable promptness. Contractor shall notify the District upon completion of repairs.
- b. In the event of failure of Contractor to comply with above-mentioned conditions within one week after being notified in writing, the District is hereby authorized to proceed to have defects repaired and made good at the expense of Contractor. Contractor hereby agrees to pay costs and charges therefore immediately on demand.
- c. If, in the opinion of the District or District's Representative, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District or to prevent interruption of operations of the District, the District or the District's Representative will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District's request for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this Article, proceed to make such correction or provide such attention. The costs of such correction or attention shall be charged against the Contractor. Such action by the District or its Representative will not relieve the Contractor of the guarantees provided in this Article or elsewhere in this Contract.

- d. This Article does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish the District with all appropriate guarantee or warranty certificates upon completion of the Project.

Article 16. NOTICE AND SERVICE THEREOF

- a. Any notice from one party to the other under the Contract shall be in writing and shall be dated and signed by party giving such notice or by the duly authorized representative of such party. Any such notice shall not be effective for any purpose whatsoever unless served in one of the following manners:
 - 1) If notice is given to the District, by personal delivery or by depositing same in United States mails, enclosed in a sealed envelope addressed to the District postage prepaid and registered;
 - 2) If notice is given to Contractor by personal delivery thereof to said Contractor or to his foreman at site of Project, or by depositing same in United States mails, enclosed in a sealed envelope addressed to said Contractor at his regular place of business or at such other address as may have been established for the conduct of work under this Contract, postage prepaid and registered;
 - 3) If notice is given to surety or other person by personal delivery to such surety or other person or by depositing same in United States mails, enclosed in a sealed envelope addressed to such surety or person at the address of such surety or person last communicated by him to party giving notice, postage prepaid and registered.
 - 4) If notice is served by mail, it shall be deemed received and all time periods associated with the giving of notice shall run from the third day after mailing.

Article 17. WORKERS

- a. Contractor shall at all times enforce strict discipline and good order among his employees. Contractor shall not employ on work any unfit person or any one not skilled in work assigned to him.
- b. Any person in the employ of the Contractor whom the District or District's Representative may deem incompetent or unfit shall be dismissed from work and shall not again be employed on it except with the written consent of the District.

Article 18. WAGE RATES

- a. Pursuant to the provisions of Article 2 (commencing at Section 1770), Chapter 1, Part 7, Division 2 of the Labor Code of California, the governing body of District has ascertained

the general prevailing rate of per diem wages in the locality in which this public work is to be performed for each craft, classification, or type of workmen needed to execute the Contract.

- b. Per diem wages shall be deemed to include employer payments for health and welfare, pension, vacation, travel time and subsistence pay as provided in Labor Code Section 1773.1 apprenticeship or other training programs authorized by Labor Code Section 3093, and similar purposes when the term "per diem wages" is used herein.
- c. Holiday and overtime work when permitted by law shall be paid for at a rate of at least one and one-half times the above specified rate of per them wages, unless otherwise specified.
- d. There shall be paid each worker of the Contractor or any of his subcontractors engaged in work on the Project not less than the prevailing wage rate, regardless of any contractual relationship, which may be alleged to exist between the Contractor or any subcontractors and such workers.
- e. The Contractor shall, as a penalty to the District, forfeit an amount as determined by the Labor Commissioner pursuant to Labor Code Section 1775 for each calendar day, or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of Industrial Relations for such work or draft in which such worker is employed for any public work done under the Contract by him or by any subcontractor under him. The difference between such 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 prevailing wage rate, shall be paid to each worker by the Contractor.
- f. Copies of the determined prevailing wage rates are on file and available upon request at the District's office. Contractor shall post, at appropriate conspicuous points on the site of the Project, a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned.
- g. Any worker employed to perform work on the Project which is not covered by any classification available in the District office, shall be paid not less than the minimum rate of wages specified for the classification which most nearly corresponds with work to be performed by him, and that minimum wage rate shall be retroactive to the time of initial employment of the person in the classification.
- h. A certified copy of all payroll records shall be submitted to the Owner no later than the tenth (10th) day of each month for the immediately preceding month. This submission shall be a condition precedent for payment to the Contractor. Failure to submit payroll records shall be grounds for withholding of payment to Contractor until such submission is made.
- i. The provisions of this subsection shall apply if required for this Project as set forth in the Notice to Contractors and/or Information to Bidders.

- 1) Pursuant to Labor Code section 1771.7, the District has implemented and shall enforce a Labor Compliance Program (LCP). The Contractor, and any subcontractors, are required to comply with the requirements of the District's LCP. The Contractor hereby expressly agrees to comply with the requirements of the District's LCP at no additional cost to the District.
- 2) The District's LCP includes, but is not limited to, provisions requiring the Contractor to comply with the prevailing rates of wages and maintenance and submission of weekly certified payroll records as set forth in Articles 19 and 20 of these General Conditions, employment of apprentices as set forth in Article 21 of these General Conditions, compliance with legal hours of work as set forth in Section Article 22 of these General Conditions, and debarment as set forth in Article 23 of these General Conditions. The District's LCP also requires the Contractor to attend a mandatory pre-construction meeting and allow District representatives to conduct on site interviews of workers to ensure that prevailing wages are being paid. Failure to comply with these provisions or any other provisions of the District's LCP shall result in the withholding of contract payments by the District. The Contractor expressly acknowledges these provisions and agrees to comply with these provisions and any provisions in the District's LCP.
- 3) The Contractor shall include provisions (1) and (2) in this subsection in all subcontracts and require subcontractors to comply with these provisions at no additional cost to the District.

Article 19. RECORD OF WAGES PAID: INSPECTION

Pursuant to Labor Code Section 1776, Contractor stipulates to the following:

- a. Each Contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, 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 work under this Contract. Such records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information of such forms.
- b. The payroll records enumerated under subdivision (a), above, 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 such employees or his or her authorized representative on request.
 - 2) A certified copy of all payroll records enumerated in subdivision (a), above, shall be made available for inspection or furnished upon request to a representative of

the District, the Division of Labor Standards Enforcement and Division of Apprenticeship Standards of the Department of Industrial Relations.

- 3) A certified copy of all payroll records enumerated in subdivision (a), above, shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the District, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. 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 preparation by the Contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.
- c. Contractor shall file a certified copy of the records enumerated in subdivision (a), above, with the entity that requested such records within ten (10) days after receipt of the written request.
- d. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or performing the contract shall not be marked or obliterated.
- e. Contractor shall inform the District of the location of the records enumerated under subdivision (a), including the street address, city and county, and shall, within five (5) working days, provide a notice of a change of location and address.
- f. In the event of noncompliance with the requirements of this Article, the Contractor shall have ten (10) calendar days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this section. Should noncompliance still be evident after such 10-day period, the Contractor shall pay a penalty of Twenty-five Dollars (\$25.00) to the District for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payment then due.
- g. The responsibility for compliance with this Article shall rest upon the Contractor.

Article 20. APPRENTICES

- a. Contractor and any Subcontractor under them shall comply with the requirement of Sections 1777.5 and 1777.6 of the Labor Code in the employment of apprentices.
- b. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of

Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

- c. Knowing violations of Section 1777.5 will result in forfeiture not to exceed \$100 for each calendar day of non-compliance pursuant to Section 1777.7.

Article 21. HOURS OF WORK

- a. As provided in Article 3 (commencing at section 1810), chapter 1, part 7, division 2 of the Labor Code, Contractor stipulates that 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 provisions herein above set forth, work performed by employees of Contractor in excess of eight (8) hours per day, and forty (40) hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.
- b. The Contractor and every subcontractor shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by him in connection with the work or any part of the work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of the District and to the Division of Labor Law Enforcement, Department of Industrial Relations of the State of California.
- c. The Contractor shall pay to the District a penalty of twenty-five dollars (\$25) 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 calendar week in violation of the provisions of Article 3 (commencing at section 1810), chapter 1, part 7, division 2 of the Labor Code.
- d. Any work necessary to be performed after regular working hours, or on Saturdays and Sundays or other holidays, shall be performed without additional expense to the District.

Article 22. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

Contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by a contractor on the Project shall be returned to the District. The Contractor shall

be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

Article 23. FINGERPRINTING REQUIREMENTS

District Determination of Fingerprinting Requirement Application is set forth in the Special Conditions.

(a) Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility Involving **More than Limited Contact with Students.**

If the District determines based on the totality of the circumstances concerning the Project that the Contractor and Contractor's employees are subject to the requirements of Education Code section 45125.2 pertaining to Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility because they will have contact other than limited contact with pupils, by execution of the Contract, the Contractor acknowledges that Contractor is entering into a contract for the construction, reconstruction, rehabilitation, or repair of a school facility where the Contractor and/or Contractor's employees will have more than limited contact with students and the services to be provided do not constitute an emergency or exceptional situation. In accordance with Education Code section 45125.2 the Contractor shall, at Contractor's own expense, (a) install a physical barrier to limit contact with students by Contractor and/or Contractor's employees, or (b) provide for the continuous supervision and monitoring of the Contractor and/or Contractor's employees by an employee of the Contractor who has received fingerprint clearance from the California Department of Justice, or (c) provide for the surveillance of the Contractor and Contractor's employees by a District employee.

(b) Contracts for Construction, Reconstruction Rehabilitation or Repair of a School Facility Involving **Only Limited Contact With Students.**

If the District determines based on the totality of the circumstances concerning the Project that the Contractor and Contractor's employees are subject to the requirements of Education Code section 45125.2 pertaining to Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility because they will have only limited contact with pupils, by execution of the Contract, the Contractor acknowledges that Contractor is entering into a contract for the construction, reconstruction, rehabilitation or repair of a school facility involving only limited contact with students. Accordingly, the parties agree that the following conditions apply to any work performed by the Contractor and/or Contractor's employees on a school site: (1) Contractor and/or Contractor's employees shall check in with the school office each day immediately upon arriving at the school site; (2) Contractor and/or Contractor's employees shall inform school office staff of their proposed activities and location at the school site; (3) Once at such location Contractor and/or Contractor's employees shall not change locations without contacting the school office; (4) Contractor and Contractor's employees shall not use student restroom facilities; and (5) If Contractor and/or Contractor's employees find themselves alone with a student, Contractor and Contractor's employees shall immediately contact the school office and request that a member of the school staff be assigned to the work location.

Article 24. NON-DISCRIMINATION

Pursuant to the provisions of Labor Code Section 1735, Contractor and its subcontractor shall not unlawfully discriminate in the employment of persons on this Project because of race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, and sex.

Article 25. OWNER CONTROLLED INSURANCE PROGRAM

District reserves the right pursuant to Government Code Section 4420.5 to use an Owner Controlled Insurance Program. Information regarding utilization of an OCIP is included in the Special Conditions or pursuant to an addendum.

Article 26. WORKERS' COMPENSATION INSURANCE

The Contractor shall provide, during the life of this Contract, workers' compensation insurance for all of the employees engaged in work under this Contract, on or at the site of the Project, and, in case any of his work is sublet, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees. 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 Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to his employees in accordance with the provisions of Section 3700 of the Labor Code. The Contractor shall file with the District certificates of his insurance protecting workers. Company or companies providing insurance coverage shall be acceptable to the District, if in the form and coverage as set forth in Article 32.

Article 27. EMPLOYER'S LIABILITY INSURANCE

Contractor shall provide during the life of this Contract, Employer's Liability Insurance in the amount of, at least, one million dollars (\$1,000,000.00) per accident for bodily injury and disease. Contractor shall provide District with a certificate of Employer's Liability Insurance. Such insurance shall comply with the provisions of Article 32 below.

Article 28. COMMERCIAL GENERAL LIABILITY AND PROPERTY DAMAGE INSURANCE

- a. Contractor shall procure and maintain during the life of this Contract and for such other period as may be required herein, at its sole expense, such comprehensive general liability insurance or commercial general liability and property damage insurance as shall protect Contractor and the District, the District's Representatives and Agents, from all claims for bodily (personal) injury, including accidental death, as well as claims for property damage arising from operations under this Contract, and other covered loss, however occasioned, occurring during the policy term. Such policy shall comply with all

the requirements of this Article, and shall be in the form and amounts as set forth in the Special Conditions hereof. The limits set forth in the Special Conditions shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth in the Special Conditions shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor's indemnification obligations to the District, and shall not preclude the District from taking such other actions available to the District under other provisions of the Contract Documents or law.

- b. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this Contract. If any subcontractor's coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold the District harmless from any damage, loss, cost, or expense, including attorneys' fees, incurred by the District as a result thereof.
- c. Company or companies providing insurance coverage shall be acceptable to the District and authorized to conduct business in the State of California.
- d. All general liability policies provided pursuant to the provisions of this Article shall comply with the provisions of Article 32 below.
- e. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, under-ground excavation, removal of lateral support, and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in Article 32 hereof, relating to liability for injury to or death of persons and damage to property. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, the District may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement described in Article 32 below.

Article 29. AUTOMOBILE LIABILITY INSURANCE

Contractor shall take out and maintain at all times during the term of this Contract Automobile Liability Insurance in the amount set forth in the Special Conditions. Such insurance shall provide coverage for bodily injury and property damage including coverage for non-owned and hired vehicles, in a form and with insurance companies acceptable to the District. Such insurance shall comply with the provisions of Article 32 below.

Article 30. BUILDER'S RISK [FIRE; "ALL RISK"]

- a. It is the Contractor's responsibility to maintain or cause to be maintained Builder's Risk

[Fire; "All Risk"] extended coverage insurance on all work, material, equipment, appliances, tools, and structures which are a part of the Contract and subject to loss or damage by fire, and vandalism and malicious mischief, in an amount to cover 100% of the replacement cost. The District accepts no responsibility until the Contract is formally accepted by the Governing Board for the work. The Contractor is required to file with the District a certificate evidencing fire insurance coverage.

- b. Provide insurance coverage on completed value form, all-risk or special causes of loss coverage.
 - 1) Insurance policies shall be so conditioned as to cover the performance of any extra work performed under the Contract.
 - 2) Coverage shall include all materials stored on site and in transit.
 - 3) Coverage shall include Contractor's tools and equipment.
 - 4) Insurance shall include boiler, machinery and material hoist coverage.
- c. Company or companies providing insurance coverage shall be acceptable to the District and authorized to conduct business in the State of California.
- d. Such insurance shall comply with the provisions of Article 32 below.

Article 31. PROOF OF CARRIAGE OF INSURANCE

- a. Contractor shall, as soon as practicable following the placement of insurance required hereunder, but in no event later than the effective date of the Contract, deliver to the District certificates of insurance evidencing the same, together with appropriate separate endorsements thereto, evidencing that Contractor has obtained such coverage for the period of the Contract. Contractor shall deliver certified copies of the actual insurance policies specified herein, within thirty days after commencement of work. Thereafter, copies of renewal policies, or certificates and appropriate separate endorsements thereof, shall be delivered to the District within thirty (30) calendar days prior to the expiration of the term of any policy required herein. Contractor shall permit the District at all reasonable times to inspect any policies of insurance of Contractor which Contractor has not delivered to the District.
- b. Certificates and insurance policies shall include the following clause:
 - 1) This policy shall not be canceled or reduced in required limits of liability or amounts of insurance until notice has been mailed to the District stating date of cancellation, reduction or other adverse change respecting such insurance. The date of cancellation, reduction or adverse change may not be less than thirty (30) calendar days after date of mailing notice."
- c. Any notice required to be sent pursuant to this section shall be to the District's address as shown in the Notice to Contractors Calling for Bids.

- d. Certificates of insurance shall state in particular those insured, extent of insurance, location and operation to which insurance applies, expiration date, and cancellation and reduction notice. All Certificates of Insurance provided by Contractor shall name the District as additional insured.
- e. The coverage afforded by the additional insured endorsement described in paragraph (d) above, shall apply as primary insurance, and any other insurance maintained by the District owner, the members of the District's Board of Education, or its officers, agents, employees and volunteers, or any self-funded program of the District, shall be in excess only and not contributing with such coverage. This coverage must be given via ISO endorsement CG 2010 (11/85 ed.) or insurer's equivalent for coverage as respects: liability arising out of activities performed by or on behalf of the Contractors; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the District, its board of trustees, directors, officers, employees, agents or authorized volunteers.
- f. Insurance carriers shall be qualified to do business in California and maintain an agent for service of process within the State. Such insurance carriers shall have not less than an "A" policy holder's rating and a financial rating of not less than "Class VIII" according to the latest Best's Key Rating Guide unless otherwise approved by the District.
- g. After receiving written Notice of Cancellation of Insurance, Contractor shall have ten (10) calendar days to provide other policies of insurance similar to the canceled policies and acceptable insurance. If such replacement coverage is not provided, the District may secure insurance at the Contractor's expense.
- h. Nothing contained in the insurance requirements shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from operations under this Contract.
- i. Contractor's failure to procure the insurance specified herein, or failure to deliver certified copies or appropriate certificates of such insurance, or failure to make the premium payments required by such insurance, shall constitute a material breach of the Contract, and the District may, at its option, terminate the Contract for any such default by Contractor.
- j. The requirements as to the types and limits of insurance coverage set forth herein and in the Special Conditions to be maintained by the Contractor, and any approval of said insurance by the District or its insurance Contractor(s), are not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to the Contract, including, but not limited to, the provisions concerning indemnification.
- k. The District shall retain the right at any time to review the coverage, form, and amount of

insurance required herein and may require Contractor to obtain insurance reasonably sufficient in coverage, form and amount to provide adequate protection against the kind and extent of risk which exists at the time a change in insurance is required.

- l. All deviations from the contractual insurance requirements stated herein must be approved in writing by the District's risk manager.
- m. Included in any policy or policies of liability insurance provided by Contractor hereunder, except Workers' Compensation Insurance, shall be a standard waiver of rights of subrogation against the District, its Representatives, or Agents, by the insurance company issuing said policy or policies.
- n. If coverage is written on a "claims made" basis, the Certificate of Insurance shall clearly so state. In addition to the coverage requirements specified above, such policy shall provide that:
 - 1) The policy retroactive date coincides with or precedes Contractor's commencement of work under the Contract (including subsequent policies purchased as renewals or replacements).
 - 2) Contractor will make every effort to maintain similar insurance during the required extended period of coverage following expiration of the Contract, including the requirement of adding all additional insureds.
 - 3) If insurance is terminated for any reason, Contractor shall purchase an extended reporting provision of at least two years to report claims arising in connection with the Contract.
- o. The policy allows for reporting of circumstances or incidents that might give rise to future claims.
- p. Contractor shall notify the District in writing of the amount, if any, of self-insured retention provided under the General Liability coverage, with a maximum limit of \$25,000. The District may approve higher retention amounts, based upon review of documentation submitted by Contractor. Such review shall take into consideration Contractor's net worth and reserves for payment of claims of liability against Contractor, which must be sufficient to adequately compensate for the lack of other insurance coverage required hereunder.

Article 32. THIRD-PARTY CLAIMS

Pursuant to Public Contract Code section 9201, District shall provide Contractor with timely notification of the receipt of any third-party claim, relating to the Contract. District is entitled to recover its reasonable costs incurred in providing such notification.

Article 33. INDEMNIFICATION

The District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof, or for any of the materials or other things used or employed in performing the Work, or for injury or damage to any person or persons, either workers, employees of Contractor or its subcontractors or the public, or for damage to adjoining or other property, from any cause whatsoever arising out of or in connection with the performance of the Work. The Contractor shall be responsible for any damage to adjoining or other property, from any cause whatsoever arising out of or in connection with the performance of the work. The Contractor shall be responsible for any damage or injury to any person or property resulting from defects or obstructions or from any cause whatsoever arising out of or in connection with the performance of the Work; provided, however, that the Contractor shall not be liable for the sole established negligence, willful misconduct or active negligence of the District, its Board members, directors, officers, employees, agents and authorized volunteers who are directly responsible to the District.

- a. Contractor shall indemnify the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers against and will hold and save them and each of them harmless from any and all actions, claims, damages to persons or property, penalties, obligations or liabilities that may be asserted or claimed by any person, firm entity, corporation, political subdivision or other organization arising out of or in connection with the Work, operation or activities of Contractor, its agents, employees, subcontractors or invitees, provided for herein, whether or not there is concurrent passive or active negligence on the part of the District, the District's Representative, or their Board members, directors, officers, employees, agents and authorized volunteers, but excluding such actions, claims, damages to persons or property penalties, obligations or liabilities arising from the sole established negligence, willful misconduct or active negligence of the District, the District's Representative, or those who are directly responsible to them; and in connection therewith:
 - 1) Contractor will defend any action or actions filed in connection with any of said claims, damages, penalties, obligations or liabilities and will pay all costs and expenses, including attorney's fees incurred in connection therewith.
 - 2) Contractor will promptly pay any judgment rendered against Contractor, the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers covering such claims, damages, penalties, obligations and liabilities arising out of or in connection with such work, operations, or activities of Contractor hereunder and Contractor agrees to save and hold the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers harmless therefrom.
 - 3) In the event the District, the District's Representative, and their Board members, directors, officers, employees, agents and authorized volunteers are made a party to any action or proceeding filed or prosecuted against Contractor for such damages or other claims arising out of or in connection with the Work, or operation or activities of Contractor hereunder, Contractor agrees to pay to the District, the District's Representative, the Architect, and their Board members, directors, officers, employees, agents and authorized volunteers any and all costs and expenses incurred by the District, the District's Representative, the Architect, and their Board members, directors, officers, employees, agents and authorized volunteers in such action or proceeding together with reasonable

attorney's fees.

- 4) The District may retain, to the extent it deems necessary, the money due to the Contractor under and by virtue of the Contract Documents until disposition has been made of such actions or claims for damages as specified hereinabove.

Article 34. PERSONAL LIABILITY

Neither the District, the District's Representative, nor any other director, officer or authorized assistant or agent of the District or the District's Representative shall be personally responsible for any liability arising under the Contract.

Article 35. LAWS AND REGULATIONS

- a. Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on conduct of work as indicated and specified. If Contractor observes that drawings and specifications are at variance therewith, he shall promptly notify the Owner in writing and any necessary changes shall be adjusted as provided for in this Contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall bear all costs arising therefrom.
- b. Contractor shall be responsible for familiarity with the Americans with Disabilities Act ("ADA") (42 USC §12101 et seq.). Installations of equipment and other devices shall be in compliance with ADA regulations.

Article 36. PERMITS AND LICENSES

Permits and licenses necessary for prosecution of work shall be secured and paid for by Contractor, unless otherwise specified.

Article 37. PATENTS, ROYALTIES, AND INDEMNITIES

The Contractor shall indemnify, defend and hold harmless the District and its Board Members, officers, agents, and employees harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of this Contract, including its use by the District, unless otherwise specifically stipulated in the Contract Documents.

Article 38. MATERIALS

- a. Except as otherwise specifically stated in this Contract, Contractor shall provide and pay for all materials, labor, tools, equipment, water, lights, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within specified time.

- b. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted and/or specified, and workmanship shall be of good quality.
- c. Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of work and shall be stored properly and protected as required. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or work under this Contract.
- d. No materials, supplies, or equipment for work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in work and agrees upon completion of all work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by him, to the District free from any claims, liens, or charges. He further agrees that neither he nor any person, firm, or corporation furnishing any materials or labor for any work covered by this Contract shall have any right to lien upon premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivisions title to which is commonly retained by utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise the District as to the owner thereof. Nothing contained in this Article, however, shall defeat or impair right of persons furnishing material or labor under any bond given by Contractor for their protection or any rights under any law permitting such persons to look to funds due Contractor in hands of the District, and this provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.
- e. Materials shall be stored on the premises in such manner so as not to interfere with the work and so that no portion of the structure shall be overloaded.
- f. Materials or work required or necessary to be tested shall be tested under supervision of, as directed by and at such places as may be convenient to the District and/or the District's Representatives. The required testing of all structural materials shall be done by an approved testing laboratory as pursuant to Article 69, herein.

Article 39. SUBSTITUTIONS

- a. For purposes of this provision the term "substitution" shall mean the substitution of any material, process or article that is substantially equal or better in every respect to that so indicated or specified in the specifications.
- b. Whenever in specifications any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article

desired and shall be deemed to be followed by words "or equal." Bidders may, unless otherwise stated, offer for substitution any material, process or article which shall be substantially equal or better in every respect to that so indicated or specified. If any material, process or article offered for substitution by bidders is not, in the opinion of the District, substantially equal or better in every respect to that specified, bidders shall furnish the material, process or article specified. The burden of proof as to the equality of any material, process or article shall rest with the bidders. In addition, pursuant to the provisions of Public Contract Code section 3400 (b), the District has made findings that some particular materials, products, things or services, that are designated by specific brand or trade name are required in order to match other products in use. Such Materials, products, things or services are listed in the Special Conditions.

- c. Bidders shall submit requests together with substantiating data for substitution of any "or equal" material, process or article no later than five (5) calendar days prior to the bid opening. Provisions authorizing submission of "or equal" substitution justification data shall not in any way authorize an extension of time for performance of this Contract. Furthermore, if a proposed "or equal" substitution request is rejected, a bidder shall be responsible for including the specified material, process or article in its bid. The District shall not be responsible for any costs of bidders associated with "or equal" substitution requests. The District has the complete and sole discretion to determine if a material, process or article is an "or equal" material, process or article that may be substituted.
- d. For purposes of subdivision (c) above, data required to substantiate requests for substitutions of an "or equal" material, process or article data shall include a signed affidavit from the Contractor stating that the substituted "or equal" material, process or article is equivalent to that specified in the specification in every way except as listed on the affidavit. Substantiating data shall also include any and all illustrations, specifications, and other relevant data including catalogue information which describes the requested substituted "or equal" material, process or article and substantiates that it is an "or equal" to the material process or article specified. In addition, the submittal documentation must also include a statement of the cost implications of the substitution being requested stating whether and why the substitution of the "or equal" material, process or article will reduce or increase the Contract Price. The substantiating data must also include information regarding the durability and lifecycle cost of the requested substituted "or equal" material, process or article. Failure to submit all the needed substantiating data, including the signed affidavit, to the Owner in a timely fashion so that the substitution can be adequately reviewed may result in the rejection of the proposed substitution. The Owner is not obligated to review multiple substitution submittals for the same product or item due to the Contractor's failure to submit a complete package initially.
- e. Time limitations in this Article must be complied with strictly and in no case will an extension of time for completion be granted because of Contractor's failure to request the substitution of an alternative item at the times and manner set forth herein in subdivision (c). Further, the Contractor shall bear the costs of all engineering work associated with the review of submittals for substitution of equals.
- f. In event Contractor furnishes material, process, or article more expensive than that specified, the difference in cost of such material, process, or article so furnished shall be borne by Contractor.

Article 40. SHOP DRAWINGS

- a. Contractor shall check and verify all field measurements and shall submit with such promptness as to cause no delay in his own work or in that of any other contractor, subcontractor, other independent contractor or worker on the Project, three (3) copies of all shop or setting drawings, schedules, and materials list, and all other submittals in accordance with other provisions of the Contract required for the work of various trades. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to submission to Owner. Each signed submittal shall affirm that the submittal meets all the requirements of the Contract Documents except as specifically and clearly noted and listed on the cover sheet of the submittal.

Article 41. SUBMITTALS

- a. Contractor shall furnish for approval, within ten (10) calendar days from the work commencement date stated in the notice to proceed a log of all samples, material lists and certifications, schedules, and other submittals, as required in specifications. Such log shall indicate whether samples will be provided as specified and in accordance with other provisions of this Contract.
- b. Contractor will provide samples and submittals, together with catalogs and supporting data required by the Owner within a reasonable time period so as not to cause delays on the Project.
- c. This provision shall not authorize any extension of time for performance of this Contract. Architect will check and approve such samples, only for conformance with design concept of work and for compliance with information given in the Contract Documents. Work shall be in accordance with approved samples. Owner's action will be taken within five (5) calendar days after receiving such samples and submittals. If in the Architect's professional judgment five (5) calendar days is an insufficient amount of time to permit adequate review, Architect shall, within the initial five (5) calendar days period, notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.
- d. If the Owner's response results in a change in the Project, then such change shall be effected by a written change order.

Article 42. COST BREAKDOWN AND PERIODICAL ESTIMATES

- a. Contractor shall furnish, for District acceptance and approval, on forms approved by the District:
 - 1) Within five (5) calendar days of award of Contract a detailed estimate giving a complete breakdown of Contract Price; and
 - 2) Within five (5) calendar days of request by the District, a schedule of estimated

monthly payments which shall be due him under the Contract.

- b. Values employed in making up any of these schedules will be used for determining basis of partial payments.

Article 43. PAYMENTS

- a. Each month within thirty (30) calendar days after receipt of an undisputed and properly submitted payment request, there shall be paid to Contractor a sum equal to ninety percent (90%) of the value of work performed up to the last day of the previous month, less the aggregate of previous payments. Monthly payments shall be made only on the basis of monthly estimates, which shall be prepared by Contractor on a form approved by the District and filed with the District before the fifth day of the month during which payment is to be made. Work completed as estimated shall be an estimate only and no inaccuracy or error in said estimate shall operate to release Contractor or any bondsman from damages arising from such work or from enforcing each and every provision of this Contract and the District shall have the right subsequently to correct any error made in any estimate for payment. Contractor shall not be entitled to have any payment estimates processed or be entitled to have any payment made for work performed so long as any lawful or proper direction concerning work, or any portion thereof given by the District shall remain uncomplied with.
- b. The final payment of ten percent (10%) of the value of work done under this Contract, if unencumbered, shall be made within thirty (30) calendar days after the date of completion of the work, provided however, that in the event of a dispute between the District and the Contractor, the District may withhold from the final payment an amount not to exceed one hundred and fifty percent (150%) of the disputed amount. Completion means any of the following as provided by Public Contract Code section 7107:
 - 1) The occupation, beneficial use, and enjoyment of a work of improvement, excluding any operation only for testing, startup, or commissioning, by the public agency, or its agent, accompanied by cessation of labor on the work of improvement.
 - 2) The acceptance by the public agency, or its agent, of the work of improvement.
 - 3) After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 100 calendar days or more, due to factors beyond the control of the Contractor.
 - 4) After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 30 calendar days or more, if the public agency files for record a notice of cessation or a notice of completion.
- c. This Contract is subject to the provisions of Public Contract Code section 7107.

- d. For purposes of this Contract, the acceptance by the District means acceptance made only by an action of the governing body of the District in session. Acceptance by Contractor of said final payment shall constitute a waiver of all claims against the District arising from this Contract. At any time after fifty percent (50%) of the work has been completed, if the District, by action of its governing body, finds that satisfactory progress is being made, the District may make any of the remaining payments in full for actual work completed or may withhold any amount up to ten percent (10%) thereof as the District may find appropriate based on the Contractor's progress.
- e. **Final Payment.** The District shall, after the satisfactory completion of the work, make a final estimate of the amount of Work done thereunder and the value of said work, and the District shall pay the entire sum so found to be due after deduction therefrom all previous payments and all amounts to be retained under the provisions of the Contract Documents, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code Section 3262. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of thirty-five (35) calendar days from the date of acceptance of the work by the District, which acceptance shall be by formal action of the Board of Education.
- f. The provisions of this subsection shall apply if required for this Project as set forth in the Notice to Contractors and/or Information to Bidders.
- 1) Prior to, and as a condition precedent for final payment, Contractor shall provide the Owner with written documentation identifying the amount paid to Disabled Veteran Business Enterprises (DVBE), and shall submit the certification letter issued by the Office of Small Business Certification and Resources verifying the DVBE status of the subject subcontractors. This documentation is required regardless of whether DVBE subcontractors were utilized in the performance of the Contract.]
- a) No certificate given or payments made under the Contract, except the final certificate or final payment shall be evidence of the performance of the Contract, either wholly or in part, and no payment shall be construed to be an acceptance of any defective work or improper materials.
- g. Whenever any part of the work is in a condition suitable for use, and the best interest of the District requires such use, the District may take possession of, connect to, open for public use, or use a part thereof. When so used, maintenance and repairs due to ordinary wear and tear or vandalism will be made at District's expense. The use by the District as contemplated in this section shall in no case be construed as constituting acceptance of the work or any part thereof. Such use shall neither relieve the Contractor of any of his responsibilities under the Contract nor act as a waiver by the District of any of the conditions thereof. Contractor shall continue to maintain all insurance, including Builder's Risk insurance, on the Project.

Article 44. PAYMENTS WITHHELD

- a. In addition to amounts which the District may retain under any and all other Articles in this Contract including those entitled "Payments," and "Time for Completion and Liquidated Damages," the District may withhold a sufficient amount or amounts of any payment or payments otherwise due to Contractor, as in his judgment may be necessary to cover:
- 1) Payments which may be past due and payable for just claims against Contractor or any subcontractors for labor or materials furnished in and about the performance of work on the Project under this Contract.
 - 2) Defective work not remedied.
 - 3) Failure of Contractor to make proper payments to his subcontractor or for material or labor.
 - 4) Completion of the Contract if there exists a reasonable doubt that the work can be completed for balance then unpaid.
 - 5) Damage to another Contractor.
 - 6) Amounts which may be due the District for just claims against Contractor.
 - 7) Failure of Contractor to keep the record ("as-built") drawings up to date.
 - 8) Failure to provide update on construction schedule as required by Article 9 hereof. When the above grounds are removed, payment shall be made for amounts withheld because of them.
 - 9) Site clean up.
- b. The District may apply such withheld amount or amounts to payment of such claims or obligations at its discretion. In so doing, the District shall be deemed the agent of Contractor and any payment so made by the District shall be considered as a payment made under contract by the District to Contractor and the District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. The District will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

Article 45. CHANGES AND EXTRA WORK

- a. **Changes In Work.** The District, without invalidating the Contract, and as provided by law, may order extra work or make changes by altering, adding to, or deducting from work, the Contract sum being adjusted accordingly. All such work shall be subject to prevailing wage rates and shall be executed under the conditions of the original contract except that any claim for extension of time caused thereby shall be adjusted at the time of

ordering such change.

- b. In giving instructions, Contractor agrees that the Owner shall have authority to make minor changes in work, not involving change in cost, and not inconsistent with the purposes or approvals of the Project. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless pursuant to a written order from the District, and no claim for an addition to the Contract sum shall be valid unless so ordered. If the Contractor is delayed in completing the work by reason of any change made pursuant to this Article, the time for completion of the Work shall be extended by change order for a period commensurate with such delay. The Contractor shall not be subject to any claim for liquidated damages for this period of time.
- c. **Unforeseen Conditions.** Contractor shall provide the District with notice of unforeseen conditions immediately upon discovery of such conditions.
- d. Value of any such extra work, change, or deduction shall be determined at the discretion of the District in one or more of the following ways:
 - 1) By acceptable lump sum proposal from Contractor with itemization as required by the District.
 - 2) By unit prices contained in Contractor's original bid and incorporated in the Contract Documents or fixed by subsequent agreement between the District and Contractor.
 - 3) By the actual cost of material and labor and a percentage for overhead and profit. The following form shall be followed as applicable for additions and deductions to the Contract:

4)		<u>EXTRA</u>	<u><CREDIT></u>
	(a) Material (attach itemized quantity and unit cost plus sales tax)	_____	_____
	(b) Labor (attach itemized hours and base rates from identified prevailing wage rate schedules)	_____	_____
	(c) Commercial General Liability and Property Damage Insurance, Workers' Compensation Insurance, Social Security and Unemployment taxes at actual and verified cost (Do not include this amount of OCIP is in place.)		

(d) Subtotal	_____	_____
(e) Subcontractor's overhead and profit as defined in Section 49 (h), below, not to exceed 15% of Item (d) (if applicable)	_____	_____
(f) Subtotal	_____	_____
(g) Contractor's Overhead and Profit, as defined in Section 49 (h), below, not to exceed 5% of Item (f) for work performed by subcontractor, or 15% if performed by Contractor	_____	_____
(h) Subtotal	_____	_____
(i) Bond Premium, note to exceed 1% of Item (h)	_____	_____
(j) Total	_____	_____

- e. Regardless of whether the cost of the change order is determined pursuant to 1, 2, or 3, above, in addition to the cost of the material and labor for deleted items, Contractor shall credit back overhead mark-up and the bonding mark up for deleted items at the time of the request for changes and extra work.

- f. Should Contractor claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation (i) obligates the District to pay additional compensation to the Contractor; or (ii) obligates the District to grant an extension of time for the completion of the Contract; or (iii) constitutes a waiver of any provision in the Contract, CONTRACTOR SHALL NOTIFY THE DISTRICT, IN WRITING, OF SUCH CLAIM AS SOON AS POSSIBLE, BUT IN NO EVENT WITHIN MORE THAN FIVE (5) WORKING DAYS FROM THE DATE CONTRACTOR HAS ACTUAL OR CONSTRUCTIVE NOTICE OF THE CLAIM. CONTRACTOR SHALL ALSO PROVIDE DISTRICT WITH SUFFICIENT WRITTEN DOCUMENTATION SUPPORTING THE FACTUAL BASIS OF THE CLAIM including in the documentation items D(3)a-j described in this Article 49 above. Contractor shall be required to certify under penalty of perjury the validity and accuracy of any claims submitted. The Contractor's failure to notify the District within such five (5) working day period shall be deemed a waiver and relinquishment of the claim against the District. If such notice be given within the specified time, the procedure for its consideration shall be as stated above in this Article.

- g. All costs associated with the change are to be included in the change order proposal to the District. Costs may be in terms of time, money or both.

- h. **Overhead and Profit.** The term "overhead and profit" for the Contractor and any subcontractors shall be considered to include insurance other than mentioned in Section 49 (d) above, field and office supervisors and assistants, watchman, use of small tools,

consumables, and general field and home office expenses, and no separate allowance will be made therefore.

Article 46. DEDUCTIONS FOR UNCORRECTED WORK

If the District deems it inexpedient to correct work injured or not done in accordance with the Contract, an equitable deduction from the Contract Price shall be made therefore.

Article 47. PAYMENTS BY CONTRACTOR

Contractor shall pay:

- a. For all transportation and utility services not later than the 20th day of the calendar month following that in which such services are rendered,
- b. For all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at site of Project and balance of cost thereof not later than the 30th day following completion of that part of work in or on which such materials, tools, and equipment are incorporated or used, and
- c. To each of his subcontractors, not later than the 7th day following each payment to Contractor, the respective amounts allowed Contractor on account of work performed by respective subcontractor to the extent of such subcontractor's interest therein.

Article 48. CONTRACTOR'S SUPERVISION

- a. Unless personally present on the premises where work is being done, Contractor shall keep on the work, during its progress, a competent full-time job (project) superintendent satisfactory to the District. The job superintendent shall not be changed except with consent of the District unless the job superintendent proves to be unsatisfactory to Contractor and ceases to be in his employ. The job superintendent shall represent Contractor in his absence and all directions given to him shall be as binding as if given to Contractor. Other directions shall be so confirmed on written request in each case.
- b. Contractor shall give efficient supervision to work, using his best skill and attention to control safety and job coordination. He shall carefully study and compare all drawings, specifications, and other instructions and shall at once report to the District of any error, inconsistency or omission which he may discover.

Article 49. DISTRICT'S INSPECTOR

- a. One or more Inspectors employed by District in accordance with requirements of Title 21 of the California Code of Regulations will be assigned to the work. The Inspectors duties are specifically defined in Title 21, Section 42 of the California Code of Regulations.

- b. Inspector shall have access to all plant operations involving work under this Contract and shall be provided reasonable advance notice of the time and place of operations, which the Inspector desires to observe. Inspector shall be provided with all necessary samples of materials and work for testing purposes. All work shall be under the observation of said Inspector. He shall have free access to any or all parts of work at any time. Contractor shall furnish Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting progress and manner of work and character of materials. Inspection of work shall not relieve Contractor from any obligation to fulfill this Contract. Inspector or the Architect shall have authority to stop work whenever the provisions of the Contract Documents are not being complied with and Contractor shall instruct his employees accordingly.

Article 50. INSPECTOR'S FIELD OFFICE

- a. Contractor shall provide for the use of the Inspector a separate trailer or temporary private office of not less than seventy-five square feet of floor area to be located as directed by the Inspector and to be maintained until removal is authorized by the District or the District's Representative. The Office shall be of substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. Door shall have a key-type lock or padlock hasp. The Inspector's field office shall have heating and air-conditioning and shall be equipped with a telephone, a telephone answering machine, and a fax machine at Contractor's expense.
- b. A table satisfactory for the study of plans and two chairs shall be provided by Contractor. Contractor shall provide and pay for adequate electric lights, local telephone service, and adequate heat and air conditioning for the field office until authorized removal.
- c. The provisions of this section are intended to be complementary to any requirements provided elsewhere in these Contract Documents, however in the event of conflicts between this section and other provisions of these Contract Documents, this section shall prevail.

Article 51. DOCUMENTS ON WORK

- a. Contractor shall keep one copy of all Contract Documents, including addenda, change orders, Division I, Title 21 of the California Code of Regulations (Building Standards Administrative Code), Title 24 of the California Code of Regulations, and the prevailing wage rates applicable at the time of the Contract, and any other laws, rules or regulations governing building standards for public school construction, which by this reference is a part of the Contract Documents, on job at all times. Said documents shall be kept in good order and available to the District. Contractor shall be acquainted with and comply with the provisions of said these laws, rules or regulations as they relate to this Project. (See particularly Duties of the Contractor, Titles 21 California Code of Regulations, section 43.) Contractor shall also be acquainted with and comply with all California Code of Regulations provisions relating to this Project, particularly Titles 17, 19, 21 and 24.)

- b. Contractor shall also make available all books, records, accounts, contracts, bids, etc. upon request of the District.

Article 52. RECORD ("AS BUILT") DRAWINGS

- a. Contractor shall maintain a clean, undamaged set of contract drawings and shop drawings. In addition to maintaining one complete set of record drawings (herein referred to as "as-builts"), Contractor shall require each trade to do its own as-builts. The trade as-builts shall contain information showing clean and clear drawings with horizontal and vertical controls suitable for conversion to electronic media. Graphic quality must be equal to clean and clear original drawings. Adequacy of the drawings shall be determined by the District's representative. Contractor shall mark the set to show the actual installation where the installation varies from the work as originally shown. Contractor shall mark whichever drawings are most capable of showing conditions fully and accurately where shop drawings are used, record a cross-reference at the corresponding location on the contract drawings. Contractor shall give particular attention to concealed elements that would be difficult to measure and record at a later date. Contractor shall use colors to distinguish variations in separate categories of the work.
- b. Contractor shall note related change order numbers where applicable. Contractor shall organize record drawings sheets into manageable sets, bound with durable paper cover sheets and shall print suitable title, dates and other identification on the cover of each set.
- c. At the end of the Project, the Contractor shall provide the District Representative with two complete sets of as-built drawings. The complete sets shall contain information showing clean and clear drawings with horizontal and vertical controls suitable for conversion to electronic media. Graphic quality must be equal to clean and clear original drawings; adequacy of the drawings shall be determined by the District's representative or architect. The as-builts must show the entire site for each major trade, including but not limited to water, sewer, electrical, data, telephone, cable, fire alarm, gas and plumbing.

Article 53. UTILITY USAGE

- a. All temporary utilities, including but not limited to electricity, water, gas, and telephone used on work shall be furnished and paid for by Contractor. Contractor shall furnish and install necessary temporary distribution systems, including meters, if necessary, from distribution points to points on site where utility is necessary to carry on the work. Upon completion of work, Contractor shall remove all temporary distribution systems.
- b. Contractor shall provide necessary and adequate utilities and pay all costs for water, electricity, gas, oil, and sewer charges required for completion of the Project.
- c. All permanent meters installed shall be listed in the Contractor's name until completion occurs, as defined in Article 6 hereof, at which time further pro-rating will be determined if necessary. When the District begins using the Project, charges over and above power actually used for construction will be the responsibility of the District.

- d. If the Contract is for construction in existing facilities, Contractor may, with written permission of the District, use the District's existing utilities by making prearranged payments to the District for utilities used by Contractor for construction.

Article 54. PROTECTION OF WORK AND PROPERTY

- a. The Contractor shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of this Contract. Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance by the District. All work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as provided by law and the Contract Documents. Contractor shall take all necessary precautions for the safety of employees on the Project and shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where work is being performed. Contractor shall erect and properly maintain at all times, as required by conditions and progress of work, all necessary safeguards, signs, barriers, lights, and watchmen for protection of workers and the public and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of his organization on the work, whose duty shall be prevention of accidents. The name and position of the person so designated shall be reported to the District and to the Architect by Contractor.
- b. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from either the District, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury, and he shall so act, without appeal, if so authorized or instructed by the District. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.
- c. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all work, materials, equipment, appliances, and tools against damage by weather conditions.
- d. Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and to avoid damage thereto, and repair any damage thereto caused by construction operations. Contractor shall:
 - 1) Enclose working area with a substantial barricade, arrange work to cause minimum amount of inconvenience and danger to students and faculty in their regular school activities, and perform work which may interfere with school routine before or after school hours. (This subsection applies to construction on existing school sites.)
 - 2) Provide substantial barricades around any shrubs or trees indicated to be preserved.

- 3) Deliver materials to the building area over a route designated by the District.

Article 55. CUTTING AND PATCHING

- a. Contractor shall do all cutting, fitting, or patching of work as required to make its several parts come together properly and fit it to receive or be received by work of other contractors showing upon, or reasonably implied by, the drawings and specifications for the completed structure. Contractor shall make good after them as the Owner may direct.
- b. All cost caused by defective or ill-timed work shall be borne by party responsible therefore.
- c. Contractor shall not endanger any work by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor save with written consent of the District.

Article 56. CLEANING UP

- a. Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment caused by this work. Contractor shall not leave debris under, in, or about the premises. Upon completion of work, Contractor shall clean the interior and exterior of the building or improvement including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected so surfaces are free from foreign material or discoloration. Contractor shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment and Contractor shall also remove temporary fencing, barricades, planking and construction toilet and similar temporary facilities from site. Contractor shall also clean all buildings, asphalt and concrete areas to the degree necessary to remove oil, grease, fuel, or other stains caused by Contractor operations or equipment.
- b. If the Contractor fails to clean up at the completion of the Work, the District may do so and the cost of such clean up shall be charged back to the Contractor.

Article 57. CORRECTION OF WORK BEFORE FINAL PAYMENT

- a. Contractor shall promptly remove from the premises all work condemned by the District as failing to conform to the Contract, whether incorporated or not. Contractor shall promptly replace and re-execute his own work to comply with the Contract Documents without additional expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.
- b. If Contractor does not remove such condemned work within a reasonable time, fixed by written notice, the District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, the District may, upon ten (10) calendar days' written notice, sell

such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

Article 58. ACCESS TO WORK

The District and its Representatives shall at all times have access to work wherever it is in preparation or progress. Contractor shall provide safe and proper facilities for such access so that The District's Representatives may perform their functions under contract.

Article 59. OCCUPANCY

The District reserves the right to occupy buildings at any time before completion, and such occupancy shall not constitute final acceptance of any part of work covered by this Contract.

Article 60. TESTS AND INSPECTIONS

- a. If the Contract, the District's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, Contractor shall give notice in accordance with such authority of its readiness for observation or inspection at least two (2) working days prior to being tested or covered up. If inspection is by a public authority other than the District, Contractor shall inform the District of date fixed for such inspection. Observations by the District shall be promptly made and where practicable at source of supply. If any work should be covered up without approval or consent of the District, it must, if required by the District be uncovered for examination and satisfactorily reconstructed at Contractor's expense in compliance with the Contract.
- b. Where such inspection and testing are to be conducted by an independent laboratory or agency, such materials or samples of materials to be tested shall be selected by such laboratory or agency, or the District's representative, and not by Contractor. All test or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.
- c. In advance of manufacture of materials to be supplied by Contractor under the Contract, which by the terms of the Contract must be tested, Contractor shall notify the District and the Architect in advance so that the District and its Representatives may arrange for testing of same at the source of supply. Any materials shipped by Contractor from the source of supply prior to having satisfactorily passed such testing and inspection, or prior to receipt of notice from the District's Representative that such testing and inspection will not be required, shall not be incorporated into the work without the prior approval of the District or its Representatives and subsequent testing and inspection.
- d. Reexamination of questioned work may be ordered by the District or its Representatives. If so ordered, work must be uncovered by Contractor. If such work is found to be in accordance with the Contract Documents, the District shall pay the costs of reexamination and replacement. If such work be found not to be in accordance with the Contract Documents, Contractor shall pay such costs.

Article 61. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause 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 forthwith be physically amended to make such insertion or correction.

Article 62. LABOR/EMPLOYMENT SAFETY

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 USC, section 651 et seq.), and California Code of Regulations, Title 8, Industrial Relations Division 1, Department of Industrial Relations, Chapter 4.

Article 63. ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Section 7103.5 of the Public Contract Code, in entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 USC, section 15) or under the Cartwright Act (chapter 2 (commencing with section 16700) of part 2 of division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this Contract or any subcontract. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

Article 64. SUBSTITUTION OF SECURITY

In accordance with Public Contract Code Section 22300, the District will permit the substitution of securities for any moneys withheld by the District 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 District, or with a state or federally chartered bank as the escrow agent, who shall then pay such moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Article 65. COMPLIANCE WITH STATE STORM WATER PERMIT FOR CONSTRUCTION

- a. Contractor shall be required to comply with all conditions of the State Water Resources Control Board (State Water Board) National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity ("Permit") for all construction activity which results in the disturbance of in excess of five acres of total land area or which is part of a larger common area of development or sale. Contractor shall be responsible for filing the Notice

of Intent and for obtaining the Permit. Contractor shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan ("SWPPP") prior to initiating Work. In bidding on this Contract, it shall be Contractor's responsibility to evaluate the cost of procuring the Permit and preparing the SWPPP as well as complying with the SWPPP and any necessary revision to the SWPPP. Contractor shall comply with all requirements of the State Water Resources Control Board. Contractor shall include all costs of compliance with specified requirements in the Contract amount.

- b. Contractor shall be responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions, monitoring and reporting requirements as required by the Permit. Contractor shall provide copies of all reports and monitoring information to the District.
- c. Contractor shall comply with the lawful requirements of any applicable municipality, the County, drainage district, and other local agencies regarding discharges of storm water to separate storm drain system or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.

Article 66. RESOLUTION OF CONSTRUCTION CLAIMS

a. **The following shall be applicable to all Claims:**

- 1) **Definition of Claim:** A "Claim" means a separate demand by the Contractor for (a) time extension, (b) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the Contract and 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 District.
- 2) **Filing Claim is Not Basis To Discontinue Work:** The Contractor shall promptly comply with work under the Contract or work requested by the District even though a written claim has been filed. The Contractor and the District shall make good faith efforts to resolve any and all claims that may arise during the performance of the work covered by this Contract.

b. **Procedure for Claims \$375,000 and Under:**

- 1) Any formal claim of \$375,000 and under shall be processed as follows in accordance with Public Contract Code Section 20104 et. seq.:
 - (a) Claims less than \$50,000 For claims less than Fifty Thousand Dollars (\$50,000.00), the District shall respond in writing to any written claim within forty-five (45) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim that the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided upon mutual agreement of the District

and the Contractor. The written response of the District to the claim, as further documented, shall be submitted to Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by Contractor in producing the additional information, whichever is greater.

(b) Claims in Excess of \$50,000 For claims over Fifty Thousand Dollars (\$50,000.00), and less than or equal to Three Hundred Seventy-five Thousand Dollars (\$375,000.00), the District shall respond in writing to all written claims within sixty (60) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim that the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided by mutual agreement of the District and the Contractor. The written response of the District to the claim, as further documented, shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by Contractor in producing the additional information or requested documentation, whichever is greater.

2) Informal Meet and Confer Conference: If Contractor disputes the written response of the District, or the District fails to respond within the time prescribed, Contractor may so notify the District, in writing, either within fifteen (15) days of receipt of the District's response or within fifteen (15) days of the failure of the District 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 District shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.

3) Tort Claim: If following the meet and confer conference the claim or any portion remains in dispute, the claimant may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of the Title 1 of the California Government Code. For purposes of those provision, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his/her written claim until the time the claim is denied, including any period of time utilized by the meet and confer conference.

c. **Procedures for Civil Actions to Resolve Disputed Claims:**

1) Non-binding Mediation: Within sixty (60) days, but no earlier than thirty (30) days, following the filing of a responsive pleading, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation by both parties. The mediation process shall provide for the selection within fifteen (15) days by both parties of a disinterested third person as mediation, shall be commenced within thirty (30) days of the submittal, and shall be concluded within fifteen (15) days

from the commencement of the mediation unless a time requirement is extended upon a good cause shown to the court. If the parties fail to select a mediator within the 15 day period, any party may petition the court to appoint the mediator.

- 2) **Judicial Arbitration:** If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the California Code of Civil Procedure, notwithstanding Section 1141.11 of the code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subsection consistent with the rules pertaining to judicial arbitration. Arbitrators shall be experienced in construction law.
 - 3) **Appeals:** In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of the Code of Civil Procedure), any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees, also pay the attorneys' fees on appeal of the other party.
 - 4) **Interest:** In any suit filed pursuant to Public Contract Code Section 20104.4, the District shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in the court of law.
- d. **Rights and Remedies.** The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor by the General Conditions and amendments thereto and all of the rights and remedies available to District thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.
- e. **Arbitration Award.** Pursuant to California Government Code Section 818, the Arbitrator shall have no jurisdiction to award punitive or exemplary damages.
- f. **Attorney's Fees and Costs.** In the event that any arbitration, action, suit or other proceeding is instituted to enforce any provision of this Contract, and/or to remedy, prevent, or obtain relief from a breach of this Contract, the prevailing party shall be entitled to recover all of its attorney's fees and costs incurred in each and every such arbitration, action, suit or other proceeding, including any and all appeals or petitions therefrom, except as may be provided to the contrary above. As used herein, attorney's fees shall be deemed to mean the full actual costs of any legal services actually performed in connection with the matters involved, calculated on the basis of the usual fees charged by the attorneys performing such services and shall not be limited to "reasonable attorney's fees" as defined by any statute or rule of court.

Article 67. INTEGRATION

- a. **Oral Modifications Ineffective.** No oral order, objection, claim or notice by any party to the other shall affect or modify any of the terms or obligations contained in any of the Contract Documents and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, except by a waiver or modification thereof in writing and signed by the authorized representative of the District and the Contractor.
- b. **Contract Documents Represent Entire Agreement.** The Contract Documents represent the entire understanding of the District and Contractor as to those matters contained therein, and no prior oral or written understanding shall be of any force or effect with respect to those matters covered by the Contract Documents.

Article 68. DRUG-FREE WORKPLACE, NO ASBESTOS CERTIFICATION

Contractor shall, for all contracts involving state funds, submit a "Drug-Free Workplace Certification." This form is included in the Contract Documents and must be signed under the penalty of perjury and dated prior to commencing work on this Project.

In addition to the above listed certification, Contractor shall, for all contracts involving state funds, execute and submit an "Asbestos-Free Materials Certification." Contractor, further, is aware of the following:

- a. Should asbestos containing materials be installed by the Contractor in violation of this certification, or if removal of asbestos containing materials is part of the Project, decontaminations and removals will be performed in accordance with the requirements of all applicable laws and will meet the following criteria:
 1. Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency (EPA).
 2. The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have sole discretion and final determination in this matter.
 3. The asbestos consultant shall be chosen and approved by the District which shall have sole discretion and final determination in this matter.
 4. The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

- b. If removal of asbestos containing materials is part of the Project, the cost of all asbestos removal, including, but not necessarily limited to the cost of the asbestos removal contractor, the cost of the asbestos consultant, analytical and laboratory fees, time delays and additional costs that may be incurred by the District shall be borne entirely by the Contractor.
- c. Hold Harmless: Interface of work for the Project with work containing asbestos shall be executed by the Contractor at his/her risk and at his/her discretion with full knowledge of the currently accepted standards, hazards, risks and liabilities associated with asbestos work and asbestos containing products. By execution of the Contract, the Contractor acknowledges the above and agrees to the fullest extent permitted by law to hold harmless the District, its Governing Board, employees, agents, representatives for all asbestos liability which may be associated with this work. The Contractor further agrees to instruct his/her employees with respect to the above-mentioned standards, hazards, risk and liabilities.

Article 69. MISCELLANEOUS

These Contract Documents shall be interpreted in accordance with the laws of the State of California. If any action is brought to interpret or enforce any term of these Contract Documents, the action shall be brought in a state or federal court situated in the County of San Diego, State of California. Except as otherwise provided in these Contract Documents, in the event of any such litigation between the parties, the prevailing party shall be entitled to recover all reasonable costs incurred, including reasonable attorney's fees, as determined by the court.

END OF GENERAL CONDITIONS DOCUMENT

DOCUMENT 00800: SPECIAL CONDITIONS

A. **Time of Performance/District Representative.** The work shall be commenced on the date stated in the District’s notice to the Contractor to proceed (which date will be not less than **five (5)** consecutive calendar days after Award of Contract and shall be completed within sixty (60) consecutive calendar days from and after the date stated in such notice. District and Contractor each hereby stipulate that the stated performance period is accepted as reasonable and that no other performance period shall be acceptable unless accepted in writing (See Article 2 of Contract and Article 6 of General Conditions.) The District Representative for this Project is ***Caroline Brown***.

Target Milestones for the project are as follows:

Board Approval:	May 17, 2018
Notice to Proceed:	May 18, 2018
Last Day of School:	June 15, 2018
Commence Site Work Construction:	June 16, 2018
Scheduled Modular Site Delivery:	July 9, 2018
Substantial Completion:	August 3, 2018
District Occupancy:	August 8, 2018
Project Completion/Final:	August 15, 2018
Teachers Return to School:	August 20, 2018

B. **Liquidated Damages.** If work under this Contract is not ready for the intended use within the specified time period, the agreed liquidated damages established in Article 6 of the General Conditions is five hundred dollars (\$500.00) per day for each calendar date completion is delayed.

C. **Documents Furnished.** The number of copies of drawings and specifications to be furnished to Contractor free of charge, per Article 3 of the General Conditions, is three (3). Any additional copies required by Contractor may be obtained from the District upon payment by Contractor to the Owner for the cost of reproduction.

D. **Insurance.** As provided in General Conditions, Contractor shall procure and maintain and shall require all subcontractors, if any, whether primary or secondary, to procure and maintain either:

Comprehensive General Liability Insurance

With a combined single limit per occurrence of not less than \$1,000,000

OR

Commercial General Liability Insurance

(including automobile insurance) which provides limits of not less than:

1. Per occurrence (combined single limit)\$1,000,000

- 2. Project Specific Aggregate (for this Project only).....\$1,000,000
- 3. Products/Completed Operations.....\$1,000,000
- 4. Personal & Advertising Injury limit.....\$1,000,000

AND

Automobile Liability Insurance

In the amount of not less per occurrence for bodily injury and property damage.....\$1,000,000

Insurance Covering Special Hazards: Following special hazards shall be covered by riders or riders to above-mentioned commercial liability insurance or property damage insurance policy or policies of insurance, or by special policies of insurance, in amounts as follows:

Automotive and truck where operated in amounts as stated above.

Material hoist where used in amounts as stated above.

F. **Executed Copies:** The number of executed copies of the Contract, the Performance Bond, and the Payment Bond for Public Works required is two (2).

G. **License Classification:** Each bidder shall be a licensed Contractor pursuant to the Business and Professions Code and shall be licensed in the following classification:
B – General Contractor.

H. **Fingerprinting Requirement:** Pursuant to the provisions of Article 24 of the General Conditions:

District Determination of Fingerprinting Requirement Application is as follows:

The District has considered the totality of the circumstances concerning the Project and has determined that the Contractor and Contractor's employees,

a. _____ are subject to the requirements of Education Code section 45125.2 and Paragraph (a) of Article 24 of the General Conditions.

b. X are not subject to the requirements of Education Code section 45125.2 and are subject to Paragraph (b) of Article 24 of the General Conditions.

I. **Bid Protests:** Bidders must submit bid protests within five (5) calendar days of the bid opening date or such protests shall be rejected as untimely. If the last day to submit a bid protest falls on a weekend or holiday, the bid protest deadline shall be extended

to the next business day. Bid protests must be in writing and contain the name and address of the bidder, the name(s) of the bidder whose bid(s) are the subject of the bid protest, the legal and factual basis for the protest, and any supporting documentation related to the protest. Bid protest(s) must be submitted to: Caroline Brown, Solana Beach School District Office, 309 North Rios Avenue, Solana Beach, CA 92075.

- J. **Required Certifications (Article 29):** Fingerprinting requirement is not necessary for this project.
- K. **DVBE (Article 32):** Compliance with Disabled Veteran Business Enterprise (DVBE) contracting goals is not required for this project.
- L. **Inspector's Trailer (Article 50):** Contractors are not required to provide an Inspector's Trailer.

DOCUMENT 00810: SUPPLEMENTAL GENERAL CONDITIONS

The following articles supercede the General Conditions as issued. When any article, paragraph or subparagraph is not modified or deleted by these SUPPLEMENTAL GENERAL CONDITIONS, the unaltered provisions of such Article, paragraph or subparagraph shall remain in effect.

END OF DOCUMENT

SPECIFICATIONS

DIVISION 01
GENERAL REQUIREMENTS
ADDITIONAL DIVISION 01 SECTIONS BY OWNER

SECTION 01 31 14

ADDITIONAL REQUIREMENTS FOR DSA REVIEWED PROJECTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Additional requirements for projects reviewed by the Division of the State Architect (DSA).
- B. DSA Forms:
 - 1. DSA-6 – Verified Report.
 - 2. DSA-103 – Statement of Structural Tests and Inspections.

1.2 RELATED SECTIONS

- A. Section 01 40 00 – Quality Requirements: Testing and Inspection.
- B. Section 01 70 00 – Execution and Closeout Requirements: Project closeout requirements.

1.3 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Section 01 42 00 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. California Code of Regulations (CCR).
 - 1. Title 8, Division 1, Chapter 3.2 – California Occupational Safety and Health Regulations (Cal/OSHA).
 - 2. Title 8, Division 1, Chapter 4, Sub-Chapter 4 – Construction Safety Orders.
 - 3. Title 8, Division 1, Chapter 4, Sub-Chapter 7 – General Industry Safety Orders.
 - 4. Title 19, Division 1 –State Fire Marshal (SFM).
 - 5. California Code of Regulations, Title 24, Part 1 - California Administrative Code.
 - a. All Code Section numbers in this Section refer to Chapter 4 “Administrative Regulations for the Division of the State Architect – Structural Safety”, Group 1 “Safety of Construction of Public Schools”.
- D. Division of the State Architect Interpretation of Regulations Manual (DSA IR)
 - 1. DSA IR A-6 – Construction Change Document Submittal and Approval Process.
 - 2. DSA IR A-7 – Project Inspector Certification and Approval.
 - 3. DSA IR A-8 – Project Inspector and Assistant Inspector Duties and Performance.
 - 4. DSA IR A-12 – Assistant Inspector Approval.
- E. Division of the State Architect Website: www.dsa.dgs.ca.gov.

1.4 GENERAL REQUIREMENTS

A. Contractor's Duties:

1. Comply with California Administrative Code, Chapter 4, Article 6, Paragraph 4-343, "Duties of the Contractor" in addition to the duties described in the Contract Documents.
2. Comply with CCR Title 8, Division 1, Chapter 3.2, California Occupational Safety and Health Regulations (Cal/OSHA).
3. Comply with CCR Title 8, Division 1, Chapter 4, Sub-Chapter 4, Construction Safety Orders.
4. Comply with requirements of CCR Title 19, Division 1, State Fire Marshal (SFM).

B. Architect's and Architect's Consultants' Duties: Comply with requirements of California Administrative Code, Chapter 4, Article 6, Paragraph 4-341, "Duties of the Architect, Structural Engineer or Professional Engineer" and Paragraph 4-344, "Duties of Mechanical and Electrical Engineers", in addition to the duties described in the Contract Documents.

C. Arbitration: DSA is not subject to arbitration proceedings.

D. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the DSA approved documents wherein the finished work will not comply with Title 24, California Code of Regulations (CCR), a Construction Change Document (CCD), or a separate set of Drawings and Specifications, detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work.

1.5 REGULATORY REQUIREMENTS

A. Perform all work in accordance with applicable laws, codes, ordinances, rules, and regulations including, without limitation, 2016 California Building Code (CBC) Parts 1 through 6, Part 9, and Part 12 in accordance with Title 24, Part 1, 4-305. Maintain a copy of these documents at the project site at all times.

B. Codes adopted by the City, County, State, and Federal agencies govern minimum project requirements. Comply with the latest edition of applicable regulatory requirements and standards unless otherwise indicated or specified.

C. Work as described in Drawings and Specifications shall not be construed as to permit work not in accordance with applicable laws, codes, ordinances, rules, and regulations.

1.6 INSPECTION AND SUPERVISION

A. Supervision by DSA shall be in accordance with California Administrative Code, Chapter 4, Article 5, Paragraph 4-334.

B. Owner will select and pay for the services of a Project Inspector, certified and approved by the Architect, the Structural Engineer when applicable, and DSA in accordance with Title 24, Part 1, 4-333(b).

1. When required, Owner will select and pay for the services of additional full-time Assistant Project Inspector(s) certified and approved by DSA in accordance with DSA IR A-12.

- C. Project Inspector shall have and maintain on the job at all times, the edition of Title 24, Part 1 through Part 6 referred to in the Drawings and Project Manual per Title 24, Part 1, 4-342(b)3.
- D. Project Inspector shall inspect construction in accordance with California Administrative Code, Chapter 4, Article 5, Paragraph 4-333(b), "Inspection by a Project Inspector", and Article 6, Paragraph 4-342, "Duties of the Project Inspector" ; and DSA IR A-8.
 - 1. Project Inspector performance rating by DSA shall be in accordance with DSA IR A-8, Section 2, "DSA's Rating of the Inspector's Performance".
- E. Reports: Project Inspector shall submit the following in accordance with DSA IR A-7.
 - 1. Notice of Start of Construction: Notify DSA of start of construction in accordance with California Administrative Code, Chapter 4, Article 5, Paragraph 4-331.
 - 2. Semi-Monthly Reports: Comply with California Administrative Code, Chapter 4, Article 5, Paragraph 4-337.
 - 3. Verified Reports: Comply with California Administrative Code, Chapter 4, Article 5, Paragraph 4-336.
- F. Special Inspection Requirements:
 - 1. Comply with California Administrative Code, Chapter 4, Article 5, Paragraph 4-333(c), "Special Inspection".
 - 2. Special inspection costs to be paid by Owner.
 - 3. Conduct special inspection in accordance with DSA-103, Statement of Structural Tests and Inspections.

1.7 TESTING AGENCY REQUIREMENTS

- A. Comply with California Administrative Code, Chapter 4, Article 5, Paragraph 4-335, "Structural Tests and Special Inspections".
- B. Owner will select the Testing Agency, acceptable to DSA, with the advice of Architect and Structural Engineer.
- C. Sampling and testing shall be performed by properly qualified persons in accordance with applicable American Society for Testing and Materials (ASTM) standards.
- D. Conduct tests in accordance with DSA-103, Statement of Structural Tests and Inspections.
- E. Submit one copy of test reports to DSA.

1.8 SUBSTITUTIONS AND REQUESTS FOR INFORMATION

- A. Substitutions and Requests for Information (RFIs) that affect structural safety, fire and life safety, access compliance, or energy (as applicable) are Construction Change Documents and shall be submitted to DSA for review and approval prior to fabrication and installation on the project.

1.9 ADDENDA AND CONSTRUCTION CHANGES

- A. Comply with California Administrative Code, Chapter 4, Article 5, Paragraph 4-338, "Addenda and Construction Changes".
 - 1. Addenda and Construction Changes, including supplementary drawings when applicable, shall be signed and stamped by the Architect and approved by DSA in accordance with Title 24, Part 1, 4-338.
- B. Comply with DSA IR A-6.
- C. Obtain DSA approval for changes to DSA approved Drawings and Specifications which affect Code-regulated construction and inspection/testing functions prior to start of that Work. Code-regulated construction refers to Work that is regulated by Code provisions applicable to public school construction, including those adopted by Division of the State Architect-Structural Safety Section (DSA/SS), Division of the State Architect-Access Compliance Section (DSA/AC), and Division of the State Architect-Fire and Life Safety Section (DSA/FLS).
 - 1. All changes, substitutions, and Requests for Information (RFIs) that affect Structural Safety, Fire and Life Safety, Access Compliance, or Energy, as applicable, shall be submitted to DSA for review and approval as a construction change document prior to commencement of the Work in accordance with Title 24, Part 1, 4-338.
- D. Changes can be approved by DSA through the CCD Category A or the CCD Category B review process, as applicable. Comply with DSA IR A-6, Article 3, Section 3.1, "CCD Category A" and DSA IR A-6, Article 3, Section 3.2, "CCD Category B".
 - 1. CCD Category A is defined as changes to or affecting the Structural, Access, or Fire-Life safety portions of the Project.
 - 2. CCD Category B is defined as changes not affecting the Structural, Access, or Fire-Life safety portions of the Project.
- E. Do not begin any work under addendum or construction changes until required DSA written approval is obtained.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

DIVISION 02
EXISTING CONDITIONS

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of designated construction.
- B. Identification of utilities.
- C. Demolition requirements.

1.2 RELATED SECTIONS

- A. Division 01 Sections, as applicable.

1.3 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 01.
- B. Accurately record actual locations of capped utilities and subsurface obstructions.

1.4 REGULATORY REQUIREMENTS

- A. Perform work of this Section under provisions of CBC Chapter 33, CFC Chapter 33, and NFPA 241 for demolition work, safety of structure, dust control and safety of occupants.
- B. Obtain required permits from authorities.
- C. Do not close or obstruct egress width to exits.
- D. Do not disable or disrupt building fire or life safety systems without three-day prior written notice to Owner.
- E. Conform to procedures applicable when discovering hazardous or contaminated materials.

1.5 SCHEDULING

- A. Schedule work under the provisions of Division 01.
- B. Describe demolition removal procedures and schedule.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Provide, erect and maintain temporary barriers as required.

- B. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to adjoining facilities.
- C. Protect existing materials and finishes that are not scheduled or otherwise required to be demolished.
- D. Mark location of utilities.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent and occupied buildings.
- B. Maintain protected egress and access to the Work.

3.3 DEMOLITION

- A. Disconnect, remove, cap and identify designated utilities within demolition areas.
- B. Demolish in an orderly and careful manner. Protect existing supporting structural members and materials.
- C. Except where noted otherwise, remove demolished materials from site. Do not bury or burn materials on site.
- D. Remove demolished materials from site as Work progresses. Upon completion of Work, leave areas in clean condition.
- E. Remove temporary Work.

END OF SECTION

DIVISIONS 03 – 09
NOT USED

DIVISION 10
SPECIALTIES

SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Exterior Signages:
 - 1. Accessibility Signage.
- B. Interior Signages:
 - 1. Accessibility Signage.
- C. Life Safety Signages.

1.2 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. Referenced Standards:
 - 1. ADA – Americans with Disabilities Act - 2010 Standards for Accessible Design.
 - 2. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
 - 4. 2016 California Building Code (CBC).
 - 5. NFPA 101 – Life Safety Code.
 - 6. UL 924 – Emergency Lighting and Power Equipment.
 - 7. UL Building Materials Directory.

1.3 SUBMITTALS

- A. General: Submit in accordance with Division 01.
- B. Product Data: Submit manufacturer's descriptive literature and product specification for each product.
- C. Shop Drawings: Submit shop drawing for each sign and plaque to show construction, sections, text, character spacing, and mounting details.
- D. Samples: Submit sign and plaque colors, designs and sizes as specified in this Section and as shown on the Drawings for review.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm specializing in manufacturing products specified in this Section with a minimum five years' experience.
- B. Regulatory Requirements:
1. Accessibility Signage, General: Provide signage in accordance with California Code of Regulations, Title 24, Part 2, Chapter 11B, Sections 11B-216 and 11B-703, 2016 California Building Code.
 - a. Finish, Color, and Contrast: Characters, pictograms, symbols and their backgrounds shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.
 - b. Depth: Raised characters shall be 1/32 inch minimum above their background.
 - c. Case:
 - 1) Raised Characters: Characters shall be uppercase.
 - 2) Visual Characters: Characters shall be uppercase or lowercase or a combination of both.
 - d. Style: Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms. Raised characters shall be sans serif.
 - e. Proportions: Visual characters on signs shall be selected from fonts where the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I". Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 20 percent maximum of the height of the character.
 - f. Character Height:
 - 1) Raised Characters: Character height measured vertically from the baseline of the character shall be 5/8 inch minimum and 2 inches maximum based on the height of the uppercase letter "I". Stroke thickness of tactile characters shall be 15 percent maximum of the height of the character.
 - 2) Visual Characters: Minimum character height shall comply with CBC Table 11B-703.5.5. Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. Character height shall be based on the uppercase letter "I".
 - g. Character Spacing:
 - 1) Raised Characters: Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be 1/8 inch minimum and four times the raised character stroke width maximum, Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch minimum and four times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch minimum and four times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch minimum. Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and Section 11B-703.2.8.

- 2) Visual Characters: Character spacing shall be measured between the two closest points of adjacent characters, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.
 - h. Line Spacing: Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.
 - i. Format: Text shall be in horizontal format.
 - j. Braille: Comply with CBC Section 11B-703.3, contracted Grade 2 Braille.
 - 1) Dimensions and Capitalization: Braille dots shall have a domed or rounded shape and shall comply with CBC Table 11B-703.3.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, and acronyms.
 - 2) Position: Braille shall be positioned below the corresponding text in a horizontal format, flush left or centered. If text is multi-lined, Braille shall be placed below the entire text. Braille shall be separated 3/8 inch minimum and 1/2 inch maximum from any other tactile characters and 3/8 inch minimum from raised borders and decorative elements.
 - k. Pictograms: Comply with CBC Section 11B-703.6.
 - 1) Pictogram Field: Pictograms shall have a field height of six inches minimum. Characters and Braille shall not be located in the pictogram field.
 - 2) Text Descriptors; Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with CBC Sections 11B-703.2, 11B-703.3, and 11B-703.4.
 - l. Symbols of Accessibility: Symbols of accessibility shall comply with CBC Section 11B-703.7.
 - m. Edges and verticals on geometric symbols shall comply with CBC Section 11B-703.7.2.6.4.
2. Accessibility Signage:
- a. Tactile Exit Signage: CBC Chapter 10 "Means of Egress," Section 1013 "Exit Signs," Section 1013.1 "Where Required," and Section 1013.4 "Raised Character and Braille Exit Signs".
 - 1) Tactile signs required by CBC Section 1013.4 need not be provided with illumination per Section 1013.3.
 - b. Other Accessible Signage: CBC Chapter 11B, "Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing."
 - 1) Detailed Requirements for Accessible Signage: CBC Chapter 11B, Division 7, Section 11B-703, "Signs".
 - a) Sign Mounting Heights and Locations: CBC Sections 11B-703.4, 11B-703.5.6, and 11B-703.7.2.6.
 - b) Symbols of Accessibility: CBC Section 11B-703.7, "Symbols of Accessibility".
 - c) International Symbol of Accessibility: CBC Section 11B-703.7.2.1, "International Symbol of Accessibility".
 - d) Entrance Signs: CBC Section 11B-216.6, "Entrances".

- e) Assistive Listening Symbol: CBC Section 11B-216.10, "Assistive Listening Systems" and Section 11B-703.7.2.4, "Assistive Listening Systems".
- 2) Site Accessibility Signage: CBC Sections 11B-216, "Signs", 11B-502.6, "Identification", 11B-502.8, "Additional Signs", and 11B-703, "Signs".
- c. Field Inspection: Signs and identification shall be field inspected after installation and approved by the enforcing agency, in accordance with CBC Section 11B-703.1.1, "Plan Review and Inspection".
- 3. Exit Signage: Provide signage in accordance with California Code of Regulations, Title 24, Part 2, 2016 California Building Code, Chapter 10 "Means of Egress", Section 1013 "Exit Signs", as applicable to Occupancy Group.
 - a. Illuminated Exit Signs: CBC Section 1013.1 "Where Required", Section 1013.3 "Illumination", Section 1013.5 "Internally Illuminated Exit Signs", and Section 1013.6 "Externally Illuminated Exit Signs".
 - b. Floor Exit Signs (SFM Requirement): CBC Section 1013.7 "Floor-Level Exit Signs".
- C. Pre-Installation Meetings:
 - 1. Conduct pre-installation meeting in accordance with provisions of Division 01.
 - 2. Convene pre-installation meeting one week prior to commencing work of this Section.
 - 3. Coordinate work in this Section with work in related Sections.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Division 01.
- B. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact.
- C. Storage and Protection: Store materials in a dry secure place. Protect from weather, surface contaminants, corrosion, construction traffic, and other potential damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. WeidnerCA, Sacramento, CA; phone: 916-452-8000, URL: www.weidnerca.com.
 - 2. ASI-Modulex, Dallas, TX; phone: 800-274-7732, URL: www.asisign.com.
 - 3. In Pro Corporation, Muskego, WI; phone: 800-222-5556, URL: www.inprocorp.com.
 - 4. Mohawk Sign Systems, Inc., Schenectady, NY; phone: 518-842-5303, URL: www.mohawksign.com.
 - 5. APCO, Atlanta, GA; phone: 404-688-9000, URL: www.apcosigns.com.
 - 6. Diverse ID, Tampa, FL; phone: 877-446-2374, URL: www.diverseid.com.
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Acrylic Plastic: Non-glare finish acrylic with integral color as manufactured by Romark or accepted equal. Thickness shall be 1/8 inch minimum, unless noted otherwise. Colors as selected by Architect from manufacturer's full range of colors.
- B. Anchors and Fasteners: Stainless steel conforming to ASTM F593.

2.3 EXTERIOR SIGNAGE

- 1. Building Entrance: Provide a 6-inch square International Symbol of Accessibility plaque for public entrances where indicated on the Drawings.
 - a. Minimum 1/8 inch thick, non-glare finish acrylic with integral color and inlaid copy.
- 2. Functional Room Signage: Provide acrylic plastic room signage with inlaid characters raised 1/32-inch, upper case, sans serif type with corresponding contracted Grade 2 Braille. Raised characters shall be at least 5/8 inch high, but no higher than 2 inches. Color selections from manufacturer's full range of colors. Characters and symbols shall contrast with their background per CBC Section 11B-703.

2.4 INTERIOR SIGNAGE

- A. Accessible Signage: Provide the following signages in accordance with 2010 ADA Standards for Accessible Design and 2016 CBC where indicated on Drawings:
 - 1. Material: 1/4-inch thick acrylic plastic, edges rounded, chamfered, or eased. Corners shall have minimum radius of 1/8 inch.
 - 2. Color: Characters, symbols, and pictograms on contrasting background per CBC Section 11B-703. Colors as selected by Architect from manufacturer's full range of colors.
 - 3. Assistive Listening Signage: Provide sign notifying availability of assistive listening system, 13 inch wide by 8 inch high acrylic plaque with 1/32-inch raised international symbol of access for hearing loss in compliance with CBC Figure 11B-703.7.2.4 imprinted centered at the top of the sign and 1/32 inch raised characters below with text "ASSISTIVE LISTENING DEVICE AVAILABLE FROM SCHOOL ADMINISTRATOR".
 - 4. Tactile Exit Signage:
 - a. Provide tactile exit signs at doors in rooms or areas that require more than one exit or exit access per CBC Sections 1013.1 and 1013.4.
 - b. Acrylic plaque tactile exit signs shall have text at least 5/8 inch high, but no higher than 2 inch high, and corresponding contracted Grade 2 Braille shall be placed a minimum of 3/8 inch and a maximum of 1/2 inch directly below the text as follows:
 - 1) Each grade-level exterior exit door that is required to comply with CBC Section 1013.1 shall be identified by a tactile exit sign with the word "EXIT".
 - 2) Each exit door that is required to comply with CBC Section 1013.1, and that leads directly to a grade-level exterior exit by means of a stairway or ramp shall be identified by a tactile exit sign with the following words as appropriate: "EXIT STAIR DOWN", "EXIT RAMP DOWN," "EXIT STAIR UP," or "EXIT RAMP UP." At exit discharge level, door sign shall include a raised five-pointed star located to the left of the identifying floor level.

- 3) Each exit door that is required to comply with CBC Section 1013.1, and that leads directly to a grade-level exterior exit by means of an exit enclosure or an exit passageway shall be identified by a tactile exit sign with the words "EXIT ROUTE".
- 4) Each exit access door from an interior room or area to a corridor or hallway that is required to comply with CBC Section 1013.1 shall be identified by a tactile exit sign with the words "EXIT ROUTE".
- 5) Each exit door through a horizontal exit that is required to comply with CBC Section 1013.1 shall be identified by a tactile exit sign with the words "TO EXIT".

2.5 LIFE SAFETY SIGNAGE

- A. Exit Signs: Internally illuminated exit signs conforming to NFPA 101, Section 7.10.7; UL listed in accordance with UL 924, with wording in legible characters not less than 4 inch high and text "EXIT".

2.6 FABRICATION

- A. Work shall be assembled in the shop, as far as practical, ready for installation at the site. Work that cannot be shop assembled be trial fit in the shop to ensure proper field assembly.
- B. Drill or punch holes for bolts and screws; produce clean, true lines and surfaces.
- C. Acrylic signs shall have inlaid acrylic copy/characters and Braille symbols as described in this Section.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install signs and plaques level and plumb.
- B. Accessible Sign Mounting Heights and Locations:
 1. Mounting Height With Tactile Characters: Per CBC Section 11B-703.4.1, tactile characters on signs shall be located 48 inches minimum above the finished floor or ground surface, measured from the baseline of the lowest Braille cells and 60 inches maximum above the finished floor or ground surface, measured from the baseline of the highest line of raised characters.
 2. Mounting Location with Tactile Characters: Per CBC Section 11B-703.4.2 as follows:
 - a. Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side.
 - b. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf.
 - c. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door.
 - d. Where there is no space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall.

- e. Signs containing tactile characters shall be located so that a clear floor space of 18 inches minimum by 18 inches minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
 - f. Where permanent identification signage is provided for rooms and spaces, they shall be located on the approach side of the door as one enters the room or space. Signs that identify exits shall be located on the approach side of the door as one exits the room or space.
3. Mounting Height With Visual Characters: Per CBC Section 11B-703.5.6, visual characters shall be 40 inches minimum above the finished floor or ground.
- C. Exterior Accessible Building Entrance Signs and Functional Room Signs: Mount to exterior door and wall surfaces using tamper proof stainless steel mechanical fasteners suitable for the mounting substrate as recommended by the manufacturer and accepted by the Architect.
- D. Interior Exit Signs and Assistive Listening Signs: Mount to door and wall surfaces with double faced adhesive foam tape strips and silicone adhesive.

3.2 ADJUST AND CLEAN

- A. Clean and Touch-up: Remove all packing and protection blemishes and thoroughly clean and polish all finish surfaces. Restore any marred or abraded surfaces to their original condition by touching up in accordance with the manufacturer's recommendations. Touch-up shall not be obvious.
- B. Defective Work: Remove and replace all defective work that cannot be properly repaired, cleaned or touched-up, as directed by the Architect, with no additional cost to the Owner.
- C. Protect installed work during the construction period to prevent abuse and damage.

3.3 CLEAN-UP

- A. Upon completion of the work of this Section, remove all surplus materials, rubbish and debris from the premises.

END OF SECTION

DIVISIONS 11 – 12
NOT USED

DIVISION 13
SPECIAL CONSTRUCTION

SECTION 13 31 23
TENSILE FABRIC STRUCTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Design, fabrication, and erection of tensile membrane shade structures.

1.2 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. Referenced Standards:
1. ASTM A36 – Standard Specification for Carbon Structural Steel.
 2. ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 3. ASTM A325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 4. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
 5. ASTM E108 – Standard Test Methods for Fire Tests of Roof Coverings.
 6. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Crews, and Studs.
 7. AWS D1.1 – Structural Welding Code – Steel.
 8. NFPA 701 – Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

1.3 SUBMITTALS

- A. General: Submit in accordance with Division 01.
- B. Submit the following documents:
1. Product Data:
 - a. Submit manufacturer's descriptive literature and product specification.
 - b. Include data to indicate test reports showing project requirements where test method is indicated.
 2. One set of tensile membrane manufacturer's architectural and structural drawings from a previous or similar project consisting of the following:
 - a. Floor plan.
 - b. Elevations, front, rear, and side.

- c. Materials and equipment information.
- d. Specifications.
- 3. DSA Product Acceptance number or Pre-Check number.

C. Quality Assurance/Control Submittals:

- 1. Manufacturer qualifications information.
- 2. Designer qualifications information including copies of professional licensure.

D. Closeout Submittals:

- 1. Cleaning and maintenance information.
- 2. Warranty Certificates.

1.4 SYSTEM DESCRIPTION

A. Design and provide tensile membrane structures in accordance with criteria acceptable to DSA.

B. Design and Performance Requirements:

- 1. Structural Design Criteria:
 - a. Design structure to comply with CBC.
- 2. Fire Resistance of roof covering: Class A per ASTM E108.

1.5 REGULATORY REQUIREMENTS

A. All fabric shall be made from a non-flammable material or treated and maintained in a flame-retardant condition. Documentation shall be made available to the local authority having jurisdiction per Title 19 CCR, Division 1, Chapter 7, Article 3.

B. Fire retardant and labeling shall conform to Title 19 CCR Division 1, Chapter 8, Article 4.

1.6 QUALITY ASSURANCE

A. Qualifications:

- 1. Manufacturer Qualifications:
 - a. Firm specializing in manufacturing products specified in this Section with a minimum five years documented experience in the engineering, fabrication, and erection of tensile membrane structures. Firm shall have successfully engineered, fabricated, and erected at least ten similar structures as specified for this project. Firm shall have a minimum three years manufacturing and installing experience on DSA projects.
 - b. Provide documentation listing past projects, project description (floor area, number of building modules), date of construction and delivery, and Owners contact information.
- 2. Designer Qualifications: Structural Engineer licensed to practice in the State of California, experienced in designing work of this Section.

B. Inspections and Tests:

- 1. Project Inspector(s), approved by DSA, shall be employed by Owner to perform in-plant inspection and on-site inspection. Refer to Section 01 31 14.
- 2. Testing laboratories shall be employed by Owner as approved by DSA, Architect, and Structural Engineer.

3. Conduct tests as per DSA Structural Tests and Inspections Sheet (SSS 103-1).
4. Cost of inspection and testing shall be borne by Owner except where portions of the Work are found deficient necessitating additional inspection and testing, which shall be borne by Contractor.

C. Pre-Installation Meetings

1. Conduct pre-installation meeting in accordance with provisions of Division 01.
2. Convene pre-installation meeting prior to commencing work of this Section.
3. Coordinate work in this Section with work in related Sections.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Division 01.
- B. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact.
- C. Storage and Protection: Store materials in a dry secure place. Protect from weather, surface contaminants, corrosion, construction traffic, and other potential damage.

1.9 WARRANTY

- A. Comply with provisions of Division 01.
- B. Warrant completely installed units to be free from defects in materials and workmanship, and meets its design capacity for a period of five years from original installation against the following:
 1. Steel frame corroding or deteriorating under normal conditions.
 2. Steel frame corroding from faulty workmanship.
 3. Inappropriate design of supporting structure.
 4. Excessive loss of color or fabric under normal exposure conditions, including sunlight, rot and normal atmospheric chemicals that may render unserviceable.
 5. Any tearing or blowouts due to wind caused by improper installation or design.
- C. Provide a maintenance service agreement which includes an annual check of installations for the life of the warranty.

1.10 MAINTENANCE

- A. Operations and Maintenance Data.
 1. Submit in accordance with Division 01.
 2. Provide cleaning and maintenance information.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 1. Basis-of-Design: USA SHADE & Fabric Structures Inc., Orange, CA; 800.507.4233, www.usa-shade.com. Product: PC #04-113245.

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Shade Fabric and Thread:

1. Shade Fabric: Ultraviolet (UV) radiation stabilized high-density polyethylene, knitted with a monofilament and tape yarn filler; complies with ASTM E84 and NFPA 701, weathered or unweathered.
2. Threads: UV radiation stabilized; mildew resistant, exterior approved, heavy-duty thread; made from polymer expanded polytetrafluoroethylene (PTFE); meets or exceeds flexible temperature range, very low shrinkage factor, high strength, durable in outdoor climates and resists flex and abrasion of fabric. Product: Gore Tenara Sewing Thread by W. L. Gore and Associates, Inc. (toll free: 800.455.2791), or accepted equal.
3. Fabric and Thread: Unaffected by cleaning agents; mildew, saltwater and rot resistant; unaffected by most pollutants. Treated for prolonged exposure to sun.

B. Structural Steel: ASTM A36/A36M and as described in AISC Construction Manual.

C. Welding Materials: AWS D1.1; type required for materials being welded.

D. Erection Hardware: Determine bolt and fastening hardware based on calculated engineering loads. Bolts, nuts, and washers as follows:

1. Low strength: Stainless steel per ASTM F593.
2. Medium strength: Zinc-plated steel per ASTM A307.
3. High strength: Zinc plated steel per ASTM A325.

E. Tensioning Cable: Determine based on calculated engineering loads and as follows:

1. Light and medium loads: 1/4 inch nominal, 7 x 19 cable, galvanized.
2. Heavy loads: 3/8 inch nominal, 7 x 19 cable, galvanized.

2.3 FINISH

A. Structural Steel: Powder coat paint finish. Color as selected by Architect.

B. Shade Fabric: Color as selected by Architect from manufacturer's full range of colors.

2.4 FABRICATION

A. Employ certified welders with minimum three years experience. Steel work shall conform to AISC specifications.

B. Steel shop finishing:

1. Clean, degrease, or etch steel to ensure proper adhesion of powder coat finish.
2. Sandblast carbon steel prior to powder coating.
3. Apply sufficient powder coating, minimum four mils thickness, and cure at recommended temperature.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine job site conditions and verify field dimensions.
- B. Report unacceptable conditions to the Architect. Begin installation only when unacceptable conditions have been corrected.

3.2 ERECTION

- A. Erect in accordance with manufacturer's printed instructions and approved shop drawings.
- B. Set tensile fabric structural modules plumb, level, and square, and free from warp or twist while maintaining dimensional tolerances and alignment with adjacent modules.
- C. Anchor structural modules firmly to foundation.
- D. Perform on-site work employing mechanics skilled and experienced in the fabrication and installation of the work involved. Perform work in accordance with the best practices of the various trades involved.

3.3 CLEANING

- A. Clean as recommended by manufacturer. Do not use materials or methods which may damage finish surfaces or surrounding construction

END OF SECTION

DIVISIONS 14 – 25
NOT USED

DIVISION 26
ELECTRICAL

SECTION 26 01 00

ELECTRICAL GENERAL PROVISIONS

ARTICLE 1 SUMMARY

- 1.1 This Division of the specification outlines the provisions of the contract work to be performed under this Division.
- 1.2 This Section applies to and forms a part of each section of specifications in Division 26 and all work performed under the electrical and communications contracts.
- 1.3 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under general requirements.
- 1.4 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- 1.5 Where the words 'provide' or 'provision' are used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.6 Where items are specified in the singular, this Division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

ARTICLE 2 CONTRACTOR QUALIFICATIONS

- 2.1 The Contractor shall have a current California C-10 Electrical Contractor's license and all individuals working on this project shall have passed the Department of Industrial Relations Division of apprenticeship Standards – "Electrician Certification Program."

ARTICLE 3 CODES, PERMITS AND FEES

- 3.1 Comply with all applicable laws, ordinances, rules, regulations, codes, or rulings of governmental units having jurisdiction as well as standards of NFPA and serving utility requirements.
- 3.2 Obtain permits, fees, inspections, meter and the like, associated with work in each section of this Division.
- 3.3 Installation procedures, methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Act (OSHA).

ARTICLE 4 EXAMINATION OF PREMISES

- 4.1 Examine the construction drawings and premises prior to bidding. No allowances will be made for not being knowledgeable of existing conditions.

ARTICLE 5 STANDARDS

- 5.1 The following standard publications of the latest editions enforced, and supplements thereto shall form a part of these specifications. All electrical work must, as a minimum, be in accordance with these standards.
- 5.1.1 2016 California Electrical Code (CEC), Part 3 Title 24 CCR.
 - 5.1.2 National Fire Protection Association.
 - 5.1.3 Underwriters' Laboratories, Inc. (UL).
 - 5.1.4 Certified Ballast Manufacturers' Association (CBM).
 - 5.1.5 National Electrical Manufacturers' Association (NEMA).
 - 5.1.6 Institution of Electrical & Electronics Engineers (IEEE).
 - 5.1.7 American Society for Testing & Materials (ASTM).
 - 5.1.8 National Board of Fire Underwriters (NBFU).
 - 5.1.9 National Board of Standards (NBS).
 - 5.1.10 American National Standards Institute (ANSI).
 - 5.1.11 Insulated Power Cable Engineers Association (IPECS).
 - 5.1.12 Electrical Testing Laboratories (ETL).
 - 5.1.13 National Electrical Safety Code (NESC).
 - 5.1.14 2016 California Building Code (CBC), Part 2, Title 24 CCR.
 - 5.1.15 2016 California Fire Code (CFC), Part 9, Title 24, CCR.
 - 5.1.16 2016 NFPA 72 with California State Amendments
 - 5.1.17 National Electrical Testing Association (NETA), 2010 or most current

ARTICLE 6 DEFINITIONS

- 6.1 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings - acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 6.2 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 6.3 Finish Space: Any space ordinarily visible, including exterior areas.

ARTICLE 7 WORK AND MATERIALS

- 7.1 Unless otherwise specified, all materials must be new and of the best quality. Materials previously incorporated into other projects, salvaged, or refurbished are not considered new. Perform all labor in a thorough and workmanlike manner.
- 7.2 All materials provided under the contract must bear the UL label where normally available. Note that this requirement may be repeated under equipment specifications. In general, such devices as will void the label should be provided in separate enclosures and wired to the labeled unit in proper manner.

ARTICLE 8 SHOP DRAWINGS AND SUBMITTALS

- 8.1 Submit shop drawings and all data in accordance with Division 1 of these specifications and as noted below for all equipment provided under this Division.
- 8.2 Shop drawings submittals demonstrate to the Architect that the Contractor understands the design concept. The Contractor demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods of material and equipment he intends to use. If deviations, discrepancies, or conflicts between submittals and specifications are discovered either prior to or after submittals are processed, notify the Architect immediately.
- 8.3 Manufacturer's data and dimension sheets shall be submitted giving all pertinent physical and engineering data including weights, cross sections and maintenance instructions. Standard items of equipment such as receptacles, switches, plates, etc., which are cataloged items, shall be listed by manufacturer.
- 8.4 Index all submittals and reference them to these specifications. All submittal items shall be assembled and submitted, one for each specification section. (Multiple specification sections may be grouped together in one common submittal binder, as long as each individual section is clearly identified.) Partial or incomplete submittal sections will not be reviewed.

ARTICLE 9 EQUIPMENT PURCHASES

- 9.1 Arrange for purchase and delivery of all materials and equipment within 20 days after approval of submittals. All materials and equipment must be ordered in ample quantities for delivery at the proper time. If items are not on the project in time to expedite completion, the Owner may purchase said equipment and materials and deduct the cost from the contract sum.
- 9.2 Provide all materials of similar class or service by one manufacturer.

ARTICLE 10 COOPERATIVE WORK

- 10.1 Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration.
- 10.2 Cooperative work includes: General supervision and responsibility for proper location and size of work related to this Division, but provided under the other sections of these specifications, and installation of sleeves, inserts, and anchor bolts for work under each section in this Division.

ARTICLE 11 VERIFICATION OF DIMENSIONS

- 11.1 Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions, etc., and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.

- 11.2 Drawings are essentially diagrammatic, and many offsets, bends, pull boxes, special fittings, and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact location, routes, building obstructions, etc. and install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, keep openings and passageways clear, and maintain proper clearances.

ARTICLE 12 CUTTING AND PATCHING

- 12.1 All cutting, and patching shall be in accordance with Division 1 of these specifications and as noted below.
- 12.2 Cut existing work and patch as necessary to properly install new work. As the work progresses, leave necessary openings, holes, chases, etc., in their correct location. If the required openings, holes, chases, etc., are not in their correct locations, make the necessary corrections at no cost to the Owner. Avoid excessive cutting and do not cut structural members including wall framing without the consent of the Architect.

ARTICLE 13 CLOSING-IN OF UNINSPECTED WORK

- 13.1 Cover no work until inspected, tested, and approved by the Architect. Where work is covered before inspection and test, uncover it and when inspected, tested, and approved, restore all work to original proper condition at no additional cost to Owner.

ARTICLE 14 EXCAVATION AND BACKFILL

- 14.1 All excavation and backfill shall be in accordance with Division 1 of these specifications and as noted below.
- 14.2 Perform all necessary excavation, shoring, and backfilling required for the proper laying of all conduits inside the building and premises, and outside as may be necessary.
- 14.3 Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machine grade only to the top line of the conduits, doing the remainder by hand. Do not cut any trench near or under footings without first consulting the Architect. All trenches shall be done in accordance with OSHA standards and regulations.
- 14.4 Backfilling shall be done with each layer compacted before another layer is added. No stones or coarse lumps shall be laid directly on a conduit or conduits.
- 14.5 Trenches shall be filled with the specified material. Sod, if any, shall be removed in cut sections and replaced in same manners.
- 14.6 Provide pumps and drainage of all open trenches for purposes of installing electrical duct and wiring.
- 14.7 Perform all backfilling in accordance with the requirements of and under the direction of the Geotechnical Engineer.

- 14.8 Where new underground trenching is required on sites or in any area where existing underground utilities exist, the Contractor shall provide an independent professional utility locating service to locate exact vertical and horizontal locations of all existing utilities. Where existing utilities are found the Contractor shall hand dig those areas to avoid disruption. The Contractor shall be responsible for immediate repairs to existing underground utilities damaged during construction. The Contractor shall repair all existing asphalt, concrete and landscape surfaces damaged or removed during construction to match their original conditions. Where trenching extends through public streets or roadways, the Contractor shall notify underground service alert in addition to the independent locating service 48 hours before start of construction to determine location of existing utilities by calling (800) 422-4133.

ARTICLE 15 CONCRETE

- 15.1 Where used for structures to be provided under the contract such as bases, etc., concrete work, and associated reinforcing shall be as specified under Division 3 of these specifications.
- 15.2 See other sections for additional requirements for underground vaults, cable ducts, etc.

ARTICLE 16 ACCESSIBILITY

- 16.1 Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal, or replacement conveniently and accessibly throughout the finished building.
- 16.2 All required access doors or panels in walls and ceilings are to be furnished and installed as part of the work under this Section. Refer to Division 1 of these specifications and as noted below.
- 16.3 Where located in fire rated assemblies, provide doors which match the rating of the assembly and are approved by the jurisdictional authority.
- 16.4 Refer to 'finish schedule' for types of walls and ceilings in each area and the architectural drawings for rated wall construction.
- 16.5 Coordinate work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

ARTICLE 17 FLASHING

- 17.1 Flash and counter flash all conduits penetrating roofing membrane as shown on Architectural drawings. All work shall be in accordance with Division 7 of these specifications.

ARTICLE 18 IDENTIFICATION OF EQUIPMENT

- 18.1 All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedules:
- 18.1.1 General:

18.1.1.1 In general, the installed laminated nameplates as hereinafter called for shall also clearly indicate its use, areas served, circuit identification, voltage and any other useful data.

18.1.1.2 All auxiliary systems, including communications, shall be labeled to indicate function.

18.1.2 Lighting and Local Panelboards:

18.1.2.1 Panel identification shall be with white and black micarta nameplates. Letters shall be no less than 3/8" high.

18.1.2.2 Circuit directory shall be two column typewritten card set under glass or glass equivalent. Each circuit shall be identified by the room number and/or number of unit and other pertinent data as required.

18.1.3 Distribution Switchboards and Feeders Sections:

18.1.3.1 Identification shall be with 1" x 4" laminated white micarta nameplates with black lettering on each major component, each with name and/or number of unit and other pertinent data as required. Letters shall be no less than 3/8" high.

18.1.3.2 Circuit breakers and switches shall be identified by number and name with 3/8" x 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to or on circuit breaker or switch.

18.1.4 Disconnect Switches, Motor Starters and Transformers:

18.1.4.1 Identification shall be with white micarta laminated labels and 3/8" high black lettering.

18.1.5 All communication system terminal boxes including T.V., telephone/intercom, security, fire alarm, clock, and computer networking shall be provided with white micarta laminated labels and 3/8" high black lettering.

ARTICLE 19 CONSTRUCTION FACILITIES

19.1 Furnish and maintain from the beginning to the completion all lawful and necessary guards, railings, fences, canopies, lights, warning signs, etc. Take all necessary precautions required by City, State Laws, and OSHA to avoid injury or damage to any persons and property.

19.2 Temporary power and lighting for construction purposes shall be provided under this Section. All work shall be in accordance with Division 1 of these specifications.

ARTICLE 20 GUARANTEE

20.1 Guarantee all material, equipment and workmanship for all sections under this Division in writing to be free from defect of material and workmanship for one year from date of final acceptance, as outlined in the general conditions. Replace without charge any material or equipment proven defective during this period. The guarantee shall include

performance of equipment under all site conditions, conditions of load, installing any additional items of control and/or protective devices, as required.

ARTICLE 21 PATENTS

21.1 Refer to the General Conditions for Contractor's responsibilities regarding patents.

ARTICLE 22 PLUMBING (DIVISION 22) / HEATING, VENTILATING, AND AIR CONDITIONING (DIVISION 23) / ELECTRICAL – COORDINATION REQUIREMENTS

22.1 All electrical work performed for this project shall conform to the California Electrical Code, to Local Building Codes and in conformance with Division 22, 23, and 26 of these specifications, whether the work is provided under the "Plumbing", "Heating, Ventilating, and Air Conditioning", or the "Electrical" Division of these specifications. Where the Division 22 and/or Division 23 Contractor is required to provide electrical work, he shall arrange for the work to be done by a licensed Division 26 Contractor, using qualified electricians. The Division 22 and/or Division 23 Contractor shall be solely and completely responsible for the correct functioning of all equipment regardless of who provided the electrical work.

22.2 The work under Division 22 and/or Division 23 shall include the following:

22.2.1 All motors required by mechanical equipment.

22.2.2 All starters for mechanical equipment which are not provided under the electrical division as part of a motor control center or otherwise indicated on the electrical drawings.

22.2.3 All wiring interior to packaged equipment furnished as an integral part of the equipment.

22.2.4 All control **wiring and conduit** for mechanical control systems.

22.2.5 All control systems required by mechanical equipment.

22.3 The work under Division 26 shall include the following:

22.3.1 All power wiring and conduit; and conduit only for EMS control conductors between each building and the main control panel.

22.3.2 Electrical disconnects as shown on the electrical drawings.

22.3.3 Starters forming part of a motor control center.

22.4 All power wiring and conduit to equipment furnished under Division 22 and/or Division 23 shall be provided under Division 26. Control wiring and conduit, whether line voltage or low voltage, shall be provided under the division which furnishes the equipment.

22.5 Power wiring shall be defined as all wiring between the panelboard switchboard overcurrent device, motor control center starter or switch, and the safety disconnect switch or control panel serving the equipment. Also, the power wiring between safety disconnect switch and the equipment line terminals.

- 22.6 Control wiring shall be defined as all wiring, either line voltage or low voltage, required for the control and interlocking of equipment, including but not limited to wiring to motor control stations, solenoid valves, pressure switches, limit switches, flow switches, thermostats, humidistats, safety devices, smoke detectors, and other components required for the proper operation of the equipment.
- 22.7 All motor starters which are not part of motor control centers and which are required for equipment furnished under this Division shall be furnished and installed by the Division furnishing the equipment and power wiring connected under Division 26. Motor starters and control devices in motor control centers shall be furnished and installed under Division 26.
- 22.8 Division 26 Contractor shall make all final connections of power wiring to equipment furnished under this Division.
- 22.9 Wiring diagrams complete with all connection details shall be furnished under each respective Section.
- 22.10 Motor starters supplied by Plumbing and/or Heating, Ventilating and Air Conditioning shall be fused combination type minimum NEMA Size 1, and conform to appropriate NEMA standards for the service required. Provide NEMA type 3R/12 gasketed enclosures in wet locations. Provide all starters with appropriately sized overload protection and heater strips provided in each phase, hand/off auto switches, a minimum of 2 NO and NC auxiliary contacts as required, and an integral disconnecting means. For ½ horsepower motors and below, when control requirements do not dictate the use of a starter, a manual motor starter switch with overload protection in each phase may be provided. Acceptable manufacturers are Allen Bradley, General Electric, Square D, Furnas and Cutler Hammer.

ARTICLE 23 EQUIPMENT ROUGH-IN

- 23.1 Rough-in all equipment, fixtures, etc. as designed on the drawings and as specified herein. The drawings indicate only the approximate location of rough-ins. Mounting heights of all switches, receptacles, wall mounted fixtures and such equipment must be coordinated with the Architectural Designs. The Contractor shall obtain all rough-in information before progressing with any work for rough-in connections. Minor changes in the contract drawings shall be anticipated and provided for under this Division of the specifications to comply with rough-in requirements.

ARTICLE 24 OWNER FURNISHED AND OTHER EQUIPMENT

- 24.1 Rough-in and make final connections to all Owner furnished equipment shown on the drawings and specified, and all equipment furnished under other sections of the specifications.

ARTICLE 25 EQUIPMENT FINAL CONNECTIONS

- 25.1 Provide all final connections for the following:
- 25.1.1 All equipment furnished under this Division.
 - 25.1.2 Electrical equipment furnished under other sections of the specification.

25.1.3 Owner furnished equipment as specified under this Division.

ARTICLE 26 INSERTS, ANCHORS, AND MOUNTING SLEEVES

26.1 Inserts and anchors must be:

26.1.1 Furnished and installed for support of work under this Division.

26.1.2 Mounting of equipment that is of such size as to be free standing and that equipment which cannot conveniently be located on walls, such as motor starters, etc., shall be rigidly supported on a framework of galvanized steel angle of Unistrut or B-line systems with all unfinished edges painted.

26.1.3 Furnish and install all sleeves as required for the installation of all work under all Sections of this Division and for all communication systems including any communication systems described in this Section which are bid to the General Contractor. Sleeves through floors, roof, and walls shall be as described in "Conduit and Fittings" Section 26 05 33.

ARTICLE 27 SEISMIC ANCHORING

27.1 All switchgear and other free standing electrical equipment or enclosures shall be anchored to the floor and braced at the top of the equipment to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC Section 1616A.1.12. The Contractor shall submit drawings signed by the Contractors registered structural Engineer indicating method of compliance prior installation.

27.2 All sound systems, communication, signal or data networking equipment or enclosures shall be anchored to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC Section 1616A.1.12. The Contractor shall submit drawings signed by the Contractors registered Structural Engineer indicating method of compliance prior to installation.

ARTICLE 28 RUST PROOFING

28.1 Rust proofing must be applied to all ferrous metals and shall be in accordance with Section 05500 of these specifications and as noted below.

28.1.1 Hot-dipped galvanized shall be applied and after forming of angle-iron, bolts, anchors, etc.

28.1.2 Hot-dipped galvanized coating shall be applied after fabrication for junction boxes and pull boxes cast in concrete.

ARTICLE 29 GENERAL WIRING

29.1 Where located adjacent in walls, outlet boxes shall not be placed back to back, nor shall extension rings be used in place of double boxes, all to limit sound transmission between rooms. Provide short horizontal nipple between adjacent outlet boxes, which shall have depth sufficient to maintain wall coverage in rear by masonry wall.

- 29.2 In those instances where outlet boxes, recessed terminal boxes, or recessed equipment enclosures are installed in a fire rated assembly, provide "Flamesafe FSD 1077" fire stopping pads or approved equal, over the outlet or box.
- 29.3 Complete rough-in requirements of all equipment to be wired under the contract are not indicated. Coordinate with respective trades furnishing equipment or with the Architect as the case may be for complete and accurate requirements to result in a neat, workmanlike installation.

ARTICLE 30 SEPARATE CONDUIT SYSTEMS

- 30.1 Each electrical and signal system shall be contained in a separate conduit system as shown on the drawings and as specified herein. This includes each power system, each lighting system, each signal system of whatever nature, telephone, standby system, sound system, control system, fire alarm system, etc.
- 30.2 Further, each item of building equipment must have its own run of power wiring. Control wiring may be included in properly sized conduit for equipment feeders of #6 AWG and smaller, having separate conduit for larger sizes.

ARTICLE 31 CLEANUP

- 31.1 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 31.2 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- 31.3 During the progress of the work, keep the premises clean and free of debris.

ARTICLE 32 PAINTING

- 32.1 Paint all unfinished metal as required in accordance with Division 1 of these specifications. (Galvanized and factory painted equipment shall be considered as having a sub-base finish.)

ARTICLE 33 GENERAL DEMOLITION REQUIREMENTS

- 33.1 Remove existing work and items which are required to be removed in such manner that minimum damage and disturbance is caused to adjacent and connection work scheduled to remain. Repair or replace existing work schedule.
- 33.2 Include preparation of existing areas to receive new materials and removal of materials and equipment to alter or repair the existing building as indicated and as specified.
- 33.3 Perform demolition exercising proper care to prevent injury to the public, workmen and adjoining property.

- 33.4 Perform the removal, cutting, drilling of existing work with extreme care and use small tools in order not to jeopardize the structural integrity of the building.
- 33.5 Rebuild to existing condition or better, existing work which has to be removed to allow the installation of new work as required.
- 33.6 Remove, protect and reinstall existing items as indicated. Replace materials scheduled for reuse which are damaged by the Contractor to the extent that they cannot be reused, with equal quality material, and installation.
- 33.7 Do not reuse in this project materials and items removed from existing site or building, except with specific written approval by the Architect in each case, unless such removed material or item is specifically indicated or specified to be reused.
- 33.8 Remove materials and equipment indicated to be salvaged for reinstallation and store to prevent damage and reinstall as the work progresses. Do not reuse in this project, other materials and equipment removed from existing site or building, except with specific written approval by the Architect in each case.
- 33.9 Patch areas requiring patching, including damage caused by removing, relocating or adding fixtures and equipment, damages caused by demolition at adjacent materials.
- 33.10 Do not stockpile debris in the existing building, without the approval of the Architect. Remove debris as it accumulates from removal operations to a legal disposal area.
- 33.11 Contractor to assume existing oil filled and dry transformers, oil switches, ballasts, lamps, wooden poles, cross arms, computers, computer monitors, and conductor insulation containing materials considered hazardous. Comply with local, state and federal regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution. Contractor shall be responsible for removal of the above hazardous materials where encountered. Include all costs for such removal as part of this contract.
- 33.12 All fluorescent, compact fluorescent, high intensity discharge, metal halide, mercury vapor, high and low-pressure sodium, and neon lamps are to be disposed of as required by the California Waste Rule Regulations as described in the California Code of Regulations, Title 22, Division 4.5 and Chapter 23.
- 33.13 **Communication System:** Where new communication systems, (including telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) are installed to replace existing systems, unless where otherwise directed the existing systems shall remain fully operational until the new system has been installed and tested. Demolition of the existing systems shall include removal of all equipment and associated wiring and exposed conduits and providing new blank covers for all abandoned device locations.
- 33.14 **Salvage Power Equipment:** The Contractor shall carefully remove all existing switchboards, panelboards, transformers, and confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.

33.15 **Salvage Lighting Equipment:** The Contractor shall confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.

33.16 **Salvage Communication Equipment:** The Contractor shall carefully remove all communication devices (telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) and box each type of devices separately. The Contractor shall deliver all items to the Owner's maintenance facility.

ARTICLE 34 PROJECT CLOSEOUT

34.1 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this Division, in accordance with Division 1 of these specifications and as described below.

34.2 Equipment Lists and Maintenance Manuals:

34.2.1 Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this Section of the specifications:

34.2.1.1 Name, model, and manufacturer.

34.2.1.2 Complete parts drawings and lists.

34.2.1.3 Local supply for parts and replacement and telephone number.

34.2.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.

34.3 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

ARTICLE 35 RECORD DRAWINGS

35.1 The Division 26 Contractor shall maintain record drawings as specified in accordance with Division 1 of these specifications, and as noted below.

35.2 Drawings shall show locations of all concealed underground conduit runs, giving the number and size of conduit and wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all of the actual additions or

changes made. All as-built drawing information shall be prepared by the contractor in AutoCAD, updating the contract computer files as needed to reflect actual installed conditions for all site plans, lighting, power, communication, networking, audio visual, security or fire alarms systems included in the scope of work for this project.

- 35.3 One set of these record drawings shall be delivered to the Architect. The engineer will review documents for completeness and will not be responsible for editing contractor computer files.

ARTICLE 36 CHANGES AND EXTRA WORK

- 36.1 When **changes** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:

36.1.1 The material Costs shall **not exceed** the latest edition of the "Trade Service" end column "C" price list. The materials prices may be higher only where the Contractor can produce invoices to substantiate higher material costs. The Contractor shall submit a print out copy of the trade service sheets with the change order to substantiate these values.

36.1.2 The labor Costs shall **not exceed** the latest edition of the "NECA Manual of Labor Units" **normal column**.

- 36.2 When **credits** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:

36.2.1 The Material Costs shall **not be less than 80% of** the latest edition of the "Trade Service" end column price list. The materials prices may be lower only where the Contractor can produce invoices to substantiate lower material costs. Restocking fees may also be included in this amount where applicable.

36.2.2 The Labor Costs shall **not be less than 80% of** the latest edition of the "NECA Manual of Labor Units" **normal column**.

- 36.3 Conduit pricing for conduits of all types sized 3" or smaller.

When changes in the scope of work require the Contractor to estimate conduit Installations, they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for conduit installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

36.3.1 Couplings.

36.3.2 Set Screw or Compression Fittings, locknuts, Bushings and washers.

36.3.3 Conduit straps and associated screws or nails.

36.3.4 LB fittings or other specialty fittings or specialty mounting hardware may be included where needed.

36.4 Wire pricing for all types and sizes.

When changes in the scope of work require the Contractor to estimate wire installations they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for wire installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

36.4.1 Locknuts, Bushings, tape, wire markers.

36.5 When changes in the scope of work require other equipment installations such as lighting fixtures, panelboards, switchboards, wiring devices, communications equipment etc. the Contractor shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for these equipment items represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

36.5.1 Associated screws, nails, bolts, anchors or supports.

36.5.2 Locknuts, washers, tape.

36.6 The total labor hours for extra work will be required to be calculated as follows:

36.6.1 Change orders with 1 to 30 total labor hours

General Laborer	10%	of total labor hours
Journeyman	10%	of total labor hours
Foreman	80%	of total labor hours

36.6.2 Change orders with 31 to 100 total labor hours

General Laborer	20%	of total labor hours
Journeyman	40%	of total labor hours
Foreman	40%	of total labor hours

36.6.3 Change orders with over 100 total labor hours

General Laborer	30%	of total labor hours
Journeyman	50%	of total labor hours
Foreman	20%	of total labor hours

36.7 When change orders are issued which allow the work to be completed in the normal sequence of construction, the labor rates shall be based on the most current "Prevailing Wage" – straight time total hourly rate. When change orders require the Contractor to work out of sequence the "Prevailing Wage"– daily overtime hourly rate shall apply. Special condition situations shall be reviewed on an individual basis for alternate hourly rate schedules.

36.8 Costs **will not** be permitted for additional supervision on site or office time for processing any change order other than the 10% overhead allowance as described in Division 1. Cost for special equipment required to install items for an individual change order are

permitted and must be individually identified. Lump Sum cost for small tools or any other cost not specifically required for the change order are not permitted.

36.9 Contractor estimates shall be formatted to clearly identify each of the following:

36.9.1 Line item description of each type of material or labor item.

36.9.2 Description of quantity for each item.

36.9.3 Description of (material cost per / quantity).

36.9.4 Description of (labor cost per / quantity).

36.9.5 Description of total labor hour breakdown per Foreman, Journeyman or General Laborer as described above.

ARTICLE 37 ELECTRONIC FILES

37.1 The Contractor shall make a **written** request directly to Johnson Consulting Engineers for electronic drawing files. As a part of the written request, please include the following information:

37.1.1 Clearly indicate each drawing sheet needed (i.e., E1.1, E2.1, etc.).

37.1.2 Identify the name, phone number, mailing address and e-mail address of the person to receive the files.

37.1.3 Provide written confirmation and agreement with the requirements described for payment of computer files, as described below.

37.2 Detail or riser diagram sheets, or any other drawings other than floor plans or site plans, **will not be made available to the Contractor.**

37.3 Files will only be provided in the AutoCAD format in which they were created.

37.4 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use.

END OF SECTION

SECTION 26 05 19
POWER CONDUCTORS

PART 1 – GENERAL

- 1.1 Furnish and install wire and cable for branch circuits and feeders specified herein and as shown on the electrical drawings.
- 1.2 Submittals: Submit manufacturers' data for the following items:
 - 1.2.1 All cables and terminations
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining, or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed

PART 2 – PRODUCTS

- 2.1 Wire and cable Rated 120 volt to 600 volts.
 - 2.1.1 All wire and cable shall be new, 600 volt insulated copper, of types specified below for each application. All wire and cable shall bear the UL label and shall be brought to the job in unbroken packages. Wire insulation shall be the color as specified herein and shall be type THWN-2. Insulated conductors shall be installed in all exterior exposed raceways. Conductors for branch circuit lighting, receptacle, power and miscellaneous systems shall be a minimum of No. 12 AWG. Increase conductor size to No. 10 AWG for 120-volt circuits greater than 100 feet from the panel to the load and for 277 volt circuits greater than 200 feet from the panel to the load. Circuit home-runs indicated to be larger than No. 12 must be increased the entire length of the circuit, including equipment grounding conductor. Wire sizes No. 14 through No. 10 shall be solid. No. 8 and larger shall be stranded.
 - 2.1.2 Aluminum conductors will be permitted (only where specifically identified on the drawings. See "600 Volt Feeder Schedule") in sizes 2/0 or larger. Conductors shall be listed by Underwriters Laboratories (UL) and suitable for operation at 600 volts or less, at a maximum operating temperature of 90N C maximum in wet or dry locations. Conductors shall be marked "SUN-RES". Aluminum alloy conductors shall be compact stranded conductors of STABILOY® (AA-8030) as manufactured by Alcan Cable or Listed equal. AA-8000 Series aluminum alloy conductor material shall be recognized by The Aluminum Association.

- 2.1.3 MC type armored cable reference Section 26 05 33.
- 2.2 Wire and cable for systems below 120 volts.
 - 2.2.1 All low voltage and communications systems cables routed underground shall be provided with a moisture resistant outer jacket, West Penn "Aquaseal" or equal, unless otherwise specified.

PART 3 - EXECUTION

- 3.1 Wire and cable shall be pulled into conduits without strain using powdered soapstone, mineralac, or other approved lubricant. In no case shall wire be repulled if same has been pulled out of a conduit run for any purpose. No conductor shall be pulled into conduit until conduit system is complete, including junction boxes, pull boxes, etc.
- 3.2 All connections of wires shall be made as noted below:
 - 3.2.1 Connections to outlets and switches: Wire formed around binding post of screw.
 - 3.2.2 No. 10 wire and smaller: Circuit wiring connections to lighting fixtures and other hard wired equipment shall be made with pressure type solderless connectors, Buchanan, Scotchlock, Wing Nut, or approved equal. Alternate "WAGO" #773 series or "IDEAL" #32, 33, 34 and 39 series push wire style connectors are also acceptable.
- 3.3 All wiring shall be continuous without splicing unless where specifically noted on the drawings or where permitted below.
 - 3.3.1 No. 10 wire and smaller above grade: Quantities as needed, connection made with pressure type solderless connectors, Scotchlock or equal.
 - 3.3.2 No. 10 wire and smaller below grade: Quantities as needed, connection made with 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
 - 3.3.3 No. 8 wire and larger above grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
 - 3.3.4 No. 8 wire and larger below grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
- 3.4 All wiring throughout shall be color coded as follows:

480 volt system

208 or 240 volt system

A Phase	Brown	Black
B Phase	Orange	Red
C Phase	Yellow	Blue
Neutral	Grey	White
Ground	Green	Green

- 3.5 Wiring must be color coded throughout its entire length, except feeders may have color coded plastic tape at both ends and any other accessible point.
- 3.6 All control wiring in a circuit shall be color coded, each phase leg having a separate color, and with all segments of the control circuit, whether in apparatus or conduit, utilizing the same color coding.
- 3.7 At all terminations of control wiring, the wiring shall have a numbered T&B or Brady plastic wire marker.
- 3.8 Cables when installed are to be properly trained in junction boxes, etc., and in such a manner as to prevent any forces on the cable which might damage the cable.
- 3.9 All conductors to be installed into a common raceway, shall be pulled into the raceway at the same time.
- 3.10 All conductors shall be installed in such a manner as to not exceed the manufacturers' recommended pulling tension and bending radius. The equipment used for pulling must be specifically designed for the purpose. Motorized vehicles such as pickup trucks, are not acceptable.

END OF SECTION

SECTION 26 05 26

GROUNDING

PART 1 – GENERAL

- 1.1 Furnish and install grounding and grounding conductors and electrodes as specified herein and as shown on the drawings.
- 1.2 Submit catalog data for all components.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – EXECUTION

- 2.1 Grounding
 - 2.1.1 All panelboard cabinets, equipment, enclosures, and complete conduit system shall be grounded securely in accordance with pertinent sections of CEC Article 250. Conductors shall be copper. All electrically operated equipment shall be bonded to the grounded conduit system. All non-current carrying conductive surfaces that are likely to become energized and subject to personal contact shall be grounded by one or more of the methods detailed in CEC Article 250. All ground connections shall have clean contact surfaces. Install all grounding conductors in conduit and make connections readily accessible for inspection.
 - 2.1.2 Provide an insulated equipment grounding conductor in all branch circuit and feeder raceway systems, sized in accordance with CEC 250-1122.
 - 2.1.3 Provide an additional individual insulated grounding conductor for each circuit which contains an isolated ground receptacle or surge suppression receptacle.
 - 2.1.4 Grounding of metal raceways shall be assured by means of provisions of grounding bushings on feeder conduit terminations at the panelboard, and by means of insulated continuous stranded copper grounding wire extended from the ground bus in the panelboard to the conduit grounding bushings.

2.1.5 Except for connections which access for periodic testing is required, make grounding connections which are buried or otherwise inaccessible by exothermite type process.

2.1.6 The following ohmic values shall be test certified for each item listed. A written report signed and witnessed by the project IOR shall be provided to the engineer. If the ohmic value listed cannot be obtained additional grounding shall be installed to reach the value listed.

2.1.6.1 Service.10 ohms.

2.1.6.2 Step down transformers and non-current carrying metal parts
. 25 ohms.

2.1.6.3 Manholes, handholes, etc.
. 10 ohms.

END OF SECTION

SECTION 26 05 33
CONDUIT AND FITTINGS

PART 1 – GENERAL

- 1.1 Furnish and install conduit and fittings as shown on the drawings and as specified herein.
- 1.2 Submit Manufacturer's data on the following:
 - 1.2.1 Conduit.
 - 1.2.2 Fittings
 - 1.2.3 Fire stopping Material.
 - 1.2.4 Surface Raceways.
 - 1.2.5 Type MC or MC-PCS cable, provide construction details and UL "E" number.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Rigid steel conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT) and flexible metallic conduit shall be steel, hot dipped galvanized after fabrication.
- 2.2 PVC conduit shall be Carlon or approved equal.
- 2.3 Liquid tight flexible metal conduit shall be Anaconda Sealrite type UA or approved equal. Fittings shall be Appleton, Crouse-Hinds, Steel City, T&B, or equivalent.
- 2.4 MC type armored cable, when utilized, shall be provided with the following:
 - 2.4.1 Comply with UL 1479 and CEC 330
 - 2.4.2 90°C, copper, THHN conductors.
 - 2.4.3 Minimum #12 insulated grounding conductor.

- 2.4.4 Conductors sized No. 10 and smaller shall be solid, No. 8 and larger shall be stranded.
- 2.4.5 Oversized (150%) neutrals or separate neutrals shall be provided.
- 2.4.6 Increase phase conductors to No. 10 AWG for 120-volt circuits greater than 100 feet from panel to load and for 277-volt circuits greater than 200 feet from panel to load. Where required increase conductor sizes for entire length of circuit.
- 2.4.7 Interlocked armored **aluminum** sheath.
- 2.4.8 AC or BX type armored cable shall **not** be substituted in lieu of MC type cable.
- 2.4.9 Color code cable according to cable type and configuration.
- 2.4.10 Acceptable manufacturers are AFC and Alfex.
- 2.5 MC-PCS luminary armored cable, when utilized, shall be provided with the following:
 - 2.5.1 Comply with UL 1479 and CEC 330
 - 2.5.2 90°C, copper, THHN conductors.
 - 2.5.3 Minimum #12 insulated grounding conductor.
 - 2.5.4 Lighting phase conductors sized No. 10 and smaller shall be solid, lighting control conductors shall be sized no. 16 solid.
 - 2.5.5 Interlocked armored **aluminum** sheath.
 - 2.5.6 AC or BX type armored cable shall **not** be substituted in lieu of MC type cable.
 - 2.5.7 Color code phase cable according to cable type and configuration. color code control conductors purple/gray.
 - 2.5.8 Acceptable manufacturers are AFC and Alfex.
- 2.6 Fire stopping material shall provide an effective seal against fire, heat, smoke and fire gases. Fire stopping material shall be tested to comply with ASTM E 814 and UL 1479. The submittal for this product shall include the UL listed system number and installation requirements for each type of penetration seal required for this project.
- 2.7 Each length of conduit shall be stamped with the name or trademark of the manufacturer and shall bear the UL label.
- 2.8 All plastic conduit shall be rigid, schedule 40, heavy wall PVC. All PVC conduit shall be UL listed. Underground utility company conduits shall comply with local utility co. requirements.
- 2.9 Plastic conduit shall be stored on a flat surface, and protected from the direct rays of the sun.

2.10 Where branch circuit or communication raceways cannot be concealed in ceilings or walls and are required to be exposed in interior spaces, provide nonmetallic surface raceway system sized per the manufacturer capacity requirements. A full complement of nonmetallic fittings must be available and matching device boxes and cover plates must be provided. The color of the raceway system, components and boxes shall be (white). Where data networking cabling is to be installed, all raceway fittings shall meet Category 5 radius requirements. Where specific raceway types have been noted on the drawings they shall be as follows:

2.10.1 System 'SR'	Hubbell Wiremold Panduit Hellerman-Tyton	WALLTRAK 1 series ECLIPSE PN05series LD5 series TSR2 series
2.10.2 System 'SR2'	Hubbell Wiremold Panduit Hellerman-Tyton	WALTRAK 22 2300D Series D2P10 TSR3 series
2.10.3 System 'SR3'	Hubbell Wiremold Panduit Hellerman-Tyton	BASETRAK series 5400 - series 70 series MCR Infostream" series

Provide with offset boxes, inline boxes may only be used where specifically shown on the drawings.

PART 3 – FITTINGS

- 3.1 All metallic fittings, including those for EMT, flexible conduit, or malleable iron. Die cast fittings of any other material are not permitted.
- 3.2 Locknuts shall be steel or malleable iron with sharp clean-cut threads.
- 3.3 Entrance seals shall be 0.Z. type FSK or equivalent.
- 3.4 Bushings and locknuts: Where conduits enter boxes, panels, cabinets, etc., they shall be rigidly clamped to the box by locknuts on the outside, and a lock nut and plastic bushing on the inside of the box. All conduits shall enter the box squarely.
- 3.5 Furnish and install insulated bushings as per CEC article No. 300 - 4 (F) on all conduits. The use of insulated bushings does not exclude the use of double locknuts to fasten conduit to the box.
- 3.6 Transition from plastic to steel conduits shall be with PVC female threaded adaptors.
- 3.7 Couplings and connectors for rigid steel or IMC conduit must be threaded, or compression type (set screw fittings are not permitted).
- 3.8 Couplings and connectors for EMT shall be compression, watertight. Set screw connectors are not acceptable, except for systems below 120 volts.

- 3.9 MC or MC-PCS type armored cable shall be provided with listed clamp type die cast zinc set screw connectors. Anti-short bushings shall be provided at all cable ends.
- 3.10 Connectors for flexible metal conduit shall be steel or malleable iron with screw provided to clinch the conduit into the adapter body. For sizes up to ¾" a screw-in, "Jake type," fitting may be used.
- 3.11 Install approved expansion fittings, or liquid tight flex conduit with a minimum 6" slack for conduits passing through all expansion and seismic joints.

PART 4 - EXECUTION

- 4.1 All branch circuits shall be installed concealed in walls or above ceilings or in concrete floor slabs. PVC conduits installed in concrete floor slabs shall transition to PVC coated rigid steel where conduits penetrate above finished grade or finished floor.
- 4.2 Conduit sizes for various numbers and sizes of wire shall be as required by the CEC, but not smaller than ½" for power wiring and ¾" for communications and fire alarm systems unless otherwise noted. Conduit in slab or below grade shall be ¾" minimum trade size, unless otherwise identified.
- 4.3 Conduit size shall be such that the required number and sizes of wires can be easily pulled in and the Contractor shall be responsible for the selection of the conduit sizes to facilitate the ease of pulling. Conduit sizes shown on the drawings are minimum sizes in accordance with appropriate tables in the CEC. If because of bends or elbows a larger conduit size is required, the Contractor shall so furnish without further cost to the Owner.
- 4.4 The Contractor shall be entirely responsible for the proper protection of this work from the other trades on the job. When conduit becomes bent or holes are punched through same, or outlets moved after being roughed-in, the Contractor shall replace same, without additional cost to the Owner.
- 4.5 Rigid steel conduit or IMC shall be used as follows:
 - 4.5.1 Exposed exterior locations.
 - 4.5.2 Exposed interior locations below eight feet above floor, except in electrical rooms and closets.
 - 4.5.3 In hazardous or classified areas as required by CEC.
- 4.6 EMT conduit shall be used for areas as follows:
 - 4.6.1 All interior communications, signal, and data networking systems.
 - 4.6.2 All interior power wiring systems where not required to be in rigid steel, IMC or flexible conduit.
- 4.7 Flexible conduit shall be used for areas as follows:
 - 4.7.1 To connect motors, transformers, and other equipment subjected to vibration or where specifically detailed on the drawings.

- 4.7.2 Flexible conduit shall not be used to replace EMT in other locations where the conduit will be exposed.
- 4.7.3 Flexible metal conduit shall be ferrous. Installation shall be such that considerable slack is realized. The conduit shall contain separate code sized grounding conductor.
- 4.7.4 Liquid tight flexible conduit shall be used in conformance with CEC in lengths not to exceed 4'. For equipment connections, route the conduit at 90 degrees to the adjacent path for point of connection. The conduit shall contain separate code sized grounding conductor. Use liquid tight flexible conduit for all equipment connections exposed in possible wet, corrosive or oil contaminated areas, e.g., shops and outside areas.
- 4.8 MC armored cable may be used as follows:
 - 4.8.1 All branch circuit wiring for lighting and power circuits where permitted and installed in compliance with UL 1569 and CEC 330.
- 4.9 MC-PCS luminary armored cable may be used as follows:
 - 4.9.1 All Lighting branch circuit wiring for lighting circuits where permitted and installed in compliance with UL 1569 and CEC 300-22(c), 330. This cable permits conductors of control circuits to be placed in a cable with lighting power circuits or class 1 circuits.
 - 4.9.2 It shall not be considered an acceptable option to install lighting control class 1 circuits as an open wire installation.
- 4.10 MC and MC-PCS armored cable shall **not** be used for the following areas:
 - 4.10.1 Any exterior, underground or buried in concrete circuits.
 - 4.10.2 Any circuits feeding HVAC equipment or pumps or any circuit with 30 AMPs or greater overcurrent protection.
 - 4.10.3 Any exposed interior locations except in electrical, communication or mechanical equipment rooms.
 - 4.10.4 Any exposed interior damp/wet locations, kitchens, science classrooms, shop areas, or concealed in science classroom casework, unless provided with approved PVC jacket.
 - 4.10.5 Any hazardous rated area.
- 4.11 Plastic conduit shall be used for all exterior underground, in slab, and below slab on grade conduit installations. Install bell ends at all conduit terminations in manholes and pull boxes. Where plastic conduit transitions from below grade to above grade, no plastic conduit shall extend above finished exterior grade, or above interior finished floor level.

- 4.12 Plastic conduit joints shall be made up in accordance with the manufacturer's recommendations for the particular conduit and coupling selected. Conduit joint couplings shall be made watertight. Plastic conduit joints shall be made up by brushing a plastic solvent cement on the inside of a plastic fitting and on the outside of the conduit ends. The conduit and fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly.
- 4.13 All underground conduit depths shall be as detailed on the drawings or a minimum of 30" below finished grade (when not specifically detailed otherwise), for all exterior underground conduits. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.
- 4.14 All underground conduits for power systems (600v and higher), shall be concrete encased and a minimum of 48" below grade or as detailed on the drawings. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.
- 4.15 Conduit shall be continuous from outlet to outlet, cabinet or junction box, and shall be so arranged that wire may be pulled in with the minimum practical number of junction boxes.
- 4.16 All conduits shall be concealed wherever possible. All conduit runs may be exposed in mechanical equipment rooms, electrical equipment rooms, electrical closets, and in existing or unfinished spaces. No conduit shall be run exposed in finished areas without the specific approval of the Architect.
- 4.17 All raceways which are not buried or embedded in concrete shall be supported by straps, clamps, or hangers to provide a rigid installation. Exposed conduit shall be run in straight lines at right angles to or parallel with walls, beams, or columns. In no case shall conduit be supported or fastened to other pipes or installed to prevent the ready removal of other trades piping. Wire shall not be used to support conduit.
- 4.18 It shall be the responsibility of the Contractor to consult the other trades before installing conduit and boxes. Any conflict between the location of conduit and boxes, piping, duct work, or structural steel supports, shall be adjusted before installation. In general, large pipe mains, waste, drain, and steam lines shall be given priority.
- 4.19 Conduits above lay-in grid type ceilings shall be installed in such a manner that they do not interfere with the "lift-out" feature of the ceiling system. Conduit runs shall be installed to maintain the following minimum spacing wherever practical.
- 4.19.1 Water and waste piping not less than 3".
- 4.19.2 Steam and steam condensate lines not less than 12".
- 4.19.3 Radiation and reheat lines not less than 6".
- 4.20 Provide all necessary sleeves and chases required where conduits pass through floors or walls as part of the work of this section. Core drilling will only be permitted where approved by the Architect.
- 4.21 All empty conduits and surface mounted raceways shall be provided with a ¼" polypropylene plastic pull cord and threaded plastic or metal plugs over the ends.

Fasten plastic "Dymo" tape label to exposed spare conduit to identify "power" or "communication" system, and to where it goes.

- 4.22 The ends of all conduits shall be securely plugged, and all boxes temporarily covered to prevent foreign material from entering the conduits during construction. All conduit shall be thoroughly swabbed out with a dry swab to remove moisture and debris before conductors are drawn into place.
- 4.23 Bending: Changes in direction shall be made by bends in the conduit. These shall be made smooth and even without flattening the pipe or flaking the finish. Bends shall be of as long a radius as possible, and in no case smaller than CEC requirements.
- 4.23.1 For power conduits for conductors (600v and below), provide minimum 36" radius (vertical) and 72" radius (horizontal) bends.
- 4.23.2 For power conduits for conductors (greater than 600v), provide minimum 72" radius (vertical) and 72" radius (horizontal) bends.
- 4.24 Supports: Conduit shall be supported at intervals as required by the California Electrical Code. Where conduits are run individually, they shall be supported by approved conduit straps or beam clamps. Straps shall be secured by means of toggle bolts on hollow masonry, machine screws or bolts on metal surfaces, and wood screws on wood construction. **[No perforated straps or wire hangers of any kind will be permitted. Where individual conduits are routed, or above ceilings, they shall be supported by hanger rods and hangers.]** Conduits installed exposed in damp locations shall be provided with clamp backs under each conduit clamp, to prevent accumulation of moisture around the conduits.
- 4.25 Where a number of conduits are to be run exposed and parallel, one with another, they shall be grouped and supported by trapeze hangers. Hanger rods shall be fastened to structural steel members with suitable beam clamps or to concrete inserts set flush with surface. A reinforced rod shall be installed through the opening provided in the concrete inserts. Beam clamps shall be suitable for structural members and conditions. Rods shall be galvanized steel 3/8" diameter minimum. Each conduit shall be clamped to the trapeze hanger with conduit clamps.
- 4.26 All concrete inserts and pipe clamps shall be galvanized. All steel bolts, nuts, washers, and screws shall be galvanized, or cadmium plated. Individual hangers, trapeze hangers and rods shall be prime-coated.
- 4.27 Openings through fire rated floors/walls and/or smoke walls through which conduits pass shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. Sleeves shall be provided for power or communication system cables which are not installed in conduits and shall be sealed inside and out to comply with manufacturers UL system design details. Where multiple conduits and/or cable tray systems pass thru fire-rated walls at one location, the Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.

- 4.28 Provide cap or other sealing type fitting on all spare conduits. Conduits stubbed into buildings from underground where cable only extends to equipment, the conduit/cable end shall be sealed to prevent moisture from entering the room or space.
- 4.29 All conduits which are part of a paralleled feeder or branch circuit shall be installed underground.
- 4.30 All conduits which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
 - 4.30.1 The Contractor shall coordinate all conduit requirements with each system supplier prior to bid to determine special conduit system requirements.
 - 4.30.2 The Contractor shall provide a pull rope in all conduits for these systems.
 - 4.30.3 The Contractor shall provide conduit sleeves for all open cable installations thru rated walls or block walls. Provide conduit from each building main termination cabinet or backboard to the nearest accessible ceiling for access into all electrical or communications rooms.
- 4.31 In addition to the above requirements, the following requirements shall apply to all data networking conduits:
 - 4.31.1 Flexible metal conduit may only be used where required at building seismic and/or expansion joints.
 - 4.31.2 All underground conduits shall be provided with minimum 24" radius elbows (vertical) and 60" (horizontal).
 - 4.31.3 No length of conduit above grade shall be installed to exceed 150 feet between pull boxes, or points of connection, unless where specifically detailed on the drawings.
 - 4.31.4 No length of conduit shall be installed to exceed two 90-degree bends between pull boxes, or points of connection, unless where specifically detailed on the drawings.
- 4.32 Where surface raceways are installed in interior spaces, the Contractor shall take care to route in straight lines at right angles to or parallel with walls, beams, or columns. All raceways and device boxes shall be securely screwed to the finish surface with zinc screw "Auger" anchors Stk #ZSA1K by Gray Bar Electric or equal. Tape adhesive application will not be permitted.
- 4.33 The Contractor who installs surface raceway systems shall provide and install complete with wire retention clips, one for every (8) vertical feet or (5) horizontal feet or portion thereof. This Contractor shall also provide each raceway channel with pull strings.
- 4.34 It shall be the responsibility of the Contractor installing the raceway to coordinate the installation of raceway device plates and inserts with the communications or data contractors.

- 4.35 MC or MC-PCS cable shall be cut using a specific metallic sheath armor stripping tool. The use of hacksaws, dikes or any other tools not specifically designed to remove the armor sheath will not be permitted.
- 4.36 MC or MC-PCS cables installed in attic spaces or above lay-in ceilings shall be installed to be protected from physical damage. The cable shall be mounted along the sides or bottom of joists, rafters or studs.
- 4.37 Support wires used for supporting ceilings, lighting fixtures or other equipment items shall **not** be used to support MC or MC-PCS cables. Conduits, duct work, piping or any other equipment shall not be used to support or mount MC cables.
- 4.38 MC or MC-PCS cable supports, fasteners and clips shall be designed specifically for use with MC cables. Standard conduit supports, fasteners and clips, nails or other items are not permitted for installing MC cables.

END OF SECTION

SECTION 26 05 34
OUTLET AND JUNCTION BOXES

PART 1 – GENERAL

- 1.1 Furnish and install electrical wiring boxes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Boxes shall be as manufactured by Steel City, Appleton, Raco, or approved equal.
- 2.2 All boxes must conform to the provisions of Article 370 of the CEC. All boxes shall be of the proper size to accommodate the quantity of conductors enclosed in the box. Minimum box size shall be 4" square x 1-½" deep.
- 2.3 Boxes generally shall be hot dipped galvanized steel with knockouts. Boxes on exterior surfaces or in damp locations shall be corrosion resistant, cast ferrous and shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Boxes shall be Appleton Type FS, Crouse-Hinds, or the approved equal. Conduit bodies shall be corrosion resistant, cast malleable iron. Conduit bodies shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Conduit bodies shall be Appleton Unilets, Crouse-Hinds, or the approved equal. Where recessed, boxes shall have square cut corners.
- 2.4 Deep boxes shall be used in wall covered by wainscot or paneling and in walls or glazed tile, brick, or other masonry which will not be covered with plaster. Through the wall type boxes shall not be used unless specifically called for. All boxes shall be nongangable. Boxes in concrete shall be of a type to allow the placing of conduit without displacing the reinforcing bars. All lighting fixture outlet boxes shall be equipped with the proper fittings to support and attach a light fixture.
- 2.5 All light, switch, receptacle, fire alarm devices and similar outlets shall be provided with approved boxes, suitable for their function. Back boxes shall be furnished and installed as required for the equipment and/or systems under this contract.

- 2.6 Pull and junction boxes shall be code gauge boxes with screw covers. Boxes shall be rigid under torsional and deflecting forces and shall be provided with angle from framing where required. Boxes shall be 4" square with a blank cover in unfinished areas and with a plaster ring and blank cover in finished areas. Covers for flush mounted oversize boxes shall extend $\frac{3}{4}$ " past boxes all around. Covers for 4" square boxes shall extend $\frac{1}{4}$ " past box all around.
- 2.7 All terminal cabinets and junction boxes or equipment back boxes which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
- 2.7.1 The Division 26 Contractor shall coordinate all box requirements with each system supplier prior to bid to determine special cabinet or back box requirements. The Contractor shall also provide stainless steel blank cover plates for all low voltage systems installed for future equipment.
- 2.7.2 The Contractor shall provide all plywood backboards indicated on walls or inside equipment enclosures. All backboards shall be a minimum of $\frac{3}{4}$ " thick fire rated type plywood.
- 2.7.3 The Contractor shall coordinate exact rough in locations and requirements with each system supplier.
- 2.8 In addition to the above requirements, boxes for data networking wiring and equipment shall comply with the following:
- 2.8.1 All boxes shall be a minimum of 4-11/16" square x 2-1/8" deep.
- 2.8.2 Where pull boxes are required on individual conduits 1-1/4" or smaller, provide 4-11/16" square x 2-1/8" deep boxes. Where pull boxes are required on conduits larger than 1-1/4" for straight pull through, provide eight times the conduit trade size for box length. Where pull boxes are required on conduits larger than 1-1/4" for an angle or a U-pull through installation, provide a minimum distance of six times the conduit trade size between the entering and exiting conduit run for each cable.
- 2.9 Recessed boxes installed in fire rated floors/walls and /or smoke walls shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. The Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.

PART 3 – EXECUTION

- 3.1 Boxes shall be installed where required to pull cable or wire, but in finished areas only by approval of the Architect. Boxes shall be rigidly attached to the structure, independent of any conduit support. Boxes shall have their covers accessible. Covers shall be fastened to boxes with machine screws to ensure continuous contact all around. Covers for surface mounted boxes shall line up evenly with the edges of the boxes.

- 3.2 Outlets are only approximately located on the plans and great care must be used in the actual location of the outlets by consulting the various detailed drawings and specifications. Outlets shall be flush with finished wall or ceiling, boxes installed symmetrically on such trim or fixture. Refer to drawings for location and orientation of all outlet boxes.
- 3.3 Furnish and install all plaster rings as may be required. Plaster rings shall be installed on all boxes where the boxes are recessed. Plaster rings shall be of a depth to reach the finished surface. Where required, extension rings shall be installed so that the plaster ring is flush with the finished surface.
- 3.4 All cabinets and boxes shall be secured by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard precast inserts on concrete or solid masonry; machine screws or bolts on metal surfaces and wood screws on wood construction. All wall and ceiling mounted outlet boxes shall be supported by bar supports extending from the studs or channels on either side of the box. Boxes mounted on drywall or plaster shall be secured to wall studs or adequate internal structure.
- 3.5 Boxes with unused punched-out openings shall have the openings filled with factory-made knockout seals.
- 3.6 Where standby power and normal power are to be located in the same outlet box or 480V in a switch box, install partition barriers to separate the various systems.
- 3.7 All device boxes and junction boxes for fire alarm system shall be painted red and shall be 4-11/16" square by 2-1/8" deep. No exceptions.

END OF SECTION

SECTION 26 05 43

UNDERGROUND PULL BOXES AND MANHOLES

PART 1 – GENERAL

- 1.1 Furnish and install electrical underground pullboxes and manholes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 The concrete for pull boxes and manholes shall be class 5500 psi or as noted on the drawings. All pullboxes and manholes and covers located in parking lots, driveways, roads, or any other driveable areas shall be traffic rated.
- 2.2 Each manhole shall be provided with a fiberglass ladder and ground rod. Ground rods shall be copper or a copper-clad steel 3/4" diameter by 10-feet long. All non-current carrying metallic components shall be grounded to the ground rods with minimum #6 copper wire.
- 2.3 All underground pullboxes shall be provided with steel bolt down type covers. Bolts shall be bronze or brass. All communication or signal system pullboxes shall be sized to comply with CEC Article 370 unless where other sizes are specifically noted on the drawings.
- 2.4 All underground pullbox and manhole covers shall be provided with either "electrical" or "telephone" or "fire alarm" markings. The telephone marking shall be used to identify telephone, T.V., clock or any other types of communication systems.
- 2.5 All power and communication systems shall be provided with separate pullboxes or manholes. Fire alarm circuits shall also be provided with separate pullboxes from any other type of communication systems.

PART 3 – INSTALLATION

- 3.1 Shoring of the excavation shall be in accordance with all federal, state and local regulations.

- 3.2 Provide sealing material for the joints between sections per manufacturer's instructions.
- 3.3 The contractor shall make the top and access assembly or lid flush with surrounding areas where installed in driveable or normal walking areas.

END OF SECTION

SECTION 26 24 16

PANEL BOARDS

PART 1 – GENERAL

- 1.1 Furnish and install branch circuit panel boards as specified herein and as indicated on the drawings. Submit manufacturers' data on all items.
- 1.2 Submit manufacturers' data on all panel boards and components including:
 - 1.2.1 Enclosures and covers
 - 1.2.2 Breakers
 - 1.2.3 Surge Protective Device (SPD) equipment
 - 1.2.4 Incident energy level calculations
 - 1.2.5 Common submittal mistakes which will result in the submittals being rejected:
 - 1.2.5.1 Not arranging the circuit breakers in panels to match the orientations indicated on the drawings. In other words, if a 30-amp breaker is shown on the drawing in Space #2, this must be the location it appears on the submittal schedule. Standard factory arrangements will not be accepted.
 - 1.2.5.2 Not including all items listed in the above itemized description.
 - 1.2.5.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.2.5.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.2.5.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 The interrupting rating of circuit breakers shall be 10,000 amps for the 120/208 system and 14,000 amps for 277/480 volt systems. Refer to drawings for higher interrupting rating requirements. All components and equipment enclosures shall be manufactured by the same manufacturer. Circuit breakers shall be permitted to be series rated to limit the available fault current to no more than the above ratings.
- 2.2 All panels shall be fully bussed. Recessed panel enclosures shall be a maximum of 20" wide and 5-3/4" deep for all panels 600 amp rated and less.

- 2.3 All busses shall be tin-plated aluminum and shall be located in the rear of the panelboard cabinet. Individual circuit breakers shall be bolt on type and removable from the cabinet without disturbing the bussing in any way. All panel boards shall contain ground busses.
- 2.4 Panel covers shall be door in door style, with one lock. Door lock shall allow access to breakers only. Access to wireways without removal of cover shall be permitted by (non-removable) screws behind the locked door. Panel cover shall be provided with full length piano hinge. All locks for all panels provided in this project shall be keyed alike.
- 2.5 Each panel shall have a two-column circuit index card set under glass or glass equivalent on the inside of the door. Each circuit shall be identified as to use and room or area. Areas shall be designated by room numbers. Room numbers shown on the drawings may change and contractor shall verify final room numbers with the architect prior to project completion.
- 2.6 Tandem mounted or wafer type breakers are not acceptable.
- 2.7 Multiple breakers shall have one common trip handle or be internally connected. Handle ties are not acceptable.
- 2.8 Breaker arrangements shown in the drawings shall be maintained. The circuit breakers in panels must match the orientations indicated on the drawings. In other words, if a 30 amp breaker is shown on the drawing in Space #2, this must be the location it appears on the submittal schedule. Standard factory arrangements will not be accepted.
- 2.9 Where conductor sizes exceed the standard breaker lug wire range, or where multiple conductors per phase are required, the panelboard manufacturer shall provide the breaker with suitable lugs for terminating the specified conductors.
- 2.10 Acceptable manufacturers are Square D, Eaton, Siemens or General Electric.
- 2.11 Equipment manufactured by any other manufacturers not specifically listed in Section 2.10 are not considered equal or approved for use on this project.

Surge Protective Device (SPD)

- 2.12 Surge Protective Device (SPD) panelboards, shall be provided with an integrated circuit breaker panelboard and parallel connected suppression / filter system in a single enclosure. The SPD panelboard shall meet the following parameters: IEEE C62.41.1, IEEE C62.41.2, IEEE C62.45, UL 1283 and the UL 1449, Third Edition, effective September 29, 2009.
- 2.13 The panelboard shall be UL 67 Listed, and the SPD shall be UL 1449 labeled as Type 1 or Type 2 or as Type 4 intended for Type 1 or Type 2 applications. SPD shall be factory installed integral to the panel board.
- 2.14 The SPD panelboard shall be top or bottom feed according to requirements. A circuit directory shall be located inside the door.
- 2.15 SPD shall meet or exceed the following criteria:

2.15.1 For standard areas supply SPD having 100kA per phase surge current capacity. For mountain and desert areas (areas with over 5 lightning strikes per year), SPD shall have a per phase surge current capacity of 200kA.

2.15.2 UL 1449 – Third Edition Revision; effective September 29, 2009, Voltage Protection Ratings shall not exceed the following:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>	<u>L-L</u>	<u>MCOV</u>
208Y/120	700V	700V	700V	1200V	150V
480Y/277	1200V	1200V	1200V	2000V	320V

2.15.3 SPD shall be UL labeled with 100kA Short Circuit Current Rating (SCCR).

2.16 UL 1449 - Third Edition Revision; effective September 29, 2009, Voltage Protection Ratings shall not exceed the following:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>	<u>L-L</u>	<u>MCOV</u>
208Y/120	700V	700V	700V	1200V	150V
480Y/277	1200V	1200V	1200V	2000V	320V

2.17 SPD shall be UL labeled with a minimum 100kVA short circuit rated (SCCR).

2.18 UL 1449 Listed Maximum Continuous Operating Voltage (MCOV) (verifiable at UL.com):

<u>System Voltage</u>	<u>Allowable System Voltage Fluctuation (%)</u>	<u>MCOV</u>
208Y/120	25%	150V
480Y/277	15%	320V

2.19 SPD shall incorporate a UL 1283 listed EMI/RFI filter with minimum attenuation of - 50dB at 100 kHz. No filtering is required for a 100kA SPD.

2.20 Suppression components shall be heavy duty 'large block' MOVs, each exceeding 30mm diameter.

2.21 Type 4 SPD shall include a serviceable, replaceable module.

2.22 SPD shall be equipped with the following diagnostics:

2.22.1 Visual LED diagnostics including a minimum of one green LED indicator per phase, and one red service LED.

2.22.2 No other test equipment shall be required for SPD monitoring or testing before or after installation.

2.23 SPD shall have a response time no greater than 1/2 nanosecond

2.24 SPD shall have a 10-year warranty

2.25 The SPD panelboard shall have removable interior

2.26 The SPD panelboard main bus shall be aluminum and rated for the load current required

2.27 The SPD panelboard shall include a 200% rated neutral assembly with copper neutral bus

2.28 The unit shall be provided with a safety ground bus

(SPD) Quality Assurance

2.29 Manufacturer Qualifications: Engage a firm with at least 5 years experience in manufacturing transient voltage surge suppressors.

2.30 Manufacturer shall be ISO 9001 or 9002 certified.

2.31 The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of ten (10) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

2.32 The SPD shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

PART 3 – EXECUTION

3.1 Painting of panelboard covers in finished areas shall be done by the general contractor.

3.2 Provide a spare 3/4" conduit stubbed to an accessible area for each of every three (3) spares or spaces provided in recessed panel boards.

3.3 All lugs shall be torque tested in the presence of the inspector of record.

Arc Flash and Shock Hazard

3.4 The Contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.

3.4.1 All studies shall be performed by "Emerson Electric" (858) 695-9551, MTA (858) 472-0193, or Terra Power Solutions (858) 380-8170. Studies performed by manufactures or other engineering or testing companies must submit qualifications for approval by Johnson Consulting Engineers, 7 days prior to bid for this project.

3.5 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16 Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.

3.6 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department

3.7 The design goal is to minimize the incident energy to which a maintenance employee may be exposed.

END OF SECTION

SECTION 26 27 26

SWITCHES AND RECEPTACLES

PART 1 – GENERAL

- 1.1 Furnish and install all wiring devices as shown on drawings and as herein specified. Unless otherwise noted, device and plate numbers shown are Hubbell and shall be considered the minimum standard acceptable. Other acceptable manufacturers are Pass and Seymour, Leviton, General Electric and Bryant.
- 1.2 Submit manufacturers' data on all items.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not correctly indicating ampacity rating of proposed devices.
 - 1.3.2 Not including all items listed in the above itemized description.
 - 1.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 All switches shall be of the quiet mechanical type, Specification Grade, 20-amp, 120/277 volt AC as follows:

	<u>HUBBELL</u>	<u>LEVITON</u>	<u>PASS & SEYMOUR</u>
Single Pole	CS120	CS1202	CS20AC1
Two Pole	CS1222	CS2202	CSB20AC2
Three-way	CS320	CS3202	CS20AC3
Key Switch	HBL1221L	1221-2L	PS20AC1-L

- 2.2 All switches shall have the "on" and the "off" position indicated on the handle. If switches of higher ampere ratings are required, they shall be of similar type and quality as those shown above. Groups of switches shown at one location shall be installed under a single plate up to a maximum of six where more than six switches are shown coordinate arrangement with the Architect.
- 2.3 Dimmer switches for incandescent lamp loads shall be square-law type, slide control dimmer with OFF position, Lutron or Hubbell "Nova-T" Series NT-600 (0-500 watt load), NT-1000 (501-900 watt load), NT-1500 (901-1500 watt load), or equal (no known equal).
- 2.4 All convenience receptacles and special outlets throughout shall be grounding type. Convenience receptacles shall be side wired, parallel slot, two pole, three wire, 20 amp as follows:

	<u>HUBBELL</u>	<u>LEVITON</u>	<u>PASS & SEYMOUR</u>
Duplex	5352	5362	PS5362
GFCI	GFR5362	7899	2097
Isolated Ground	IG5362	5362IG	IG6300
Tamper Proof		8300SG	TR63H

- 2.5 All safety or tamper proof receptacles shall have no exposed external current carrying metal parts and shall have integral wiring leads suitable for two or three wire installations.
- 2.6 Special receptacles shall be as noted on the drawings.
- 2.7 Weatherproof plates shall be designed to meet CEC Article 410-57, wet location listed with cover "open." Where weatherproof receptacles have been identified to be provided with locking covers, the cover shall be as manufactured by Pass & Seymour #4600-8 or Cole Lighting 310 Series. Rough-in requirements vary between manufacturers. Contractor to field verify requirements prior to installation.
- 2.8 All plates throughout shall be stainless steel. Where wiring devices are installed in concrete block walls, provide oversized 3-1/2" x 5" cover plates.
- 2.9 All devices shall be white unless otherwise noted or a special purpose outlet.
- 2.10 Unless where specifically detailed on the drawings, floor boxes shall be PVC suitable for concrete poured floors of minimum 3-1/2" depth, with a modular design to gang two or three sections together.
 - 2.10.1 Carlon #E976 series or approved equal
 - 2.10.2 Provide brass cover with brass carpet flange unless otherwise detailed.

PART 3 – EXECUTION

- 3.1 Switches for room lighting shall be located no more than 12" center line from door jamb at plus 48" center line above finished floor or +46" to top of devices where located over casework, reference CBC Figure 11B-5D.
- 3.2 All receptacles shall be mounted at plus 18" to center line above finished floor unless noted or shown otherwise. All receptacles shall be installed with the ground pin up, at the top of the receptacle to comply with IEEE 602-1986.
- 3.3 Furnish and install wall plates for all wiring devices, and outlet boxes, including special outlets, sound, communication, signal, and telephone outlets, etc. as required. All cover plates shall be appropriate for type of device.

END OF SECTION

SECTION 26 28 16

DISCONNECTS

PART 1 – GENERAL

- 1.1 Furnish and install all disconnect switches as shown on the drawings and as required by the CEC.
- 1.2 Submit manufacturers' data for all disconnects and fuses.
 - 1.2.1 Disconnects
 - 1.2.2 Fuses
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Acceptable manufacturers shall be Square D, Cutler Hammer, Siemens or General Electric.
- 2.2 Equipment manufactured by any other manufacturers not specifically listed in Section 2.1 are not considered equal, or approved for use on this project.
- 2.3 All switches shall be heavy-duty type, externally operated, quick-make, quick-break, rated 600 volts or 240 volts as required, with the number of poles and ampacity as noted. All switches for motors shall be HP rated. Switches shall have NEMA-Type 1 enclosures, except switches located where exposed to outdoor conditions shall have NEMA Type 3R enclosure. Switches generally shall be fused except where noted to be non-fused on the drawings.
- 2.4 Where fuses are indicated, fuses shall be Bussman or Littlefuse (no known equal). Fuses shall be current limiting type with time delay characteristics to suit the equipment served.

PART 3 – EXECUTION

- 3.1 Mount all switches to structure or U-channel support. U-channel supports shall be cleaned and painted to prevent rust.
- 3.2 Switches shall be accessible with proper clearances in front per CEC 110-16.
- 3.3 All lugs shall be torque tested in the presence of the inspector of record.
- 3.4 Arc Flash and Shock Hazard
 - 3.4.1 The contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.
 - 3.4.2 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16. Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.
 - 3.4.3 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department.
 - 3.4.4 The design goal is to minimize the incident energy to which a maintenance employee may be exposed and in no case more than 8 cal./cm².

END OF SECTION

SECTION 26 90 90

TESTING

PART 1 – GENERAL

- 1.1 Upon completion of the electrical work, the entire installation shall be tested by the Contractor, and demonstrated to be operating satisfactorily to the Architect, Engineer, Inspector and Owner.
- 1.2 All testing and corrections shall be made prior to demonstration of operation to the Architect, Engineer, Inspector and Owner.
- 1.3 In addition to the demonstration of operation, the Contractor is also required to review the content and quality of instructions provided on items demonstrated with the Architect, Engineer, Inspector and Owner.

PART 2 – EXECUTION

- 2.1 Wiring shall be tested for continuity, short circuits and/or accidental grounds. All systems shall be entirely free from “grounds,” “short circuits,” and any or all defects.
- 2.2 Motors shall be operating in proper rotations, and control devices functioning properly. Check all motor controllers to determine that properly sized overload devices are installed, and all other electrical equipment for proper operation.
- 2.3 Tests and adjustments shall be made prior to acceptance of the electrical installation by the Architect, and a certificate of inspection and acceptance of the electrical installation by local inspection authorities shall be provided.
- 2.4 All equipment or wiring provided which tests prove to be defective or operating improperly shall be corrected or replaced promptly, at no additional cost to the Owner.
- 2.5 Test all motor and feeder circuits with a “megger” tester to determine that insulation values conform to Section 110-20, California Electrical Code (CED). Test reports must be submitted and approved by the engineer before final acceptance.
- 2.6 Test all grounding electrode connections to assure a resistance of no more than 10 ohms is achieved. Augment grounding until the ohmic value stated above is achieved. Provide certified test results to the Architect, Engineer and Inspector.

END OF SECTION

DIVISION 27
COMMUNICATIONS

SECTION 27 01 00

COMMUNICATIONS GENERAL PROVISIONS

ARTICLE 1 - SUMMARY

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a sub contract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

SECTION 2710 00

VOICE / DATA / IP INFRASTRUCTURE

PART 1 – GENERAL

- 1.1 Include all labor, equipment and materials necessary for providing a complete networking infrastructure system as described herein and/or as indicated on the drawings.
- 1.2 Related specification sections:
 - 1.2.1 Section 26 01 00 - General Provisions
 - 1.2.2 Section 26 05 19 - Conductors
 - 1.2.3 Section 26 05 33 - Conduit and Fittings
 - 1.2.4 Section 26 05 34 – Outlet and Junction Boxes
- 1.3 Approved minimum Product and Contractor Extended Warranty Certifications;
 - 1.3.1 All components shall be manufactured by one of approved manufacturers, the installing Contractor must have the accompanying certification from the product manufacturer(s) for installation of a “Extended Warranted System” as required by each manufacturer and as indicated in these specifications.
 - 1.3.1.1 Specified system warranties are to be established between the component and cable manufacturers and the District, warranties between the cable manufacturer only or installing Contractor and the District are not considered equal.
 - 1.3.1.2 Warranty shall be a full “Performance Warranty” installed by a “Certified Contractor” as specified by one of the approved manufacturer’s. A “Component Warranty” will not be considered equal. All components, labor, and “Performance Criteria” shall be warranted by one of the approved manufacturers;
- 1.4 Acceptable manufacturers are:
 - 1.4.1 **LEVITON / BERK-TEK**
 - 1.4.1.1 Installing Contractor must be LEVITON Network Solutions Premier certified to install this system.
 - 1.4.1.2 Warranty provision and training must be for the Leviton/Berk-Tek – Limited Lifetime Premium Performance Warranty program.
 - 1.4.2 **COMMSCOPE**
 - 1.4.2.1 Commscope’s Training and Warranty programs encompass the brand names known as AMP Netconnect, Systimax, ADC/Krone and Uniprise.
 - 1.4.2.2 Installing Contractor must be PartnerPro certified to install any of the systems under the Commscope Family of brand names. Alternate

certifications that apply as well are AMP ND&I Premier Certification for products installed with the AMP Netconnect brand name, ADC Krone TrueNet Premium for products installed with the ADC Krone brand name and Systimax Premier Certification for products installed with the Systimax brand name.

1.4.2.3 Warranty provision and training must be for the Commscope (AMP Netconnect, Uniprise and Systimax) – 25-Year Premium Performance Warranty program.

1.4.3 **ORTRONICS (Legrand)/Superior Essex**

1.4.3.1 Installing Contractor must be CIP-ESP or CIP certified to install this system.

1.4.3.2 Warranty provision and training must be for the nCompass – Lifetime Premium Performance program.

1.4.4 Warranty shall be to the District, for the period as defined by the Network Infrastructure System selected for installation, after District acceptance and sign-off of the completed system. The Contractor must provide documentation from one of the approved manufacturers, as indicated in Section 1.3, indicating their qualifications for installation of this system in compliance with the manufacturer's warranty period requirements as a warranted Contractor.

1.4.5 Equipment qualifications: It is the intent of these specifications that each bidder provides all hardware, components and installation services that are necessary to ensure a fully operational wiring system including warranties, as shown in the EIA/TIA Category-6 and the Augmented Category-6 (6A) guidelines.

1.4.6 All components, parts, infrastructure, patch cables, termination panels and cables must be classified by the manufacturer or manufacturers as a part of the "Extended Warranty" program. Contractor may not mix in components from other certified programs or materials that are not considered part of the "Lifetime" warranty.

1.4.7 Systems or components as manufactured by any other manufacturer which, are not specifically listed in 1.3, are **not** approved for use on this project.

1.5 **Installing Contractor qualifications:** Firms and their personnel must be regularly engaged in the installation of data networking cabling and equipment for systems of similar type and scope. The Contractor must have a full-service office able to respond to emergency callouts during the warranty period. The Contractor must also provide complete installation of all wiring and devices or equipment. **Subcontracts with Electrical Contractors or other warranted or non-warranted Contractors for supervised installation of any part of this system are not approved.**

1.5.1 Contractor shall have on staff a minimum of (1) LOCAL BICSI RCDD on staff as full-time employees.

1.5.2 The successful Contractor shall be a California licensed C7 or C10 Premise Wiring Contractor as defined in this specification.

- 1.5.3 All work shall be performed under the supervision of a company accredited and trained by the Manufacturer of the components and cable and such accreditation must be presented with the bid submittal. Contractor must be accredited a minimum of 180 days prior to bid submittal date. All personnel performing work on this project must have successfully completed the manufacturer's training courses to completely comply with the extended warranty requirements prior to performance of any work on this project. Accreditation will consist of individual employee certifications issued by the manufacturer or manufacturers.
- 1.5.4 All personnel engaged in the testing of premises fiber optic and copper UTP cable systems must have successfully completed the test equipment manufacturer's training courses. Certification of such training must be presented with the bid submittal. Cut sheets of the test equipment to be utilized shall be provided with the Phase I project material submittals.
- 1.5.5 If Contractor routes cables and/or associated pathways in another route than indicated on the drawings, they shall maintain all maximum cable installation distances as required by the manufacturer's distance limitations.
- 1.6 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all; labor; cabling; equipment; supplies; materials, and training. The Contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful Contractor must be factory trained on all aspects of Network Infrastructure Cabling System.
- 1.7 The drawings indicate a schematic routing of cables above ceilings. The Contractor shall field-verify the most appropriate routing of all above-ceiling cable prior to bid. Where cables penetrate through walls a conduit sleeve shall be provided. Where cables pass through fire rated walls, the conduit sleeve shall be sealed to maintain the rating of the wall assembly.
- 1.8 Unless otherwise noted in the project drawings or these specifications, the Division 26 Contractor shall provide the installation of all conduits, outlet and junction boxes, trenching and pull box installation.
- 1.9 The Contractor shall provide a licensed, qualified electrical Contractor for installation of all conduits, outlet and junction boxes, trenching and pull box installations.
- 1.10 General Submittal Requirements
 - 1.10.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:
 - 1.10.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:

- 1.10.1.2 Description and quantity of each product.
 - 1.10.1.3 Manufacturer's Name and Model Number.
 - 1.10.1.4 Manufacturer's Specification Sheet or Cut Sheet.
 - 1.10.1.5 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 271000 Item 2.1 or DWG E4.15/#1)
 - 1.10.1.6 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.
- 1.10.2 **Phase II Submittal** shall be provided within (20) working days after the approval of the Phase I submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following.
- 1.10.2.1 MDF and IDF equipment rack or cabinet elevations will be required to be provided including cable routing, grounding, support, UPS, network electronics, etc. and position of all components in the rack or cabinet.
 - 1.10.2.2 Provide labeling plan which identifies the proposed scheme for identifying all components including Racks, patch panels (fiber and copper), site distribution feed cables, horizontal station cables and site conduit systems (handholes, pullboxes, etc.).
 - 1.10.2.3 Provide shop drawings showing all end device locations, tap values, paging zones and amplifier sizing for each zone for analog speakers and horns, including devices connected to IP-Based zone controllers.
- 1.10.3 Common submittal mistakes which will result in submittals being rejected:
- 1.10.3.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.
 - 1.10.3.2 Not including all items listed in the above itemized description.
 - 1.10.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.
 - 1.10.3.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.
 - 1.10.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

- 1.10.4 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:
- 1.10.4.1 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e., E1.1, E2.1, E4.1 etc.).
 - 1.10.4.2 Identify the name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.
 - 1.10.4.3 Detail or Riser diagram sheets, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.
 - 1.10.4.4 Files will only be provided in the AutoCAD format in which they were created (i.e., version 2015 or version 2016). Files will not be made available in REVIT format.
 - 1.10.4.5 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.
- 1.11 Warranty: All components and installation, shall be warranted by the Contractor to the School District **for a period of 2-years** after District acceptance and sign-off of the completed system

PART 2 – RACKS AND CABINETS

- 2.1 Equipment racks have been detailed on the drawings and additional component information requirements have been described in the IDF products sections. The following is a list of approved manufacturers for each type of rack to be furnished. Alternate equipment manufacturers other than those indicated will not be reviewed or approved for use on this project.
- 2.1.1 **(Enclosed Swing Wall Mount)** shall be manufactured by Middle Atlantic SR Series or Tripp Lite SmartRack. Reference drawing details and specifications for complete requirements.

MDF Room Requirements

- 2.2 The Main Distribution Frame (MDF) Room shall be the central wiring and equipment location for the network infrastructure systems. The Contractor shall include the following items at this location.
- 2.2.1 Fiber Optic Feed Cable Patch Panels - Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements, including bulkheads in the fiber patch panel. Provide blank fillers for all used

portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel up to 144 strands. Additional strands shall be terminated in the largest size required to contain the remaining fibers.

2.2.1.1 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

2.2.1.2 All fiber cables shall be secured to the patch panel with the Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.

2.2.2 All fiber optic feed cables routed to the MDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the racks. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR. Maximum of (3) fiber feed cables per manager. Provide quantity of managers as required to manage all service loops.

Fiber Optic Patch Cords

- 2.3 Fiber optic patch cords shall be furnished and installed by the Contractor
- 2.4 All fiber optic patch cords furnished by the Contractor shall match the grade and glass of the fiber optic feed cable installed for the network infrastructure cabling system. The Contractor shall confirm with the District IT Department the type of connector required at the network equipment prior to ordering or installing the patch cords
- 2.5 Multimode Fiber Optic Patch Cords - Patch cords shall be duplex 50/125um, laser-optimized, OM4 (OM4+) grade multimode optical glass. Fiber optic patch cords shall be furnished with LC (SC) connectors at the network switch port end and LC (SC) connectors at the fiber optic patch panel end. Fiber patch cords shall be furnished with ceramic ferrules. All Multimode patch cords shall be Aqua (Lt. Blue) in color. Patch cords shall be 6-feet (2-meters) 3-feet (1 meter) in length
- 2.6 Single Mode Fiber Optic Patch Cords - Patch cords shall be duplex 8.3/125um, (OS2) grade single mode optical glass. Fiber optic patch cords shall be furnished with LC (SC) connectors at the network switch port end and LC (SC) connectors at the fiber optic patch panel end. All Single Mode patch cords shall be Yellow in color. Patch cords shall be 6-feet (2-meters) 3-feet (1 meter) in length
- 2.7 Each fiber optic feed cable from the MDF Room to the IDF location requires (1) duplex fiber optic patch cord for connection to the IDF switch (2) total duplex fiber patch cords for connections to the IDF network switch stack. Contractor shall furnish (1) (2) Multimode (1) (2) Single Mode fiber patch cord(s) for each fiber optic feed cable terminated in the MDF Room patch panels. Contractor shall be responsible for confirming the network switch connections with the District IT Director prior to ordering or installing the patch cords

Copper Patch Cords

- 2.8 Copper patch cords shall be furnished and installed by the Contractor
- 2.9 Provide Category-6 (Patch Panel End) patch cords with pre-molded boot, provide quantity equal to:
 - 2.9.1 Provide 100% of the total Category-6 cable ports provided on the patch panels.
 - 2.9.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (4) feet in length
- 2.10 Provide Category-6 (Workstation End) patch cords with pre-molded boot, provide quantity equal to:
 - 2.10.1 Provide 100% of the total Category-6 cable ports provided on the patch panels.
 - 2.10.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted.
 - 2.10.3 Patch cords installed at WAP (Wireless Access Point) locations IP Camera and IP Intercom locations shall be (2) feet in length.
- 2.11 Provide Augmented Category-6 (Patch Panel End) patch cords with pre-molded boot, provide quantity equal to:
 - 2.11.1 Provide 100% of the total Category-6A cable ports provided on the patch panels.
 - 2.11.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (4) feet in length
 - 2.11.3 Augmented Category-6 patch cords shall be differentiated from the Category-6 patch cords with a different color jacket
- 2.12 Provide Augmented Category-6 (Workstation End) patch cords with pre-molded boot, provide quantity equal to:
 - 2.12.1 Provide 100% of the total Category-6A cable drops provided on the patch panels
 - 2.12.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted
 - 2.12.3 Patch cords installed at WAP (Wireless Access Point) locations, IP Camera and IP Intercom locations shall be (2) feet in length
 - 2.12.4 Augmented Category-6 patch cords shall be differentiated from the Category-6 patch cords with a different color jacket
- 2.13 Requirements for all copper patch cords furnished:
 - 2.13.1 Color of patch cords shall be determined by the color codes shown in the drawing details

- 2.13.2 Patch cords shall be as manufactured by Leviton, Commscope, Panduit, Ortronics or Siemon based on the network infrastructure system furnished by the Contractor
- 2.13.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure
- 2.14 Provide all other items as detailed on the drawings.

IDF Location Requirements

- 2.15 The Intermediate Distribution Frame (IDF) Room shall be a secondary wiring and equipment location for the data networking system. The Contractor shall include the following items at this location The Intermediate Distribution Frame (IDF) Room shall be a secondary wiring and equipment location for the data networking system. The Contractor shall include the following items at this location The Intermediate Distribution Frame (IDF) Room shall be a secondary wiring and equipment location for the data networking system. The Contractor shall include the following items at this location.
- 2.16 Provide backboard 8'-0" high x 3/4" thick, with a minimum 48" width. Refer to the floorplans for the actual layout of the backboard coverage. Plywood mounting backboard shall be flame resistant, painted with fire resistant paint "white" or color to match the room finish. Contractor shall provide minimum one side finish grade plywood. Backboard shall be mounted with finish side out, regardless of location of fire rating stamp. Show proof of fire rating stamp to IOR or Inspector prior to installation.
- 2.17 Fiber Optic Feed Cable Patch Panels - Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel.
 - 2.17.1 Each IDF location shall be furnished with a minimum 24-Port patch panel, fully loaded with bulkheads. Type of connectors in the bulkheads shall be determined by the type of connectors used for termination of the fiber feed cables
 - 2.17.2 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length
 - 2.17.3 All fiber cables shall be secured to the patch panel with the Kevlar strength members at the manufacturer provided anchor point at the rear of the panel
- 2.18 Category-6 Modular Patch Panels (rack mounted) with RJ45 style connectors, for terminating all twisted pair cable from each Voice/Data/IP, or other devices, outlet served from this location. Provide 25% spare capacity for future wiring requirements. All patch panels shall be 24 or 48-ports maximum. Provide cable support bars at the rear of each patch panel all cables shall be secured to bars with velcro straps

- 2.19 Furnish and install equipment mounting racks as shown on project floor plans and details. The type of rack to be furnished is shown in the detail drawings. Furnish the following additional components and installation practices for the racks:
- 2.19.1 Provide (1) Middle Atlantic SR 40-28 SR Series Pivoting Wall Rack see plan detail for additional information.
 - 2.19.2 Provide all accessories required whether shown on the project drawings or within these specifications. The drawings and specifications shall be considered a single document.
 - 2.19.3 The racks shall be provided with structural seismic bracing using cable runway to the top of the rack, with the width of runway as shown on the MDF/IDF Room drawings and details.
 - 2.19.4 Universal 12" cable runway shall be as manufactured by APC or Middle Atlantic. The cable runway shall be furnished with the additional adapters, connectors, support components, bends and offsets and extensions as required to fit the room and layout as shown in the drawings. Cable runway shall be bonded together as shown in the detail drawings.
 - 2.19.5 Anchor the cable runway to the wall with the appropriate width angle bracket and bolts as manufactured by APC or Middle Atlantic.
 - 2.19.6 The cable runway shall also be attached to the top of the rack with the appropriate adapter panel. Cable runway shall be directly attached to the 4-Post racks with J-Hooks.
 - 2.19.7 Cable runway routed along walls, shall be offset from the wall a minimum of 6" and shall be supported with cantilevered wall mount brackets as shown in the detail drawings.
 - 2.19.8 The racks shall be structurally anchored to the floor with the anchors and bolts as shown in the detail drawings. Anchoring shall comply with all Local, State and National Codes.
 - 2.19.9 Contractor shall be responsible for providing all racks and accessories as shown in the details. The 4-Post racks shall be as manufactured by APC or approved equal by Middle Atlantic R4 Series.
 - 2.19.10 All cable runway, racks, accessories, supports and wire management shall be black in color. (Unless Otherwise Noted)
 - 2.19.11 All fiber optic feed cables routed to the IDF Locations shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the racks or stored in the back of the wall mounted cabinets. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR. Maximum of (3) fiber feed cables per manager. Provide quantity of managers as required to manage all service loops. Provide a 12" diameter service loop manager in the rear of wall mount IDF cabinets by Leviton #48900-IFR.

- 2.20 Each Wall Mounted IDF Cabinet shall be furnished with the following accessories:
- 2.20.1 Wall mounted IDF cabinets shall not be less than 45" in overall height unless specifically noted in the drawings.
 - 2.20.2 Provide horizontal wire managers between each patch panel or (1) manager per patch panel. Provide (1) spare manager per rack. Horizontal managers shall not be more than 1RU in height installed in the cabinet. Provide 1RMU height managers for each data patch panel in the cabinet by CPI Part # 30139-719 or approved equal..
 - 2.20.3 (1) Rack mounted surge arrest style power distribution unit per cabinet, 1 rack unit in height, APC Model # with (8) NEMA 5-15R rear outlets, and (1) front.
 - 2.20.4 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.
 - 2.20.5 Furnish grounding to each IDF Cabinet as shown in the detail drawings. Each cabinet shall be provided with a ground bus bar, grounding terminal block, #6 Ground wire from the cabinet to the busbar and a compression lug on the end of the ground wire at the busbar. Provide grounding components as manufactured by CPI #13622-010 ground bus bar, #40167-001 terminal block and #40162-901 compression lug or approved equal.

IDF UPS Requirements (OFCl)

- 2.21 UPS will be Owner Furnished Contractor Installed.
- 2.22 General UPS Requirements – The Contractor shall coordinate with the Division 26 Contractor to properly locate the power outlet connection for the UPS in the IDF Room or Cabinet. The location shown on the floor plans is diagrammatical and does not give the Division 26 Contractor an exact placement. In addition, all UPSs must be mounted with heavy duty mounting bracket kits. A UPS installed in a wall mounted IDF Cabinet must be furnished with a 2-Post kit that can support the full weight of the unit.
- 2.23 Final location for the UPS, within the equipment racks for IDF locations with multiple racks, must be verified by the District IT Director or District Construction Project Manager prior to the installation of the UPS or the electrical outlet for the UPS.

Fiber Optic Patch Cords

- 2.24 Fiber optic patch cords shall be furnished and installed by the Contractor.
- 2.25 All fiber optic patch cords furnished by the Contractor shall match the grade and glass of the fiber optic feed cable installed for the network infrastructure cabling system. The Contractor shall confirm with the District IT Department the type of connector required at the network equipment prior to ordering or installing the patch cords
- 2.26 Multimode Fiber Optic Patch Cords - Patch cords shall be duplex 50/125um, laser-optimized, OM4 (OM4+) grade multimode optical glass. Fiber optic patch cords shall be

- furnished with LC (SC) connectors at the network switch port end and LC (SC) connectors at the fiber optic patch panel end. Fiber patch cords shall be furnished with ceramic ferrules. All Multimode patch cords shall be Aqua (Lt. Blue) in color. Patch cords shall be 6-feet (2-meters) 3-feet (1 meter) in length.
- 2.27 Each fiber optic feed cable from the MDR Room to the IDF location requires (1) duplex fiber optic patch cord for connection to the IDF switch (2) total duplex fiber patch cords for connections to the IDF network switch stack. Contractor shall furnish (1) (2) Multimode (1) (2) Single Mode fiber patch cord(s) for each fiber optic feed cable terminated in the MDF Room patch panels. Contractor shall be responsible for confirming the network switch connections with the District IT Director prior to ordering or installing the patch cords

Copper Patch Cords

- 2.28 Copper patch cords shall be furnished and installed by the Contractor.
- 2.29 Provide Category-6 (Patch Panel End) patch cords with pre-molded boot, provide quantity equal to:
- 2.29.1 Provide 100% of the total Category-6 cable ports provided on the patch panels
- 2.29.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (4) feet in length
- 2.30 Provide Category-6 (Workstation End) patch cords with pre-molded boot, provide quantity equal to:
- 2.30.1 Provide 100% of the total Category-6 cable ports provided on the patch panels
- 2.30.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted
- 2.30.3 Patch cords installed at WAP (Wireless Access Point) locations IP Camera and IP Intercom locations shall be (2) feet in length
- 2.31 Provide Augmented Category-6 (Patch Panel End) patch cords with pre-molded boot, provide quantity equal to:
- 2.31.1 Provide 100% of the total Category-6A cable ports provided on the patch panels
- 2.31.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (4) feet in length
- 2.31.3 Augmented Category-6 patch cords shall be differentiated from the Category-6 patch cords with a different color jacket
- 2.32 Provide Augmented Category-6 (Workstation End) patch cords with pre-molded boot, provide quantity equal to:
- 2.32.1 Provide 100% of the total Category-6A cable drops provided on the patch panels

- 2.32.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted
- 2.32.3 Patch cords installed at WAP (Wireless Access Point) locations, IP Camera and IP Intercom locations shall be (2) feet in length
- 2.32.4 Augmented Category-6 patch cords shall be differentiated from the Category-6 patch cords with a different color jacket
- 2.33 Requirements for all copper patch cords furnished:
 - 2.33.1 Color of patch cords shall be determined by the color code shown in the detail drawings
 - 2.33.2 Patch cords shall be as manufactured by Leviton, Commscope, Panduit, Ortronics or Siemon based on the network infrastructure system furnished by the Contractor
 - 2.33.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure
 - 2.33.4 Provide all other items as detailed on the drawings.

Campus Indoor/Outdoor Fiber Optic Feed Cable

- 2.34 Provide one continuous fiber optic cable routed from the Main Distribution Frame fiber patch panel to the new Intermediate Distribution Frame fiber patch panel, and/or other locations as shown on the drawings
- 2.35 Outdoor Fiber Feed Cable Applications - Fiber optic cable shall be rated for indoor/outdoor riser rated applications. Construction shall consist of; all dielectric, tight buffer with central strength member, flame retardant PVC or PE jacket, rated OFNR, dry water-blocking compound only, and blank fillers as required. Central tube type fiber will not be considered equal.
- 2.36 Fiber optic feed cables for the data infrastructure must be installed as follows:
 - 2.36.1 Multimode Fiber Optic feed cable runs – Fiber optic feed cable containing only Multimode strands shall be installed as a single feed cable. Provide a 12-strand of Multimode fiber optic feed cable in a single jacket, as shown on the riser diagram, to the IDF locations.
 - 2.36.2 Feed cables shall be clearly defined and labeled for each system. Provide color coding designations with a different color marker for the multimode and/or single mode fiber feed terminations in the fiber patch panels.
- 2.37 Cable shall contain one or all types of fibers listed below:
 - 2.37.1 Provide Multimode 50/125-micron fiber optic glass, (minimum OM4+ laser-optimized grade, extended distance) for dual mode operation at 850 nm and 1300 nm wave lengths.

2.37.1.1 Maximum attenuation at 3.0dB/km @ 850nm and 1.0dB/km @ 1310nm. Minimum 1-gigabit Ethernet distance guarantee of 1110 meters @ 850nm and 600 meters @ 1300nm. Minimum 10-gigabit Ethernet distance guarantee of 550 meters @ 850nm/1300nm. Fiber shall be ISO-TIA OM4 plus rated.

- 2.37.2 All fibers shall be fully terminated and tested, unless otherwise noted in the drawings or in these specifications
- 2.37.3 Refer to drawings for cable types required. Refer to acceptable cables section for additional information and approved manufacturers.
- 2.38 Each fiber optic cable shall contain the quantity of strands of optical fibers as detailed on the drawings.
- 2.39 All fibers in a multi-fiber cable shall be fully operational within the required performance characteristics. If any individual fiber does not meet the minimum standards, the entire cable must be replaced, end to end, including connectors, without any additional expense to the customer.
- 2.40 Acceptable cables shall be:

Berk-Tek Multimode	—	GIGALITE 10-XB-OM4+
Berk-Tek Single Mode	—	Enhanced OS2 Single Mode -AB
Commscope Multimode	—	(All Brand Names) Systimax LazrSpeed 550 OM4
Commscope Single Mode	—	(All Brand Names) Systimax TeraSpeed OS2
Superior Essex Multimode	—	TeraFlex 10G-550-OM4+ (Type P)
Superior Essex Single Mode	—	TeraFlex G.657 Enhanced OS2 (Type K)
General Cable Multimode	—	Clear Curve OM4+ (Type BM)
General Cable Single Mode	—	SMF-28 Ultra Enhanced OS2 (Type Ax)
Siemon Multimode	—	XGLO 550 OM4 (Type T501)
Siemon Single Mode	—	XGLO Singlemode OS2 (Type E201)

Above glass types are an example of product names per manufacturer. Confirm requirements for indoor/outdoor, riser and plenum rated fiber cable with riser drawings and site plans. Part numbers for composite style cable will vary greatly. Confirm part numbers with manufacturer

Augmented Category-6 Station Cable

- 2.41 Contractor shall provide an Augmented Category-6 UTP cable to each Data, Voice, Wireless Access Point, IP Page, Audio-Visual Data Connection, IP Camera or any other locations as indicated on the drawings and specifications. Provide quantity of cables as indicated on the drawings at each location.
- 2.42 Provide one Augmented Category-6, 4-pair, unshielded twisted pair (UTP) cable from the nearest MDF or IDF location to each RJ45 data outlet port indicated on the drawings.

Dual port outlets will require two such cables. Four port outlets will require four cables. Refer to the drawing details for jacket color requirements for each type of connection. Color of cable jacket for each type of connection shall be determined by the drawing details. Confirm color of cable jackets prior to ordering with the District IT Director. Contractor shall be responsible for providing the correct jacket color per the drawings per District Standards

2.43 Unless otherwise shown in drawing details, the color of the Augmented Category 6 UTP cables shall be blue, shall be copper wire, individually insulated and color coded

2.44 The cables shall be UL or ETL rated and UL verified in compliance with Augmented Category-6 EIA/TIA standards. Approved cables for Network Infrastructure System:

Commscope (Systemax)	—	GigaSpeed X10D – 1091B
Commscope (AMP Netconnect)	—	TE640R
Commscope (Uniprise /Krone)	—	Ultra 10 10GN4
Superior Essex	—	10 Gain XP - #6H-246-xA
Berk-Tek)	—	LANMARK 10G2 – 10137700
(Part Number for different color jackets for Berk-Tek cables varies		
General Cable	—	GenSpeed 10,000 71338XX
Siemon	—	Z-Max 6A 9A6R4-E4-XX-R1A
(Siemon does not offer a non-shielded cabling product)		

2.45 On projects requiring plenum rated cabling, provide the plenum jacketed version of the type of cable shown in the specifications. Refer to the contract drawing for areas requiring plenum rated cabling.

2.46 Where data cables are indicated to run underground, Contractor shall use an Augmented Category-6 OSP-rated cable. Approved cables for Network Infrastructure System:

Commscope	—	Category-6A OSP – 1592A
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2.47 Superior Essex, General Cable and Siemon do not offer an OSP Rated Augmented Cat-6 product. Contractor shall provide the Commscope/Systemax OSP shielded cable for a Siemon or Leviton Network Infrastructure solution. Contractor shall provide shielded termination products for all drop locations and termination panels and shall ground all products per manufacturer's instructions and warranty requirements

2.48 Commscope Brand Names (Systemax, AMP NetConnect, Uniprise & Krone) - Cabling installed for Outside Plant applications is available in shielded type construction only for these structured cabling systems. Contractor shall provide shielded termination products for all drop locations and termination panels and shall ground all products per manufacturer's instructions and warranty requirements.

IDF to MDF Voice Feed Cables

2.49 Provide multi-pair UTP Category-5E cable from each IDF to the MDF, unless otherwise shown on the drawings. Cable must be 24 AWG, 22 AWG conductors will not be approved as an acceptable equal. Refer to the Riser Diagram for size of feed cables to be provided. Cables shall be 25-Pair to each of the IDF locations.

- 2.50 The outside plant cable shall have an aluminum shield, conductors surrounded by FLEXGEL III filling compound (or other waterblocking compound), and have a black polyethylene jacket
- 2.51 For voice feed cables, terminate all pairs on both ends of the cable on building entrance protectors on the termination blocks. Follow standard voice color codes for termination. Building entrance protectors shall be furnished with a ground wire to the local ground bus in the MDF/IDF Room.
- 2.52 Plug in Surge Protection Modules shall be provided for each pair terminated on the protector chassis. Protector module shall be solid state type unless otherwise noted:
 - 2.52.1 240VDC/300VDC solid state protector modules shall provide transient and power fault protection for standard telephone line applications. The modules shall be fast acting, self-resetting current limiters to protect against sneak current type faults. These modules shall be UL Listed with int30VDC/75VDC solid state.
 - 2.52.2 30VDC/75VDC solid state protector modules shall provide transient and power fault protection for digital and data line applications. The modules shall be fast acting, self-resetting current limiters to protect against sneak current type faults. These modules shall be UL Listed with integrated test points and Red in color
 - 2.52.3 In the event that protector modules are not called out in the drawings, Contractor shall include all costs in base bid to provide the 75v solid state modules w/sneak current protection. Confirm module color with District's Engineer prior to ordering. In all cases, Contractor is responsible to coordinate appropriate module with District prior to ordering material.
 - 2.52.4 Approved manufacturers shall include: Circa, Emerson and Marconi.
- 2.53 All voice feed cables will be tagged on the incoming cable with a typed permanent label with information as to its origin, house pair count, and cable destination. All termination blocks shall be labeled with type written labels that fit between the termination blocks (e.g., clear snap-on covers, adhesive labels and holders). Pairs shall be identified a minimum of every 5 pair on the block
- 2.54 Provide distribution rings for the termination blocks and entrance protectors mounted at the MDF and IDF locations
- 2.55 Ground and bond feed cables at one end of cable to aluminum shield with approved "bullet bond" type ground lug and #10 AWG green ground wire. Connect ground wire to closet ground buss bar
- 2.56 Acceptable manufacturers shall be: Superior Essex or equal, for outdoor riser cable applications
- 2.57 Data Contractor is responsible for providing the District with detailed feed cable documentation as well as identifying all of the physical cable in the MDF and IDF locations. Contractor shall have all installation, termination and documentation of voice feed cable completed, and released to the telephone equipment vendor, a minimum of three weeks prior to the cut-over date set by the District

- 2.58 Data Contractor is responsible for testing port connectivity from the punch blocks in the IDF closets to the main feed cable blocks in the MDF Room. Test all pairs for continuity and polarity. All testing must be completed a minimum of three weeks prior to the cut-over date set by the District.

Category-6 Outlets

- 2.59 Unshielded twisted pair Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration
- 2.60 Provide Category-6 inserts, wired for EIA 568B. Provide installation kits for all locations furnished with Category-6 UTP cabling
- 2.61 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering
- 2.62 Provide the following Category-6 UTP data connector per Network Infrastructure warranty requirements:
- 2.62.1 Leviton eXtreme Cat6+ Quick Port Series 61110-R
 - 2.62.2 Systimax (Commscope) GigaSpeed XL Series MGS400
 - 2.62.3 AMP NetConnect (Commscope) SL 110 Series 1-1375055
 - 2.62.4 Uniprise (Commscope) UNJ 600 Series UNJ600
 - 2.62.5 Ortronics Clarity 6 Tracjack Series OR-TJ600
 - 2.62.6 Panduit MiniCom TX6 Plus Series CJ688TG
 - 2.62.7 Siemon MAX-6 Series MX6-F
- 2.63 Unshielded twisted pair Augmented Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Augmented Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.
- 2.64 Provide unshielded Augmented Category-6 inserts, wired for EIA 568B. Provide unshielded installation kits for all locations furnished with Augmented Category-6 UTP cabling
- 2.65 For outlet locations cabled with OSP-rated Augmented Category-6 wire, provide shielded Augmented Category-6 inserts, wired for EIA 568B. Provide shielded installation kits for all locations furnished with OSP-rated Augmented Category-6 UTP cabling. Cable connections must be grounded at the patch panel location
- 2.66 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering

- 2.67 Provide the following unshielded Augmented Category-6 UTP data connector per Network Infrastructure warranty requirements:
- 2.67.1 Leviton Atlas-X1 Cat-6A Series 6AUJK-R
 - 2.67.2 Systimax (Commscope) GigaSpeed X10D Series MGS600
 - 2.67.3 AMP NetConnect (Commscope) AMP Twist SL Series 1-1933476
 - 2.67.4 Uniprise (Commscope) UNJ 600 Series UNJ600
 - 2.67.5 Ortronics Clarity 6 Tracjack Series OR-TJ600
 - 2.67.6 Panduit MiniCom TX6 Plus Series CJ688TG
 - 2.67.7 Siemon (No unshielded version for Cat-6A available)
- 2.68 Provide the following shielded Augmented Category-6 UTP data connector for OSP-rated cable ports per Network Infrastructure warranty requirements:
- 2.68.1 Leviton Atlas-X1 Cat-6A Shielded Series 6ASJK-R
 - 2.68.2 Systimax (Commscope) GigaSpeed X10D Shielded Series HGS620
 - 2.68.3 AMP NetConnect (Commscope) AMP Twist SL Shielded Series 2153000-1
 - 2.68.4 Uniprise (Commscope) Ultra 10® Shielded Series HFTP-J10G
 - 2.68.5 Ortronics Clarity 6A Tracjack Shielded Series OR-TJ6A
 - 2.68.6 Panduit MiniCom TX6A 10Gig Shielded Series CJ6X88TG
 - 2.68.7 Siemon ZMAX-6A Shielded Series Z6A-S

Outlet Faceplates

- 2.69 Provide a two-port faceplate for all one and two port outlet locations. Provide blanks for all unused openings.
- 2.70 Provide a four-port faceplate for all three and four port outlet locations. Provide blanks for all unused openings
- 2.71 Provide a six-port faceplate for all five and six port outlet locations. Provide blanks for all unused openings
- 2.72 Locations requiring a quantity beyond six ports will be shown on the project drawings. Provide the appropriate size faceplate and quantity of inserts as required
- 2.73 All fax/modem locations shall be provided as single port outlets. Requirements shall be the same as a single port data outlet as shown on the Technology Legend
- 2.74 For single port voice outlet locations intended for wall telephone connections, a wall telephone type faceplate with attachment studs shall be provided. The wall telephone

- jack shall be 8-pin, RJ45 type and use IDC wire terminations only. Provide Category-6 insert, within stainless steel wall plate faceplate. Provide faceplate from the approved manufacturers listed in the specifications
- 2.75 Provide single port or dual port Surface mount small surface mounted outlet box for IP Speaker data outlets. Provide surface mount box by Leviton QuickPort Series 41089-xxx or equal by one of the approved manufacturers. Provide Category-6 series insert, in surface box for IP Speaker data locations mounted in the backcan for the speaker as shown in the detail drawings
 - 2.76 Provide single port or dual port Surface mount small surface mounted outlet box for IP Camera data outlets in the J-Box for the camera location. Provide surface mount box by Leviton QuickPort Series 41089-xxx or equal by one of the approved manufacturers. The location shall also be furnished with a blank weather-tight faceplate to protect the data termination until the cameras are installed
 - 2.77 All faceplates and surface mount outlet boxes shall be furnished with label windows. All labeling shall be installed within the label window
 - 2.78 Confirm color of all faceplates prior to ordering. All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Hand written labels are not permitted. All color schemes shall be approved by the customer prior to installation.
 - 2.79 Colored inserts are required for this project. Refer to the detail drawings for the exact color scheme to be provided. Inserts submitted that do not follow the color and identification requirements will be rejected. Inserts installed that do not follow the color coding as shown in the detail drawings will be replaced at the Contractor's expense
 - 2.80 All labels will be installed under label windows. Labels adhered to the surface of the faceplate will not be accepted. Contractor must provide clear laminating type of cover material over the surface mounted labels where used
 - 2.81 Reference the drawings for special outlet configurations or plate requirements

PART 3 – IP PAGING REQUIREMENTS

- 3.1 The Contractor shall furnish and install the IP-based speakers and horns and all associated hardware and software.
- 3.2 Data Contractor shall be responsible for providing enclosures for all IP-based speakers and horns. Contractor shall provide vandal resistant screws with all enclosures for attachment of the speaker/horn baffle. Exterior locations shall be provided with stainless steel vandal resistant screws.
- 3.3 All enclosures shall be furnished and installed by the 27 10 00 Contractor in all areas shown in the floor plans
- 3.4 Paging speakers shall be as manufactured by Atlas, the speakers and enclosures will be procured by the 27 10 00 Contractor
- 3.5 Provide speakers and enclosures for the IP-Based Speakers and Paging Horns for the following types of locations as shown on the drawings

- 3.5.1 Interior surface mounted IP Speaker Only, Atlas Sound Part #18S+ - provide surface mount angled enclosure Part #SEA-18S in white finish
- 3.5.2 Flush wall mount IP Speaker Only, Atlas Sound Part #18S+ - provide flush mount straight enclosure Part #FEST-18S
 - 3.5.2.1 The same enclosure shall be provided for any IP-Based speaker only being placed in a non-accessible (Hard Lid) ceiling space. The enclosure shall be secured to the structure above with a minimum of (4) ceiling support type 12-AWG wires or framed in placed and attached to the structural members. Contractor shall field modify the enclosure to allow for connection of the support wires.
- 3.5.3 Accessible ceiling mount IP Speaker Only, Atlas Sound Part #I128SYS+. Speaker is a 1-foot by 2-foot drop-in type for accessible ceilings. Speaker shall include T-bar attachment.
- 3.5.4 Surface mount Combination IP Clock/Speaker, Atlas Part #I8SCH+ – provide surface mount angled enclosure Part #SEA-18S in white finish
- 3.5.5 Flush mount Combination IP Clock/Speaker, Atlas Part #I8SCH+ – provide flush mount straight enclosure Part #FEST-I8SC.
- 3.5.6 Surface mount IP Standard Page Horn Atlas Sound Part # IHVP+ - provide vandal resistant surface mount enclosure Part #SEST-IH stainless steel construction in white powder coat finish.
- 3.5.7 Flush mount IP Standard Page Horn Atlas Sound Part #IHVP+ - provide flush mount enclosure Part #FEST-IH stainless steel construction, no finish
- 3.5.8 Provide a 2-foot long, CAT-6, UTP patch cord, for the speaker/horn location to connect to the data drop located in the enclosure, color of patch cord per District IT Department instructions. Provide patch cords for 100% of IP-based speaker/horn locations. Provide (10) spare patch cords, deliver all Patch cords to the District IT Department
- 3.5.9 IP speakers/horns shall be connected to a POE switch in the MDF / IDF Room or cabinet. Coordinate the connection of the POE powered devices with the District IT Department. Speakers/horns must be patched to a POE powered switch in the MDF/IDF to allow for proper operation
- 3.5.10 All speaker/horn connections to be terminated at the data patch panel and identified with a colored insert or color tabbed label, per the District Standards or as shown in the detail drawings and instructions.

IP-Based Paging Software and Server

- 3.6 Contractor shall furnish and install the software for the IP-Based Paging system. The server is existing.

- 3.7 Provide IP-Based Paging software for the project. The software shall be loaded on the Contractor furnished server. District will capture all new speakers and assume existing site programming once the speakers are on the network.
- 3.8 Contractor shall interface the IP-Paging software with the District's VoIP call management software program and provide all programming information required to allow the District to set the parameters for the existing call management software.
- 3.9 District has existing licensing for "Informacast" to cover the additional speakers and zone controllers.
- 3.10 Programming of speakers and horns for page coverage zones, tones, time schedules, pass class bell and VoIP interface to be completed by the Contractor. The District will be responsible for providing IP addressing to the Contractor for the network to identify individual zone controllers.
- 3.11 Programming of speakers for page coverage zones, tones, time schedules, pass class bell and VoIP interface to be completed by 27 10 00 Contractor and is also responsible for providing IP addressing and identification of individual speakers and horns.
- 3.12 Provide a location IP/MAC address list to the district once the speakers are installed.
- 3.13 District has an existing software version of the Informacast control software and the Cisco Call Manager software. The Contractor shall be responsible for providing upgrades to the existing Informacast control software, if applicable. The Cisco Call Manager software changes shall be provided by the District.

Analog Paging Speakers/Horns (IP System Controlled)

- 3.14 The 27 10 00 Contractor shall furnish and install all Analog paging speakers, horns and associated IP-Based interface components.
- 3.15 The 27 10 00 Contractor shall be responsible for providing enclosures for all analog speakers and horns. Contractor shall provide vandal resistant screws with all enclosures for attachment of the speaker/horn baffle. Exterior locations shall be provided with stainless steel vandal resistant screws.
- 3.16 Analog paging speakers and horns shall be as manufactured by Atlas Sound or Community professional loudspeakers. These speakers must be procured from Atlas Sound and Community Authorized distributors. Contact Atlas Sound and Community for a list of authorized distributors.
- 3.17 Analog paging speaker and horn enclosures shall be furnished and installed by the 27 10 00 Contractor at all of the buildings shown in the floor plans.

IP-Based Zone Controllers and Amplifiers for Analog Paging Speakers and Horns

- 3.18 Provide IP-Based zone controllers for standard analog speakers and horns per the locations shown on the floor plans. Provide a minimum of (2) zone controllers for each IDF closet/cabinet location on the campus, including the MDF Room. The quantity of zones in any particular building shall be as indicted by the zone letters next to the speaker symbol on the drawings. The zones are marked by capital letters next to the symbol shown on the floor plans as "A", "B", "C" and so on.

- 3.19 Buildings without individual POE powered IP-Based speakers – Buildings that do not have individual IP-Based speakers provided, shall be provided with zone controllers for both the interior and exterior coverage zones. Each building shall be provided with a minimum of (2) zone controllers, one for the exterior and one for the interior. Standard paging zones shall be as follows; Zone “A” shall be designated for the overall exterior paging and Zone “B” shall be designated for the overall interior paging, as shown on the floor plans. Provide additional zone controllers as required.
- 3.20 Buildings provided with individual POE powered IP-Based speakers – Buildings shown on the floor plans with connected individual IP-Based speakers, shall be furnished with a minimum of (1) zone controller for the exterior analog paging horns. The exterior zone controller shall be designated as Zone” A”. Provide additional zone controllers for the additional exterior or interior paging zones shown on the floor plans.
- 3.21 Provide Atlas Sound Part # ZC1PRO+T or ZC2PRO+T zone controllers at the MDF and IDF locations. The system shall be configured with the two optional transformers, model ZCMT, for use in applications requiring line out signal with additional volume level adjustment. The quantity of zone controllers to be furnished at each closet location shall be dependent on the number of zones shown on the floor plans and the number of buildings serviced by the IDF closet. Contractor shall coordinate the zoning for the campus with the District IT Director and the District Facilities Director.
- 3.22 Provide rack mount adapter brackets for the equipment racks or cabinets. Zone controllers shall be connected to the amplifier or amplifiers furnished and installed by the Contractor. See drawing details for further requirements.
- 3.23 Provide amplifiers for the analog paging speakers and horns connected to the zone controllers. Amplifiers shall be rack mounted in the MDF or IDF equipment rack or cabinet. Provide rack mount adapter bracket as required to mount one or two amplifiers in a single rack unit. Provide quantity of amplifiers to service the quantity of horns and speakers as shown on the drawings. A separate amplifier must be provided for each IP zone controller output. Size of amplifier shall be determined by the load, plus 25% expansion capacity. Larger amplifiers may be required for a single zone depending on quantity of horns and speakers requiring amplification. Contractor is responsible for providing sufficient power amplification to service all speakers and horns. Contractor is responsible connecting the amplifiers to the IP zone controllers and insuring proper operation between the zone controller and amplifiers.
- 3.24 Provide amplifier choice based on load: Approved Models; Atlas Model #PA40G, PA60G, DPA404 or approved equals.
- 3.25 Provide rack mount adapter bracket Model #AARMK2-5, one bracket for each pair of amplifiers provided. If there is a single amplifier to be installed at the rack, the amplifier would still require the rack mount bracket. Provide optional Level Control Security Covers for all models.

Analog Paging Speakers and Horns

- 3.26 Recessed accessible ceiling mounted speaker - Atlas Sound Part #SD72WV (with external tap selector, 62-8 Baffle with volume control, CS95-8 Back Box and 81-8R T-bar bridge). Speaker baffle shall be white powder coat epoxy finish. Speaker shall be

- tapped at a minimum of 2 watts. Louder areas (such as common hallways) shall be tapped at 5 watts.
- 3.27 Recessed non-accessible ceiling mounted speaker – Atlas Sound Part #SD72WV speaker with volume control, with recessed round ceiling enclosure Part #95-8 mounted in the hard lid ceiling. Speaker baffle shall be white powder coat epoxy finish. Speaker shall be tapped at a minimum of 2 watts. Louder areas (such as common hallways) shall be tapped at 5 watts.
- 3.28 All ceiling mounted speakers shall be provided with a minimum of (4) 12-AWG ceiling support wires securely attached to the structure above with either a powder actuated nail into the concrete deck above or with a screw type hanger into the wood structural members. The speaker shall not depend to the ceiling tile grid for support.
- 3.29 Surface mounted speaker - Atlas Sound Part #SBMS with square surface mount enclosure. Speaker baffle shall be white powder coat epoxy finish and shall be attached to the enclosure with vandal-resistant screws. Speaker shall be tapped at a minimum of 2 watts. The speaker shall be surface mounted on the wall, not mounted to any beams. Louder areas (such as common hallways) shall be tapped at 5 watts.
- 3.30 Recessed Exterior Paging Horn - Provide Atlas Sound Part #VP161-APF Vandal Proof Baffle, #APF-15T series Horn/Loudspeaker, and 161RES stainless steel exterior recessed series enclosure. Unit must be weather resistant. All horns shall be tapped at 15 watts.
- 3.31 Surface Mounted Exterior Paging Horn – Provide Atlas Sound Part #VP161-APF Vandal Proof Baffle, #APF-15T series Horn/Loudspeaker, and 161SES series enclosure. Unit must be vandal and weather resistant. Horns shall be tapped per plan details U.O.N.
- 3.32 Contractor responsible for proper paging coverage and tap settings at the speakers and horns. Contractor shall confirm tap settings after the school has been occupied, testing the paging after the students have occupied the campus to properly judge the ambient noise levels and make adjustments before the project completion.
- 3.33 All loudspeaker circuits shall operate balanced to ground. Bonding shall be provided to assure equal potential measurement between the chassis of all amplifiers, power supplies, etc. Bond to the ground bus bar.
- 3.34 All wiring shall test free of grounds and shorts.
- 3.35 Each speaker location cable shall be home run to the IDF equipment rack/cabinet or MDF Room. Provide 1-pair, 18-AWG unshielded CMR rated speaker cable to each speaker location. Terminate speaker cable on terminal strips at the backboard. All speakers shall be home run to the MDF or IDF location. Speakers/Horns may not be run in a series, unless otherwise shown on the drawings.
- 3.35.1 Cross connect the speaker or horn wiring from the amplifiers to the terminal strips. All connections shall be labeled at the terminal strip with the Zone and Building Name or Number.
- 3.35.2 Contractor shall furnish CMP rated speaker cable for all cable routed within a plenum ceiling space. Refer to the Architectural drawings for ceiling rating information prior to installation of any wiring.

- 3.35.3 All paging speaker cables installed shall contain all necessary conductors and/or cables to all devices shown on the Drawings and the Contractor shall make all necessary conductor terminations to all devices for a complete system. All cables routed underground shall be suitable for wet location provided with UL listed wet location insulation or flooded type cable construction as manufactured by West Penn Aquaseal #AQ224 or approved equal.
- 3.36 Contractor shall be responsible for testing all paging speakers and horns and insuring the proper volume levels are set in the paging software and on the speakers/horns and amplifiers. Provide (16) man hours for re-adjustment of the paging speakers and horns volume per the District's requirements 4 weeks after the school has been occupied by the students. Check with High School Staff for areas that are either too loud or too soft. The final adjustments to the individual IP-Based speakers/horns, zone controllers, analog speakers/horns and amplifiers shall be documented and furnished as part of the As-Built documents for the project.
- 3.37 Wrap around labels are required on all cable connections at the rear of the amplifier, at the zone controller and at the terminal strip for all cabling to the speakers or connections between equipment. Label shall clearly define paging zones, room numbers or type of port.

Sports Field Pole Mounted Paging Speaker

- 3.38 Surface Mounted Exterior High-Output Paging Speaker shall be a Community R.15 FULL RANGE Model: R.15COAX High Output Paging Speaker. Provide high output Speaker for the locations shown on the floor plans. Unit must be weather resistant. All Speaker shall be tapped at 30 watts U.O.N. Always follow manufacturers basic safety precautions when installing and using Community Model PMB-1RR Pole-Mount Brackets.
- 3.38.1 Provide (1) Community R.15 Coax Two-Way 6.5-inch coaxial weather resistant loudspeaker.
- 3.38.1.1 Provide Grainger #1W312 or McMaster-Carr #7422K61 cabling or approved equal.
- 3.38.1.2 Wire speaker and place jumper for 70V use and set Music/Voice switch to Voice.
- 3.38.1.3 Provide all spade or ring terminals with barrel type crimp connectors that are crimped with a forged crimp tool (such as Klein 1005) or a ratcheting tool (such as Klein T1720), as this method, when properly executed, results in a gas-tight connection that is quick and easy to accomplish. The maximum width of the ring or spade lug should be 0.375" (9.5mm), or less. The terminal screws are #8 (M4). The maximum wire size that can be accommodated for bare wire connections is 10 AWG (5.26 mm²).
- 3.38.2 Provide (2) Community PMB-1RR mounting brackets, one for the R.15 speaker and one located above the speaker for the positive safety cable pole attachment. Follow manufacturers mounting instructions. EXACT PLACEMENT OF PMB-1RR SAFETY KIT MAY VARY DEPENDING UPON SPECIFIC

CONFIGURATIONS. INSTALLER MAY NEED TO ROTATE PMB-1RR 90° ON POLE TO ALLOW CABLE TO CLEAR THE OTHER MOUNT. The loudspeaker is not designed to be rotated 90° or mounted upside-down.

- 3.39 Attach a safety cable to the integrated eyebolt on the rear of each loudspeaker. Secure the other end of the safety cable to the above PMB-1RR Pole-Mount Bracket.
 - 3.39.1 Provide (1) Community PMB-BAND kit for 201 stainless steel banding.
 - 3.39.2 Provide all other necessary hardware, fittings, brackets, safety cabling and strapping necessary for a complete safe installation, all rigging shall be rated at a Working Load Limit of 100 lbs. (45.4kg) with a 10:1 safety margin.
- 3.40 Speaker audio shall be fed from the main building MDF and cabling shall be pulled through new conduit to existing pull box, through existing conduits to existing pull-box and then into existing MDF. See site plan for details.
 - 3.40.1 Provide (1) new Atlas Sound Part # ZC1PRO+T (with rack mount kit) mounted in existing MDF rack. Provide network patch cabling to existing patch panels. Confirm IP address, rack location and software setup with District IT representative before installation.
 - 3.40.2 Provide (1) new Atlas PA60G Single Channel, 60-Watt Power Amplifier with Global Power Supply T (with rack mount kit) mounted in existing MDF rack.
 - 3.40.3 Provide all necessary new cabling, software and programming in MDF for a complete turn-key paging speaker application.
 - 3.40.4 District shall provide Informacast endpoint licensing for this zone controller IP address.

PART 4 - INSTALLATION

- 4.1 Upon completion of 10% of the cabling installation, the Contractor shall notify the Project Engineer for an inspection of the methods and types of materials used on the project. The Contractor shall give a minimum of 72 hours notification to the Project Engineer for the scheduling of the inspection. The Contractor will be given a written review of the findings, so if adjustments are required, they can be done before the project proceeds. The Contractor shall be responsible for adhering to the findings and a follow-up inspection will not be provided.
- 4.2 Pull strings shall be provided with all cable runs including but not limited to; conduit stub ups, conduit sleeves, cable trays, open wiring routes, innerduct, and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.
- 4.3 Velcro cable management straps are required on all Category-6 cable bundles, the last 20 feet or upon entry into equipment closet, a maximum of 12" apart. Cable bundles shall also be routed through cable management or "D" rings in the equipment closet.
- 4.4 Data Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for the data system cabling. This is to include all conduits

- installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.
- 4.5 Velcro cable management straps are required on the cabling in the rear section of the vertical managers on the equipment racks. Straps shall be a maximum of 12" apart. At a minimum, Velcro straps shall be provided at each point the cables are routed to the patch panels from the main bundle.
- 4.6 Every fiber in every fiber optic cable must be terminated at both ends on a fiber patch panel in the MDF/IDF closet or cabinet location. Termination shall be accomplished using the correct style of connectors as directed by the District with a strain relief boot. All connectors shall be of the same manufacture to ensure compatibility. Polarity of fiber strands must be observed at all times.
- 4.7 Labeling
- 4.7.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each data outlet and patch panel point. A printed label shall be placed at each of the following locations:
- 4.7.1.1 On the cable at the rear of the patch panel or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
- 4.7.1.2 On each cable in the j-box behind the faceplate location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
- 4.7.1.3 On the cable at the terminal strip prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
- 4.7.1.4 On the face of the patch panel, provide a 3/4" by 3/4" label with a letter or number identifying the patch panel designation. For special purpose data connections such as WAP, Audio-Visual, IP Page and IP Camera ports, the label shall be designated with colored label icon or marker.
- 4.7.1.5 On the face of the faceplate in the label holder window. The label shall be clearly defined with a minimum #10 font size.
- 4.7.2 Hand written labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.

- 4.7.3 Each patch panel port shall be identified with a unique sequential labeling scheme. Port identification labeling pattern shall be consistent throughout the project.
- 4.7.4 All faceplates shall be identified with permanent printed labels. Labels must not be subject to removal by incidental contact. Contractor shall be responsible for replacing defective labeling for a period of one year from date of final sign-off of project.
- 4.7.5 All fiber optic and UTP feed cables shall be identified with a permanent, water resistant, printed labels. Labeling information shall include closet identifications, quantity of conductors (UTP) or strands (fiber) and house pair designations (UTP). Cables shall be labeled in the IDF/MDF closets at the site conduit entrance point, Riser conduit entrance point and prior to entering either punch blocks or patch panels. Labels for fiber and copper feeds shall include both the name of the origination point and the destination point, house pair or house fiber strand count, cable composition (ie:12-Strand MM 50/125 LO; 6-Strand SM). See details for additional requirements.
- 4.7.6 Labeling will follow recommended EIA/TIA standards or as requested by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All test results will be identified by the final labeling scheme. Contractor shall be required to have the labeling scheme approved in writing by the District IT Director prior to manufacture or installation of the labeling.
- 4.7.7 All fiber optic cables and/or innerduct shall be tagged with fiber optic warning tags in every manhole or pullbox. Fiber warning tags shall also be placed at each end of the cable in the termination closets in clear view. A minimum of (3) tags are required at each end, with a label tag on each cable in the service loop. Fiber warning tags shall be placed on fiber optic cable and/or innerduct routed through open ceiling environments at increments no less than 15 feet apart.
- 4.7.8 Refer to detail drawings for additional labeling requirements.
- 4.8 Where open wiring cables are run through the ceiling space (only permitted where specifically noted on the drawings), the wire shall be bundled together and supported above the ceiling.
- 4.9 All cables must be fastened to the building structure via "j-hooks" or an approved Category 6 suspension system, and not directly in contact with ceiling system. For "j-hooks" maximum fill capacity is as follows: 1-5/16" hooks – 35 cables; 2" hooks - 60 cables; 4" hooks - 120 cables. For quantities beyond 120 cables use a sling support system such as "Erico Cable Cat" or equal. Maximum fill capacity 200 cables. D-rings, "Caddy #WMX cable hangar", "Caddy Bridle Rings", drive rings or any other type of wire ring support is not allowed.
- 4.10 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of the wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.
 - 4.10.1 The 27 10 00 Contractor shall be responsible for fire-stopping all unused conduit sleeves in the ceiling or through rated walls. The Electrical Contractor shall be

responsible for fire-stopping around the conduit or sleeve, unless the sleeve is installed by the 27 10 00 Contractor, in which case, the 27 10 00 Contractor shall be responsible for all fire-stopping requirements.

- 4.10.2 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.
- 4.11 Fiber optic feed cables connecting to equipment racks from the MDF Room or from an adjacent IDF location, shall be installed with not less than a 20-foot service loop between the rack and mounted on the backboard. See drawings for fiber optic service loop requirements.
- 4.12 Provide 6 inches of cable slack at computer data system outlets inside conduit box.
- 4.13 In an accessible ceiling area, provide a 10-foot (stored in a Figure-8 configuration) service loop above the all data/voice outlet locations. Service loop must be securely tied up off of ceiling tiles or ceiling surface and supported at two opposite points. Neatly coil cable without exceeding minimum bend radius limitations. Do not provide length in excess of 15 feet, as it may cause improper test results and errors.
- 4.14 Do not provide a service loop in the MDF/IDF Room on the UTP cables, unless otherwise noted. Cables shall be neatly routed around the perimeter of the room to the cable runway from the point of entrance into the room.
- 4.15 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.
- 4.16 Cables installed in manholes and pullboxes shall be supported with Velcro ties or loosely fitted UV rated tie wraps, on wall mounted cable support racks. The cables shall be clearly labeled in the manhole or pullbox.
- 4.17 Provide a full 360-degree loop of slack cable around manhole and pullbox interiors. Cables entering handholes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.
- 4.18 Cable pulling shall use a split mesh grip over the cable jacket. Connection directly to optical fibers and copper wire conductors shall not occur.
- 4.19 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.
- 4.20 Where cables are pulled through or pulled from a center of run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.
- 4.21 For each cable pull where a cable direction change is required, flexible feed-in tubes, pullout devices, multi-segmented sheaves, etc., shall be used to ensure proper cable pulling tensions and side wall pressures. Cables shall not be pulled directly around a short right-angle bend. Any device or surface the cable comes in contact with when under pull-in tension shall have a minimum radius 50% greater than the final specified minimum installed cable bending radius. The maximum possible size radius sheaves

- and feed-in tubes, usable in the available working space, shall be provided in all situations, to ensure the minimum possible cable sidewall pulling pressure. Do not use devices with multi-segment "roller" type sheaves.
- 4.22 Cable lengths over 250 feet shall be machine pulled, not hand pulled. Cables shall be pulled in a continuous, smooth operation without jerking or stop-start motion after initiation of pull. Maximum cable pulling speed shall be less than 50 feet per minute. Minimum pulling speed shall be greater than 15 feet per minute.
- 4.23 A pull string shall be placed with all UTP and paging station cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greenlee #431 or approved equal. Includes all conduit stubs and cables routed through open ceilings and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pull string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.
- 4.24 A measuring pull tape shall be placed with all feed cables at the time of installation. Indoor riser and Outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape type pull string.
- 4.25 When pulling cable through conduit, cables shall be pulled straight into or out of the raceway without bends at the raceway entrance or exit. Pull in cable from the end having the sharpest bend (i.e., bend shall be closest to the reel.) Keep pulling tension to minimum by liberal use of lubricant, hand turning of reel, and slack feeding of cable into duct entrance. Employ not less than one man at reel and one at manhole or pullbox during this operation. Cables shall be pulled directly from cable reels.
- 4.26 All cables shall be new and extend continuous from each MDF or IDF backboard or rack to all outlet locations.
- 4.27 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) within 36" or within 12" of line voltage equipment or wiring where crossing.
- 4.28 Where OSP-Rated UTP cables or OSP-Rated fiber optic cables are routed exposed through ceilings for more than 50'-0", Contractor shall install the cable in innerduct or EMT conduit in the ceiling. Innerduct installed in the accessible ceiling space shall be a minimum of riser rated and a minimum of 1" in diameter. Innerduct shall be supported a minimum of every 3-feet to the structural members.

TESTING

- 4.29 All Category-6 cables shall be point to point (link) tested after installation/termination, and verified to operate at minimum 1000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6 wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.
- 4.30 All Augmented Category-6 cables shall be point to point (link) tested after installation/termination, and verified to operate at minimum 10000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Augmented Category-6 wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Augmented Category-6 requirements by the EIA/TIA.
- 4.31 Upon completion of testing cable links for both copper and fiber optic cabling, the Contractor shall supply a copy of the original database files downloaded from the tester in original format on a USB Flash Drive. Contractor shall provide with the testing database files, an original copy of the tester's manufacturer software program (included in original cost) for record management and archiving, in a Windows format (i.e.; Fluke Linkware software program)
- 4.31.1 The manufacturer's software program will be used by the Project Engineer to review all test results, and then turned over to the District to keep as their record copy with the final approved test results. Provide (3) copies of tests on USB Flash drive. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.
- 4.32 Contractor will repair or replace cable runs or connecting hardware that do not meet specified criteria.
- 4.33 Upon completion of submittal of original test results, and after review and approval of those results, the Contractor shall provide testing equipment and personnel to randomly re-test 10% or 20 drops minimum, whichever is greater, of all UTP cable locations on the campus in the presence of the designated District Representative and Project Engineer. The District Representative shall choose which cables are to be retested. If 10% of the re-tested cables fail to match the previously submitted original tests, the Contractor must hire an independent testing firm to re-test all UTP cable on the campus, at no cost to the customer. All cables which do not meet the specifications criteria as determined by the independent test report, shall be replaced and retested by the Contractor at no cost to the District. Final sign-off of the testing shall be approved after receipt of all other documentation.
- 4.34 Multimode fiber optic cables shall be tested bi-directionally at 850nm and 1300nm. Single mode fiber optic cable shall be tested bi-directionally at 1310nm and 1550nm. All fiber strands shall be tested with an OTDR (Optical Time Domain Reflectometer). All fiber test results shall contain final source and destination information that matches IDF or MDF labeling shown on the fiber optic patch panels and final documentation. OTDR test results shall be included with the copper test results and submitted with the tester's software for review. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.

- 4.35 Test procedures shall comply with EIA/TIA 526-14 Method B. Test results shall meet the minimum following criteria:
- 4.35.1 Fiber optic test results shall not exceed 2db total attenuation loss in addition to inherent loss published by manufacturer tested at minimum 2000 Mhz for 850nm and 500 Mhz for 1300nm for the fiber optic cable.
 - 4.35.2 Test all data cables minimum Category-6 UTP cable to test results for "Channel Testing" requirements @ 250 Mhz per current EIA/TIA requirements. Any cables which do not meet these minimum requirements shall be replaced or repaired at no cost to the District.
 - 4.35.3 Test all data cables minimum Augmented Category-6 UTP cable to test results for "Channel Testing" requirements @ 500 Mhz per current EIA/TIA draft requirements. Any cables which do not meet these minimum requirements shall be replaced or repaired at no cost to the District.
- 4.36 End to end attenuation testing shall be performed with a temporary test jumper cable at each end of the installed fiber cable. The test jumper utilized shall be the same fiber core size and grade of glass as the installed cable. The measured attenuation of the test jumpers, test connectors, and test interconnection sleeve between the two test jumpers shall be less than 1dB as calibrated at the time of the test at indicated wave lengths and frequencies. Test jumpers shall be "zeroed out" before testing of fiber strands begins.
- 4.37 Final As-Built Drawing Submittals - Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCAD (2014 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities outlets and speaker locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all outlet locations with cable identification numbers.

END OF SECTION

SECTION 27 20 00

INTEGRATED AUDIO/VISUAL SYSTEM

PART 1 – GENERAL

SUMMARY

- 1.1 The Contractor shall furnish all labor, project management, materials, tools, equipment, and resources necessary for the installation, startup, and testing of the system shown on the plans and described in the specifications.
- 1.2 The Contractor shall furnish and install the system as defined by the plans and specifications. The Contractor must demonstrate to the Owner that the system is complete and complies with all operational requirements set forth in the plans and specifications.
- 1.3 The work covered under this section of the specifications consists of furnishing all labor, equipment, supplies and materials, and in performing all operations necessary for the turnkey and fully completed installation of an audio/ video system in accordance with the specifications and accompanying drawings, except as specifically noted otherwise.
- 1.4 Cables for the system shall be pulled through the conduit systems furnished by the building contractor. The 27 20 00 contractor shall be responsible for providing all cables required and for coordinating and supervising the cable installation. The 27 20 00 contractor shall be responsible for insuring the integrity of the cables before and after installation.
- 1.5 Work Excluded:
 - 1.5.1 Excluded from this work shall be any and all general construction services regarding masonry and general carpentry services. Those services are to be provided and installed by the general contractor.
 - 1.5.2 Conduit/raceways, sleeves, cable trays, electrical boxes, hand holes, pullboxes, etc. required for the system shall be furnished and installed by the Division 26 Contractor. The conduit/raceways and electrical boxes furnished and installed under Division 26 shall conform with the requirements of the drawings and specifications for the system.
- 1.6 In order to ensure project cohesion a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; cabling; equipment; software; supplies; materials and training. The contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful contractor must be factory trained on all aspects of system hardware. The successful contractor shall be a California licensed C7 or 10 premise wiring contractors as defined in this specification. Subcontractors may not be utilized in the implementation of the plant wiring installation.
- 1.7 Approval to bid shall not release the Contractor from full specification compliance requirements. Final system acceptance testing shall govern final system acceptance and compliance with the specifications.
- 1.8 Failure to provide a functional equivalent shall result in the removal of the alternate system at the contractor's expense.
- 1.9 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.

- 1.10 Where the words 'provide' or 'provision' is used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.11 Where items are specified in the singular, this division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

DEFINITIONS

- 1.12 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings - acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 1.13 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 1.14 Finish Space: Any space ordinarily visible, including exterior areas.

Contractor Qualifications

- 1.15 The successful bidder shall be a California licensed C7 or C10 premise wiring contractor as defined in this specification. Subcontractors may not be utilized in the implementation of the installation or programming.
- 1.16 The successful bidder shall have on staff a university graduate engineer in electrical or electronic engineering.
- 1.17 The successful bidder shall have design staff with a BICSI certified (RCDD) Registered Communications Distribution Designer. The design staff shall also include individuals with CTS certification, AMX ACE programming certification and Extron Advanced A/V Certifications.
- 1.18 The successful bidder shall have installation staff with CTS certification, programming certification and Extron Advanced A/V Certifications.
- 1.19 All bidders must provide a listing of two similar size projects having the same scope of work using the proposed information delivery equipment. This listing shall be complete with facility names, completion dates, names of contacts, and their telephone numbers. Referenced projects must have been completed in the past 18 months.
- 1.20 The bidder shall have a factory trained service department the service department shall be on call 24 hours a day, 365 days a year, to arrive and initiate onsite service the specified equipment upon (24) hours notice.
- 1.21 The Contractor shall employ factory-trained technical/service personnel for service and maintenance of the system. Their résumés will be required. The factory-trained technical/service personnel shall have a minimum of two years experience installing the proposed system. The Bidder shall submit the names and copies of the certificates issued by the factory. The bidder shall instruct the Owner's technical personnel in the operation, care, and maintenance of the system.

CODE COMPLIANCE

- 1.22 All material and equipment shall be clearly listed, labeled, or certified by Underwriters Laboratories, Inc. All power supplies and computers shall be clearly UL Listed. Any system which is not UL Listed at time of bid will be rejected.
- 1.23 All acceptable systems shall be approved under Part 15, Subpart B, Section 15.107b of the FCC Rules and Regulations. Bidders must provide the FCC Registration Number of the proposed system. Systems that are not in compliance with the FCC will not be considered. Any system that is not FCC compliant at time of bid will be rejected. All equipment must be clearly labeled with FCC compliance stickers.
- 1.24 The system shall be installed in accordance with local and national electrical codes.
- 1.25 The manufacturer and contractor shall provide the Owner with a release for use of all copyright materials, corporate logos, and corporate trademarks at time of bid.

SUBMITTALS

- 1.26 **Index all submittals and reference to these specifications. All submittal items shall be assembled and submitted in a single complete binder per submittal group. Partial submittals will not be reviewed. Submit items in groups as indicated below: All submittals, warranty information, close - out documents, and as built documents must be submitted independently for owner, in order to provide record documentation for the project owner.**
- 1.27 Group # 1 Submittal shall be made within (20) working days after the award of the contract. This submittal shall include the following:
 - 1.27.1 Complete bills of quantities, including all materials, components, devices, and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:
 - 1.27.1.1 Quantity of each type of equipment item
 - 1.27.1.2 Description of each item
 - 1.27.1.3 Manufacturer's Name and Model Number
 - 1.27.1.4 Manufacturer's Specification Sheet
 - 1.27.1.5 Equipment items which have individual components, will require that all component parts be listed individually.
 - 1.27.1.6 Description of any specialty backbox requirements
 - 1.27.1.7 All wiring types required for installation of this system
 - 1.27.1.8 Copy of equipment warranty
 - 1.27.1.9 Spare parts shall be listed individually to verify proposed quantity
- 1.28 Group # 2 Submittal shall be provided within (20) working days after the approval of the Group # 1 submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered and drawn on a CAD System. Each submission shall include 'D' or 'E' size print copies to match the contract drawings, and (1) data disk copy with files in a AutoCAD 2017 format. Contractor shall make the request for drawings in writing directly to Johnson Consulting Engineers, confirmation of the request and a release form will be forwarded to the contractor to include a signed copy with payment prior to release of files. Detail or riser diagram sheets or any other drawings other than floor or site plans, will not be made available to the contractor. Phase II Submittals drawings shall include the following:
 - 1.28.1 Furnish complete shop drawings for all systems specified. Each drawing shall have a descriptive title and all sub parts of each drawing shall be completely described. All drawings shall have the name of the project, architect, consultant, and electronics contractor in the title block.

- 1.28.2 Furnish complete scaled drawings of all equipment racks, consoles, special assemblies, etc. Each drawing shall show all equipment with its manufacturer and model number.
 - 1.28.3 Furnish complete scaled installation drawings detailing locations of all equipment such as control panels, plug panels, video monitors, video projectors, equipment racks, speakers, etc. All conduits with cable quantities and types and all terminal block locations shall be shown also.
 - 1.28.4 Provide single line riser diagrams of all racks, consoles, control panels, speaker assemblies, etc. Each drawing shall delineate circuit numbers for all cables and terminal connections. Provide typical wiring termination for all devices.
- 1.29 **Common submittal mistakes which will result in submittals being rejected:**
- 1.29.1 Not including the qualifications of the installing contractor.
 - 1.29.2 Not including all items listed in the above itemized description.
 - 1.29.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.29.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.29.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.
- 1.30 All equipment items referenced by manufacturer name and model number shall be the only approved product to be furnished for use on this project. Where alternate items are acceptable (or approved alternate) will be noted with the product description.
- 1.31 Products as manufactured by "Extron" have been specified to coordinate with an existing facility and other contracts to be issued for this project. **Alternate products will not be approved.**

SEISMIC ANCHORING

- 1.32 All sound systems, A/V equipment or enclosures shall be anchored to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC 2007 Section 1613A and ASCE 7-05. The contractor shall submit drawings signed by the contractor's registered structural engineer indicating method of compliance prior installation.

CLEANUP

- 1.33 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 1.34 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- 1.35 During the progress of the work, keep the premises clean and free of debris.

GENERAL COORDINATION

- 1.36 The A/V drawings may reference components by manufacturer which conflict with the written specification requirements, where this occurs the written specifications shall be followed.
- 1.37 The 27 20 00 Contractor shall actively coordinate all power requirements for the Audio-Visual Systems with the Division 26 Electrical Contractor. The 27 20 00 Contractor shall coordinate the placement of the electrical outlets and hard-wired power connections at projectors, ceiling enclosures, AV Systems cabinets and other equipment, with the Division 26 Contractor to determine the exact placement of the power. Outlet placement in many of the applications is critical to the space requirements and power cord length of the equipment or devices being installed.

WARRANTY

- 1.38 All components and installation, shall be warranted by the Contractor to the School District for a period of 2-years after District acceptance and sign-off of the completed system. Apart from the following equipment that shall be provided with longer warranties as noted;
 - 1.38.1 Provide extended 2-Year Exchange - Extended Service Plan for each of the Epson projectors Model: EPPDCEX2

PART 2 — PRODUCTS

Classroom Audio-Visual Systems

2.1 General Requirements

- 2.1.1 Provide installation of projectors, mounts with audio and video components and all local wiring including Assistive Listening for each classroom. Projectors and screens shall be located per the drawings. Projectors shall be provided and installed by the Contractor.
- 2.1.2 Contractor shall furnish and install all projection system components as shown in the A/V system details and specifications. System shall consist of components that will use the projector as the audio-visual switch. All video inputs shall be directly wired to the projector. Audio shall be routed as shown in the AV Wiring Diagrams in the detail drawings to allow the microphone system to serve as a system-wide amplification device. Refer to the detail drawings for additional installation configuration requirements, mounting systems and additional parts.
- 2.1.3 Provide cable loom wrap around all AV, Data Networking, Docking Station and Document Camera patch cables from devices to the Audio-Visual wall plates.
- 2.1.4 The Contractor shall provide all individual Audio-Visual systems hand-off components (microphones, charging bases, extra patch cables, etc.) for each of the classroom systems to the District. The components shall be individually bagged up for each of the classrooms at the end of the project (or other agreed upon time-period), identified with the classroom number, boxed up and delivered to the District. The District shall deliver the system components to the individual Teachers for use in their classrooms.
- 2.1.5 The details shown for speaker attachment shall be used as a minimum requirement and the Contractor shall be responsible for confirming the actual field conditions for each speaker location. Contractor shall submit mounting information prior to installation of the equipment.
- 2.1.6 The Contractor shall refer to the Audio/Video Patch Cable section of this specification for the descriptions of the type and style of patch cable to be furnished for the different

Audio-Visual and data patch cable connections. Patch Cable Section includes the different requirements for cable runs based on length and style of connector. HDMI cables shall be furnished as outlined in this section and based on the length of the cable, the model of HDMI cable required will vary. Individual patch cord specifications are not shown in the room system descriptions, only the type of cable required will be shown.

- 2.1.7 Contractor shall furnish and install all Audio-Visual system components as shown in the A/V system details and these specifications. Refer to the Audio-Visual System Diagrams, for each of the different room system requirements, for additional information. The drawing details and specifications shall be considered as one overall document. Contractor shall provide all systems as complete turn-key operational Audio-Visual systems.
 - 2.1.8 Provide Epson Easy Interactive Tools software for the projectors. The contractor shall include programming of all projectors with the manufacturer's interactive software tools. The programming shall include assigning IP addresses as required for the projectors. Coordinate with the District IT Department for access to network for setting up programming parameters. The Contractor shall also program all command and control requirements for the projectors and all associated interfaces or devices.
 - 2.1.9 Contractor shall apply asset tags to all projectors installed. The asset tags shall be furnished by the School District to the Contractor. The Contractor shall provide the School District with a spread sheet in Excel showing the asset tag number, School Name, Room Number, Projector make and model and projector serial number for their permanent records.
 - 2.1.10 Contractor shall test all equipment for each system to insure proper operation with control system, audio and video.
 - 2.1.11 Contractor shall provide and install all wiring and components required per the detail drawings. All audio outputs from the Teacher's Computer and Projector shall be wired as shown in the detail drawings.
 - 2.1.12 Contractor shall provide and install all projector mounts per drawing details.
 - 2.1.13 Provide all faceplates for Local origination outlet locations as indicated on the drawings. All faceplates shall match the color and type of faceplate installed for the data infrastructure system installed by the Data (27 10 00) Contractor.
- 2.2 District Furnished and Installed Equipment;
- 2.2.1 Laptop Computers
 - 2.2.2 Personal Computers with Monitors
 - 2.2.3 Document Cameras
- 2.3 **Classroom AV Projectors**
- 2.3.1 Classrooms shall be furnished with (1) Epson PowerLite 535W WXGA 3LCD Projector mounted in the accessible ceiling and aimed at a wall mounted manual projection screen.
 - 2.3.2 Projectors shall be furnished and installed by the Contractor. Ultra-short throw projectors must be able to fill up to a 94" diagonal screen (16:10 aspect ratio) with a Native Resolution of 1280x800 (WXGA) from a distance of not greater than 24" from the surface.

2.3.3 Provide (1) Extron PCM 340 Projector Drop Ceiling Mount with Adjustable Pole per room. Coordinate duplex power installation into plate with Div. 26 Contractor. Refer to plan detail for mounting requirements.

2.3.4 Provide (1) Extron UPB 125 Universal Projector Mounting Bracket per room.

2.4 Classroom AV System Control

2.4.1 Provide **Local Control** (1) Extron MLC 62 RS D MediaLink Controller with RS-232 Control - Decorator-Style Wallplate with eight customizable backlit buttons with power supply. Controller will be fully programmed by the Contractor for control of both the projector and audio receiver/amplifier.

2.4.1.1 Provide Extron RS-232 cable to the projector and the AV amplifier/receiver for control model # UC50' (or approved equal)

2.4.1.2 Provide RS-232 cable to the audio receiver/amplifier.

2.4.1.3 Provide any additional cabling, connectors or programming for a complete AV control solution.

2.5 Classroom AV Projection Screens

2.5.1 Provide (1) Draper Salara M manual projection screen with auto return with floating wall mounting brackets in locations shown on drawings.

2.5.1.1 Image Format 16:10

2.5.1.2 Matt White XT1000E screen surface

2.5.1.3 Diagonal Image area: 94" (50" x 80")

2.5.1.4 Floating wall brackets

2.5.1.5 Provide all necessary hardware for wall mounting these screens.

2.6 Classroom AV Local Origination

2.6.1 Provide Local Origination (1) Audio Enhancements HDBaseT HDMI/ VGA video, audio, USB 2.0 over Cat6.

2.6.1.1 Supports uncompressed 4K video at 60 Hz

2.6.1.2 Upconverts VGA signals to HDMI

2.6.1.3 Supports Power over Cable (PoC)

2.6.1.4 Includes RS-232 Control

2.6.1.5 Provide (1) Cat6 patch cabling from wallplate to HDBaseT receiver

2.6.1.6 Provide (1) Extron HDMI cable from receiver to Projector.

2.6.1.7 Provide 12' HDMI, VGA w/audio and USB patch cables as outlined below in Classroom AV Patch Cables section.

2.7 Classroom AV Ceiling Enclosure

- 2.7.1 Provide ceiling mounted enclosure to house the Enhanced Voice Amplification System, power supplies and any other ancillary equipment shown in the diagrams or specifications. The enclosure shall be furnished as follows;
- 2.7.1.1 Each enclosure will be furnished with power by the 260000 Contractor. The power shall be hard wired to the ceiling enclosure power outlet strip as shown in the detail drawings. Refer to the detail drawings for additional requirements. Coordinate the location of the enclosure with the Electrician. Power to the enclosure shall be extended to the projector location as shown in the drawing details.
 - 2.7.1.2 The Ceiling enclosure, FSR Model #FSR-CB-22S with surge protector power option Model #SG-120HW, shall be installed in the accessible ceiling above or near the projector location. The rooms with accessible ceilings shall be furnished with a 2-foot by 2-foot enclosure that will fit into the ceiling grid system.
 - 2.7.1.3 The enclosure shall also be furnished with the cable support installation kit by FSR Model #CBMNT1 and the threaded rod seismic bracing kit by FSR Model #CBTHRD for support into the deck above. Refer to the drawing details for installation kit application requirements.
 - 2.7.1.4 The Contractor shall mount the Enhanced Voice Amplification System components and Power Supplies in the ceiling enclosure.
 - 2.7.1.5 Confirm typical placement of the enclosure with the Project Engineer prior to installation of any AV cabling. Each room may vary slightly for the exact enclosure placement. Where the enclosure is to be placed in a sloped ceiling, the Contractor shall locate the enclosure in the lowest portion to insure District access for maintenance or adjustments to the equipment. The enclosure shall be no more than six feet from the projector (above projector, not distance from location on wall). Plug the Enhanced Voice Amplification System components, Power Supplies and the ADA Assistive Listening Transmitter into the outlets in the ceiling enclosure.
 - 2.7.1.6 All devices shall be secured in the ceiling enclosure with Velcro type tywraps material. The Velcro ties shall not pull directly on the connectors attached to the equipment. All cable shall be neatly secured and routed within the enclosure.
 - 2.7.1.7 Since the ceiling enclosure's electrical outlet shall serve as the power connection for the ADA Assistive Listening System, the enclosure, power outlet and ADA System must be located near each other to allow for proper operation. Coordinate the location of all components with the Electrical Contractor to insure power is properly installed.
 - 2.7.1.8 The Contractor shall be responsible for modifying, changing and/or reinforcing the existing accessible ceiling to accommodate the installation of the AV Enclosure. Additional structural support (hanging wires) shall be provided as required to properly insure the structural requirements of both the ceiling and the enclosure.

2.8 Classroom AV Wireless Microphone Receiver/Amplifier

- 2.8.1 The base unit shall serve as the audio amplifier and receiver for the Enhanced Voice Amplification System. The audio from the wallplate inputs shall be routed to the projector.

The main audio output from the projector shall be routed to the base unit and the base unit shall serve as the main audio switch for both the microphones and input sources. The base unit's inputs and volume control shall be controlled through the XD Teacher microphone or the audio source to coincide with the switching of the video inputs on the projector.

- 2.8.1.1 Provide (1) Audio Enhancements MS-450 Networked Amplifier Kit per plans.
- 2.8.1.2 Provide 3.5mm audio cable from the audio-out on Epson projector the audio-in on the RF mic receiver. Set dipswitch to not duck audio.
- 2.8.1.3 Provide a stand-alone 3.5mm audio input from the HDMI wallplate, independent of the audio from the projector. Route an audio cable from the wallplate to the base unit. The base unit shall provide independent control of the stand-alone audio input. Provide all necessary termination and connectors. Connect the stand-alone audio to Unbalanced Audio Input #3 on the base unit.
- 2.8.1.4 Provide Category-6 UTP patch cable from the 2-Port AV data, outlet at the projector location, to the network port on the MS-450 base unit. Connect the projector to a POE port and confirm that the port is activated at the IDF location. Coordinate the installation with the District IT Department. Data port connections shall be furnished by the 27 10 00 Contractor.
- 2.8.1.5 Provide a line voltage cable connection from the nearest existing paging speaker to allow the muting of the system audio when there is an intercom page announcement or class pass bell.
- 2.8.1.6 Provide all necessary audio and power cabling and hardware for a complete functional RF wireless microphone system.
- 2.8.2 Each system base unit shall serve as the amplifier for the ceiling speakers. The ceiling mounted speakers shall be wired with 18-AWG speaker wire from the amplifier. Each classroom shall be provided with (4) ceiling speakers. Ceiling speakers shall be wired to the amplifier in pairs at 4-Ohms.
 - 2.8.2.1 Provide 1' by 2' ceiling speakers by Audio Enhancements Model FS-17. The speakers shall be installed in pairs to the amplifier channels.
 - 2.8.2.2 The ceiling mounted speakers shall be furnished with at 2-foot T-Bar adapter from the manufacturer for installation in a 2' by 4' ceiling tile. The speakers shall be secured to the deck above with 12-AWG support wires. Contractor shall be responsible for providing seismic restraints for all ceiling speakers.
- 2.8.3 Volume control of the Enhanced Voice Amplification System shall be from the XD Teacher's Microphone. Provide each system with:
 - 2.8.3.1 (1) Model XD Teacher pendant hung microphone with Lithium ion battery
 - 2.8.3.2 (1) Model XD Handheld microphone with Lithium ion battery
 - 2.8.3.3 (1) XD System Microphone Charger with (2) 3-Meter USB-A to Micro USB Standard cables and power supply (Note: USB-USB Micro Cables do not come with microphone/charger from manufacturer and must be provided by the Contractor separately)

- 2.8.3.4 (1) XD IR Receiver installed at the center of the accessible ceiling in each of the classrooms. Sensor shall be cabled back to the base unit in the ceiling enclosure. The IR sensor shall be tested with the microphones to insure full coverage of the classroom. Do not bundle receiver cable with any other signal or power cables in the ceiling.
- 2.8.3.5 Microphones shall be provided with Smart Sensing Charging Circuitry in each of the microphones to limit overcharging of the rechargeable battery.
- 2.8.4 Provide the following spare parts for the Audio Enhancements XD Microphone System (This item applies to entire project, not an individual AV system):
 - 2.8.4.1 Provide (2) spare Audio Enhancements XD Teacher pendant hung microphones and (3) Lithium Ion batteries.
 - 2.8.4.2 Provide (2) spare Audio Enhancements XD hand held microphones and (3) Lithium-ion batteries.
 - 2.8.4.3 Provide (1) spare Model ICS-55 IR sensors with 50' connection cable.
 - 2.8.4.4 Provide (2) spare Micro USB Chargers, with (2) 3-Meter USB-A to Micro USB cables for each charger.
- 2.8.5 Set the equalizer on the base unit for optimal operation in the classroom when student background noise is present. The Contractor shall be responsible for setting the parameters for the base unit amplifier. Contractor shall return to the site if within 6-months complaints are received regarding insufficient volume or coverage.
- 2.8.6 All components installed in the ceiling enclosure or being powered from the ceiling enclosure, must be furnished with a power supply. The Contractor may choose as an option to provide a consolidated power supply, mounted in the enclosure, and the Contractor is responsible for sizing of power supply. If this option is chosen, the consolidated power supply must have a minimum of 20% operating headroom and must match the voltages required by the gear installed in the enclosure.
- 2.8.7 Connect the "ALS" audio output from the base station to the ADA Assistive Listening System Transmitter. Provide the 3.5mm cable required for the connection. Match cable length to actual distance to avoid excess service loop as this can induce system noise. Do not coil audio cable slack for this close to any power cables.

2.9 Classroom Assistive Listening

- 2.9.1 Provide an Assistive Listening System in each room furnished with an AV System. The Assisted Listening System shall be furnished and installed to meet CBC Section 1104B-2 and the ADA requirements for hard-of-hearing. The system shall be integrated into the sound reinforcement system. Mount the combination IR Radiator and base transmitter on the wall, at the front of the classroom near the ceiling level. Adjust as required for total coverage of seating area. Listen Technologies Assistive Listening System package shall include:
 - 2.9.1.1 (1) Stationary IR Transmitter/Radiator Combo – Model LT-84-01
 - 2.9.1.2 (1) Signage Kit – Model LA-304 Assistive Listening Notification Signage
 - 2.9.1.3 (2) IR Lanyard 4-Channel Receivers – Model LR-5200-IR with Li-ION rechargeable batteries

2.9.1.4 (1) LA-430 Induction Neck Loop

2.9.1.5 (1) LA-405 Universal Ear Buds

2.10 Classroom AV Patch Cables

- 2.10.1 All patch cables must be factory manufactured. All patch cables shall be in a length as required to provide the proper operation of the equipment, unless otherwise noted. Contractor is responsible for confirming all connector gender requirements prior to ordering.
- 2.10.2 **Audio Cable Assemblies 25-feet in length or less;** All 3.5mm stereo audio cable assemblies shall be a male to male cable fully shielded cable with 3.5mm bayonet style connectors. Extron Mini Audio Cables Series or equal. Provide minimum length of 6 feet.
- 2.10.3 **VGA Cable Assemblies 12-Feet in length for Input Wallplate to Computer patch cable Only;** VGA and VGA with audio cable assemblies shall be flexible High-Resolution type cable with molded 15-pin connectors on the assembly. Cable assembly shall be Extron Micro HR Series MVGA or MVGA-A, with gender of connectors to be field verified (Or Approved Equal).
- 2.10.4 **General use VGA Cable Assemblies 25-feet in length or less;** VGA and VGA with audio cable assemblies shall be flexible High-Resolution type cable with molded 15-pin connectors on the assembly. Cable assembly shall be Extron Micro HR Series MVGA or MVGA-A, with gender of connectors to be field verified (Or Approved Equal). Length of patch cable shall be as required for proper operation.
- 2.10.5 **General use VGA Cable Assemblies 25-feet in length or more;** VGA with audio cable assemblies shall be high resolution type cable molded 15-pin connectors on the assembly. The VGA cable assembly must have rounded low profile connectors. Cable assembly shall be Cables To Go "Select VGA" Series, Cable Assembly Part #50228 through #50232 (Or Approved Equal). Length of patch cable shall be as required for proper operation.
- 2.10.6 **HDMI Patch Cables 3-feet in length or less;** All HDMI patch cables must be 4K verified and must conform to the HDMI High Speed cable standards. Patch cable shall be Extron HDMI Micro Series High Speed, ultra-flexible patch cables (Or Approved Equal). Length of patch cable shall be either 3 feet or 1.5 feet as required for proper operation.
- 2.10.7 **HDMI Patch Cables 6-feet to 15-feet in length;** All HDMI patch cables must be 4K/30 verified and must conform to the HDMI Premium (6-12 feet) and High Speed (15 feet) cable standards. Patch cable shall be Extron HDMI Ultra Series High Speed patch cables (Or Approved Equal). Length of patch cable shall be as required for proper operation.
- 2.10.8 **HDMI Cable Assemblies 15-feet to 33-feet in length;** All HDMI patch cables must be 4K/30 verified and must conform to the HDMI Premium and High Speed cable standards. Cables shall be furnished with Redmere Equalization chipsets, Liberty AV Solutions Digitalinx high retention cables (Or Approved Equal). Length of patch cable shall be as required for proper operation.
- 2.10.9 **HDMI Cable Assemblies 33-feet to 50-feet in length;** All HDMI patch cables must be 4K/30 verified and must conform to the HDMI Premium and High Speed cable standards. Cables shall be furnished with Redmere Equalization chipsets, Liberty AV Solutions PPC Locking cables (Or Approved Equal). Length of patch cable shall be as required for proper operation.

- 2.10.10 **USB-B to USB-A 3.0 Patch Cables;** Provide a USB Type-B to USB 3.0 Type-A patch cable (male to male) for connection to transmitter unit from Teacher's PC. The patch cable shall be 15-feet in length, patch cables shall be as manufactured by Pearstone or approved equal. Patch cables shall be provided for the wallplate connections.
- 2.10.11 **USB-A 3.0 Patch Cables;** Provide a USB 3.0 Type-A patch cable for connection to receiver unit from projector. The patch cable shall be 3-feet in length or less, patch cables shall be as manufactured by Pearstone or approved equal. Patch cables shall be provided for the wallplate connections
- 2.10.12 **Category-6 Patch Cables 25-feet or Less;** Category-6 UTP patch cables shall be as manufactured by Leviton or Ortronics, or approved equal. Patch cables shall be provided with standard patch cable material.
- 2.10.13 **Category-6 Patch Cables 25-feet or More;** Category-6 UTP patch cables shall be as manufactured by Leviton or Ortronics, or approved equal. All patch cables in excess of 25-feet must be constructed with solid conductor wire to comply with the crosstalk requirements of the Category-6 standards.
- 2.10.14 All patch cables shall be provided for each type of connection required to provide a complete and operational system. All patch cables shall be factory manufactured.

Training

- 2.11 Portable Equipment shall be furnished and spares supplied to the designated representative of the Client, along with complete documentation of the materials provided. Where applicable, deliver portable equipment in the original manufacturer's supplied packaging.
- 2.12 **Contractor will provide a minimum of 40 clock hours of on-site training for site staff on the Classroom video systems.** Training for personnel shall be provided by certified technology specialists. The scope of training shall encompass system operation and procedures. Technician training should include an integrated information overview, media retrieval procedures as well as operation procedures for local control configurations. The contractor shall provide a detailed written outline clearly describing the proposed plan for all training, for approval by the Engineer and Owner's representative.
 - 2.12.1 Training for staff will include basic system concepts. Faculty and staff will need to know how to power on/off the system, and how to access one or more media resources via remote control. Training should include use and operation of audio/video devices and techniques and trouble shooting tips. Trainers should incorporate hands-on techniques to maximize staff opportunity to incorporate and develop curriculum that is both meaningful and targeted for their student needs. Clearly written support materials should be provided to all training participants. Manual describing operation and use of the system shall also be provided.

Technician: (4 Hours)

- 2.12.2 Trainers shall provide technicians with an in-depth technical overview of head end or control system concepts. Training should include basic overview of head end and local control, and trouble shooting concepts. Head end training should include system concepts and hands on usage of media sources. Media center technicians will be trained to provide setup, operation and application of return

video. Clearly written documentation and support materials must be provided for each installation. A training manual describing operation and use of the system shall also be provided. Provide control of local resources and will be equipped with the required local switching and control capability. Provide required cables to integrate all local room devices including Plasma displays, DVD/VCR and audio / visual control system.

PART 3 - INSTALLATION AND EXECUTION

- 3.1 Verify that all electrical requirements including junction boxes, empty conduit and power circuits and receptacles are in place as shown on the drawings.
- 3.2 Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.
- 3.3 Installation practices shall follow "standard broadcast wiring" and installation practices, as excerpted from "Recommended Wiring Practices, Sound System Engineering", (2nd Edition) D. Davis, and Performed to the highest standards of acknowledged industry practices. Upon request the A/V contractor shall furnish all equipment and labor to verify the compliance with the following:

Optical:

- 3.3.1 Center to corner light fall off shall be less than 50% for video/data projectors.
- 3.3.2 Center to corner light fall off shall be less than 35% for optical projectors.
- 3.3.3 Images shall be level and square with the appropriate aspect ratio.
- 3.3.4 Image shall be free from visible vibration.

Audio System:

- 3.3.5 Signal-to-noise ratio (including crosstalk): 55-dB minimum.
- 3.3.6 Total harmonic distortion: 0.1% maximum from 30 Hz to 15,000 Hz.
- 3.3.7 System frequency response: ± 1.0 dB, 20 Hz to 20,000 Hz.
- 3.3.8 Program reproduction system with point-source loudspeakers: Flat response from 63 Hz to 2.5 kHz ± 2 -dB, decreasing uniformly from a relative level of 0-dB at 2.5 kHz to a relative level of -10 -dB at 10 kHz as measured on axis of loudspeaker.
- 3.3.9 Sound output capability: Program levels of not less than 100 dB without objectionable distortion, rattles, or buzzes.
- 3.3.10 Hum and noise is inaudible (below the background noise level of the space) under normal operation and as observed in normal seat locations.

Video System:

- 3.3.11 Signal-to-noise ratio (peak to RMS, unweighted DC to 4.2 MHz): 55-dB minimum.
- 3.3.12 Crosstalk (unweighted DC to 4.2 MHz): 45-dB minimum.
- 3.3.13 Frequency response: ± 0.5 dB to 4.2 Mhz.
- 3.3.14 Line and field tilt: 2% minimum.
- 3.3.15 Differential gain: 3% maximum.
- 3.3.16 Differential phase: 2E maximum.
- 3.3.17 System timing sync coincidence: within 50 nanoseconds.
- 3.3.18 Color timing: $\pm 2E$ at 3.58 Mhz.

Radio Frequency (RF) System:

- 3.3.19 Visual Carrier level: +0 dBmV minimum and +16 dBmV maximum at system outlets for utilized channels.
- 3.3.20 Adjacent Channel Visual Carrier: 3-dB maximum differential at system outlets.
- 3.3.21 Non-adjacent Channel Visual Carrier: 0-dB maximum differential at system outlets.
- 3.3.22 Carrier-to-Noise Ratio: 42-dB minimum
- 3.3.23 Amplitude Response: Flat ± 1.0 Db
- 3.3.24 Signal-to-Noise Ratio: 45-dB minimum for the maximum level of the signal and the interference resulting from cross modulation from other signals on the system, after demodulation.
- 3.3.25 Outlet-to-Outlet Isolation: 25-dB minimum.
- 3.4 Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.
- 3.5 Where manufacturer does not provide bending radius information, minimum bending radius shall be 10 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the engineer and the owner.
- 3.6 Attach cables to permanent structure with suitable attachments at intervals of 48 to 60 inches. Support cables installed above removable ceilings. Install adequate support structures for 10 foot cable service loops at each TC.

- 3.7 Mark all cables and patch cords or jumpers with permanent, non-handwritten number or letter cable markers within six inches of both ends. All cables shall be marked. Cable marking codes shall correspond to run sheets.
- 3.8 Furnish screw-type terminal blocks, boards, strips or connectors for cables that interface with racks, cabinets, consoles or equipment modules. Attach wires terminating at screw-type terminals with crimp-on lugs. "Telephone-style" punch down blocks are not acceptable for signal or data wiring.
- 3.9 Group cables according to signals being carried. To reduce signal contamination, form separate groups for the following:
 - 3.9.1 Power cables.
 - 3.9.2 Control cables.
 - 3.9.3 Video cables.
 - 3.9.4 Camera cables.
 - 3.9.5 Audio cables for signals less than minus 20 dBm.
 - 3.9.6 Audio cables for signals between minus 20 dBm and plus 30 dBm.
 - 3.9.7 Audio cables for signals above plus 30 dBm.
 - 3.9.8 Broadband RF cables.
- 3.10 Run power cables, control cables, and high level cables on the left side of an equipment rack as viewed from the back. Run other cables on the right side of an equipment rack.
- 3.11 Cut cables (except video, camera and RGBS cables, which must be cut to electrical length) to the length required by the run. All wire and cable shall be continuous and splice-free for the entire length of run. For equipment mounted in drawers or on slides, provide the interconnecting cables with a service loop of appropriate length.
- 3.12 Install no cable with a bend radius less than that recommended by the manufacturer.
- 3.13 Provide strain relief for cables. Provide connectors with metal shell/casings. Provide a minimum of three feet of free cable coiled in a floor pocket. Use spiral wrap to group similar cable types.
- 3.14 All shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, panels, or equipment enclosures. Tin all terminated shield drain wires and insulate with heat-shrink tubing.
- 3.15 Land all field loudspeaker wiring entering each rack at terminal devices prior to connection to equipment or devices. Land loudspeaker level control cables at screw or tubular clamp type barrier blocks on the left side of the equipment rack as viewed from the rear. Make all connections to screw-type barrier blocks with insulated crimp-on spade lugs. Size all lugs properly to assure low-resistance connections.
- 3.16 Separately dress, route and land microphone and line level cables directly to equipment.
- 3.17 Use only rosin core 60/40 tin/lead solder for all solder connections.
- 3.18 Lace, tie or harness wire or cable in accordance with accepted professional practice. Dress, lace or harness all wire and cable to prevent mechanical stress on electrical connections; no wire or cable shall be supported by a connection point. Provide service

- loops where harness of different classes cross or where hinged panels are to be interconnected.
- 3.19 Patch Panel Assignments: Wire patch panels so that signal “sources” (outputs from) appear on the upper row or a row pair and “loads” (input to) appear on the lower row of a row pair.
 - 3.20 Patch Panel Designation Strips: Use alphanumeric identifications and descriptive information on patch panel designation strips. Number the jack positions in each horizontal row sequentially from left to right. Letter the horizontal jack rows sequentially from top to bottom. Include the alphanumeric identification of each jack on the functional block drawings, and on reproductions of these drawings that shall be mounted in an appropriate location near the patch bays.
 - 3.21 Each major component of equipment shall have the manufacturer's name, address, model number, and rating on a plate securely affixed in a conspicuous place. NEMA code ratings, UL label, or other data which is die-stamped into the surface of the equipment shall be stamped in a location easily visible.
 - 3.22 Upon completion of the work, remove all refuse and rubbish from and about the premises, and leave the relevant areas and equipment clean and in an operational state.
 - 3.23 During the installation, and up to the date of final acceptance, protect finished and unfinished work against damage and loss. In the event of such damage or loss, replace or repair such work at no cost to the owner.
 - 3.24 Prior to final acceptance, provide minimum of three complete sets of drawings showing all cable numbers and construction details in accordance with the actual system installation. Revise the device layout drawings to represent actual installation locations and coordinate these with the electrical contractor. The operation manual shall contain all instructions necessary for the proper operation of the installed system and manufacturers instructions. The maintenance manual shall contain all information required for the "proof of performance" as required and all manufacturer's maintenance information.

Inspection and Test upon Completion

- 3.25 Check out and final connections to the system shall be made by a factory-trained technician in the employ of a manufacturer of the products installed. In addition, factory-trained technicians shall demonstrate operation of the complete system and each major component to the Owner.
- 3.26 System field wiring diagrams shall be provided to the owner by the system manufacturer prior to completion of the installation.
- 3.27 All materials and installation shall be guaranteed to be free of defects in material and workmanship for two years after final acceptance of installation and test.
- 3.28 Upon completion of the installation, four (4) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational and maintenance manuals have been received.

- 3.29 Upon completion of the installation of the equipment, contractor shall provide to the owner a signed statement from the equipment manufacturer that the system has been tested and functions properly according to the specifications.
- 3.30 The Contractor shall be responsible to provide service within 24 hours (or by mutual consent) after notification by the Owner or his representative, within the hours of 8:00 AM to 5:00 PM from Monday through Friday. Service request forms shall be supplied by the Contractor and the faxing or mailing of such a request form shall constitute notification by the Owner of a service request.
- 3.31 The Contractor shall provide two "preventative maintenance" service calls, spaced six months apart, for cleaning of all source devices and overall inspection of the system.

PROJECT CLOSEOUT

- 3.32 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this division, in accordance with these specifications and as described below.
- 3.33 Equipment Lists and Maintenance Manuals:
 - 3.33.1 Prior to completion of job, contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this section of the specifications:
 - 3.33.1.1 Name, model, and manufacturer.
 - 3.33.1.2 Complete parts drawings and lists.
 - 3.33.1.3 Local supply for parts and replacement and telephone number.
 - 3.33.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.
- 3.34 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturer's operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

RECORD DRAWINGS

- 3.35 The contractor shall maintain record drawings as specified in accordance with these specifications, and as noted below.
- 3.36 Drawings shall show locations of all concealed and exposed conduit runs, giving the number and size of conduit wires. Underground ducts shall be shown with cross section

elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all the actual changes made.

- 3.37 One set of digital record drawings shall be delivered to the Engineer in accordance with these specifications.

END OF SECTION

SECTION 27 51 16

CLOCK SYSTEM

PART 1 – GENERAL

- 1.1 Clock system on campus is EXISTING American-Time. The Contractor shall provide equipment, devices, and components to cover both the whole school campus including the portables as shown on the drawings, and as described in these specifications including all connectors, power supplies, and auxiliary equipment as may be required.
- 1.2 Related Specification Sections:
 - 1.2.1 Section 26 01 00 - General Provisions
 - 1.2.2 Section 26 05 33 - Conduit and Fittings
 - 1.2.3 Section 26 05 19 - Conductors
 - 1.2.4 Section 26 05 34 - Outlet and Junction Boxes
- 1.3 Acceptable clock manufacturer shall be American Time.

Equipment manufactured by Primex, Sprint, TOA, Telecor, Practek, Precise, QIS, AMX, and Crestron or any other manufacturers not listed above have been reviewed and are not considered equal or approved for use on this project.
- 1.4 The Contractor shall be an established communications and electronics Contractor that has had and currently maintains a locally run and operated business for at least five years. The Contractor shall utilize a duly authorized distributor of the equipment supplied for this project location with full manufacturer's warranty privileges.
- 1.5 The Contractor shall show satisfactory evidence, upon request, that the supplier maintains a fully equipped service organization capable of furnishing adequate inspection and service to the system. The supplier shall maintain at his facility the necessary spare parts in the proper proportion as recommended by the manufacturer to maintain and service the equipment being supplied.
- 1.6 Electrical Component Standard: Provide work complying with applicable requirements of CEC with state amendments including, but not limited to:
 - 1.6.1 Article 250, Grounding.
 - 1.6.2 Article 300, Part A. Wiring Method.
 - 1.6.3 Article 310, Conductors for General Wiring.
 - 1.6.4 Article 725, Remote Control, Signaling Circuits.
 - 1.6.5 Article 800, Communication Systems.
- 1.7 UL Compliance: Comply with requirements of UL 50. The communication system supplied shall be listed by Underwriter's Laboratories under UL Standard 1459. A copy of the UL listing card for the proposed system shall be included with the Contractor's submittal. The system shall also comply with PCC Part 68 Regulations.
- 1.8 Installation and start up of all systems shall be under the direct supervision of a local agency regularly engaged in installation, repair, and maintenance of such systems. The supplier shall be accredited by the proposed equipment manufacturers and be prepared

- to offer a service contract for system maintenance on completion of the guarantee period.
- 1.9 The agency providing equipment shall be responsible for providing all specified equipment and mentioned services for all equipment as specified herein. The agency must be a local authorized distributor of all specified equipment for single source of responsibility and shall provide documents proving such. The agency must provide written proof that the agency is adequately staffed with factory-trained technicians for all of the specified equipment.
- 1.10 The Contractor shall guarantee availability of local service by factory- trained personnel of all specified equipment from an authorized distributor of all equipment specified under this section. On-the-premise maintenance shall be provided at no cost to the purchaser for a period of one (2) year from date of installation unless damage or failure is caused by misuse, abuse, neglect, or accident.

Submittals

- 1.11 Phase I Submittal shall be made within (20) working days after the award of the contract by the District. This submittal shall include the following:
- 1.11.1 Complete bills of quantities, including all materials, components, devices, and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:
- 1.11.1.1 Quantity of each type of equipment item.
 - 1.11.1.2 Description of each item.
 - 1.11.1.3 Manufacturer's Name and Model Number.
 - 1.11.1.4 Manufacturer's Specification Sheet.
 - 1.11.1.5 Equipment items which have individual components, will require that all component parts be listed individually.
 - 1.11.1.6 All wiring types required for installation of this system.

PART 2 – PRODUCTS

Wireless Clock System

- 2.1 Acceptable clock manufacturer shall be American -Time Integrated Solutions, Site Sync IQ wireless system
- 2.2 Clock system shall continually synchronize clocks throughout the facility, and shall be capable of clock readouts in multiple time zones where desired.
- 2.3 Time system shall be a synchronized time system. The system shall synchronize all clocks to each other. The system shall utilize SNTP Ethernet with remote connect web server technology to provide atomic time. The system shall not require hard wiring. Clocks shall automatically adjust for Daylight Savings Time.

- 2.4 Clocks shall be synchronized to within 10 milliseconds 6 times per day, and the system shall have an internal oscillator that maintains plus or minus one second per day between synchronizations, so that clock accuracy shall not exceed plus or minus 0.2 seconds.
- 2.5 The system shall include internal clock so that failure of the GPS signal shall not cause the clocks to fail in indicating time.
- 2.6 The system shall incorporate fail-safe design so that failure of any component shall not cause failure of the system. Upon restoration of power or repair of failed component, the system shall resume normal operation without the need to reset the system or any component thereof.
- 2.7 Clock locations shall be as indicated, and clocks shall be fully portable, capable of being relocated at any time.

Regulatory Requirements

- 2.8 The end user will hold a license, known as a "Radio Station Authorization" granted by the FCC. This license grants the end user protected use for wireless transmission at the designated frequency.
- 2.9 The system must operate in accordance with a "Radio Station Authorization", Form FCC 601 – LM, granted by the Federal Communications Commission (FCC). This license will be issued to and held by the end user.
- 2.10 FCC 1068 – A "Telecommunications Bureau Supplemental Information" must be completed and signed by end user prior to license issuance.
- 2.11 This license will designate a unique "call sign" for each end user.
- 2.12 Transmitter and receiver shall comply with Part 90 of FCC rules as follows:
 - 2.12.1 This device may not cause harmful interference and this device must accept interference received, including interference that may cause undesired operation.
 - 2.12.2 System shall be installed in compliance with local and state authorities having jurisdiction.
 - 2.12.3 In accordance with FCC regulations a "Radio Station Authorization", Form FCC 601-LM must be delivered to the Owner/End User prior to the installation and operation of the system.
 - 2.12.4 Operating License: Submit FCC Radio Station Authorization prior to installing equipment. Furnish the license to the Owner/End User prior to installation and operation of the equipment. The original license must be delivered to the Owner/End User.
- 2.13 Transmitter frequency shall be governed by FCC Part 90.35.

2.14 Transmitter output power shall be governed by FCC Part 90.257 (b).

2.15 Permits: Obtain operating license for the transmitter from the FCC.

Project Site Conditions

2.16 Clocks shall not be installed until painting and other finish work in each room is complete.

Sequence of Operation

2.17 Transmitter: When power is first applied to the transmitter, it checks for and displays the software version, then it checks the position of the switches and stores their position in memory. The transmitter then looks for the GPS time signal. Once the transmitter has received the GPS time, it sets its internal clock to that time. The transmitter then starts to transmit its internal time once every second. The transmitter updates its internal clock every time it receives valid time data from the GPS.

Equipment

2.18 **Transmitter: Primary Transmitter Location in MDF Room; Wireless Model consisting of a 5-watt wireless transmitter with amplifier. The clock system shall transmit time continuously to all clocks in the system.**

Transmission

2.19 Frequency Range: (Five watts) at frequency of 72.100 to 72.400 MHz.

2.20 Radio technology: Narrow band FM

2.21 Number of channels: 16

2.22 Channel bandwidth: 20 kHz maximum

2.23 Transition mode: One-way communication

2.24 Data rate: 2 Kbps

2.25 Operation range: 0 degrees C. to 70 degrees C.

Transmitter

2.26 Transmitter output power: +30 dBm (five watts)

2.27 Frequency deviation: +/-4 kHz

2.28 Transmitter power requirements: 120 VAC 60 Hz

2.29 Internal power requirements: 3.3 volts DC

- 2.30 Carrier frequency stability: +/- 5 ppm
- 2.31 Transmitter shall have 16 selectable channels to assure interference-free reception.
- 2.32 Transmitter shall have the following switches:
 - 2.32.1 Time zone adjust switches for all time zones in the world. Includes all US time zones: Eastern, Central, Mountain, Pacific, Alaska and Hawaii.
 - 2.32.2 Daylight Saving Time bypass switch.
 - 2.32.3 12-hour or 24-hour display.
- 2.33 Transmitter housing shall incorporate a display which shall include the following:
 - 2.33.1 Time readout
 - 2.33.2 AM and PM indicator if 12 hour time display is set
 - 2.33.3 Day and date readout
 - 2.33.4 Indicator for Daylight Savings or Standard Time
 - 2.33.5 LED which shall flash red in event of reception problem
 - 2.33.6 GPS reception indicator
 - 2.33.7 Transmitter shall contain an internal clock such that failure of reception from the GPS will not disable the operation of the clocks.

Transmitter:

- 2.34 Locate transmitter where indicated, a minimum of 2 to 3 feet above the floor, away from large metal objects such as filing cabinets, lockers or metal framed walls. Transmitter can be rack mounted or mounted on a shelf on the wall. Contractor shall furnish shelf or rack mount kit, depending on mounting option shown.
- 2.35 Contractor shall furnish and install the conduits to the roof per the drawing details.
- 2.36 Attach receiver to transmitter using coaxial cable.
- 2.37 Connect to external antenna assembly mounted on the roof of the building.
- 2.38 Connect power supply to the transmitter.
- 2.39 Set the channel number on the display to correspond to the FCC license.
- 2.40 Plug power supply into electrical outlet.
- 2.41 **Clocks:** Wireless clocks, 12 inch diameter, color and finish as selected from manufacturer's standard colors and finishes. Clocks shall be wall mounted (unless using ceiling mounted model), 12 inch diameter clocks shall have polycarbonate from

and polycarbonate lens. Face shall be white. Hour and minute hands shall be black. Clocks shall be provided with red sweep second hand.

- 2.41.1 Clocks shall be battery operated, and shall have 5 year batter life.
- 2.41.2 Clocks shall be capable of automatically adjusting for Daylight Saving Time. An on-off switch located on the transmitter shall disable this function if desired.
- 2.41.3 Time shall be automatically updated from the transmitter 6 times per day.
- 2.41.4 Clocks shall remember the time during changing of batteries.
- 2.41.5 Clock lock: Tamper proof/theft resistant hangers and slots in the backs of the clocks.
- 2.41.6 Provide 2 lithium AA cell batteries with each clock.
- 2.41.7 Clock receivers shall be as follows:
 - 2.41.8 Decode sensitivity: > - 110 dBm
 - 2.41.9 Receiver power: Two alakine "D" cells
- 2.42 Provide protective wire grill over all clocks located in gymnasium, locker or shower rooms, rooms used for athletic functions such as weightlifting, wrestling or dance and in multipurpose facilities used as combination athletic areas. Wire Guards: Provide one for each clock as follows:
- 2.43 All clocks shall be provided with custom school LOGO dial face, verify graphics at time of submittals.
- 2.44 Provide a quantity of (1) spare 12" wireless clock in addition to the quantity indicated on the drawings.
 - 2.44.1 Deliver any spare clock, to the district maintenance department, at the close of the project.
- 2.45 Provide training to Owner's representative on setting and adjusting clocks, replacing batteries and routine maintenance.

PART 3 - EXECUTION

- 3.1 Clock transmitter shall be mounted on steel shelves, rack mounted or mounted to the plywood backboard.
- 3.2 120 Volt AC supply shall be connected from each piece of equipment directly to power outlet provided by Electrical.
- 3.3 All cable connections shall be labeled in the MDF closet. All labels shall be type- written, hand written labels will not be accepted. Contractor shall provide self-laminating wrap

around labels. Provide Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (No Approved Equal).

Inspection and Test upon Completion

- 3.4 Check out and final connections to the system shall be made by a factory-trained technician in the employ of a manufacturer of the products installed. In addition, factory-trained technicians shall demonstrate operation of the complete system and each major component to the Owner.
- 3.5 All materials and installation shall be guaranteed to be free of defects in material and workmanship for two years after final acceptance of installation and test.
- 3.6 Upon completion of the installation three (3) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational and maintenance manuals have been received.
- 3.7 Upon completion of the installation of the equipment, Contractor shall provide to the owner a signed statement from the equipment manufacturer that the system has been tested and functions properly according to the specifications.

Operation and Training

- 3.8 Contractor will provide a minimum of 2 clock hours of on-site training for site staff on the operation and programming for the clock systems. Training for personnel shall be provided by certified technology specialists. The scope of training shall encompass system operation and procedures. Technician training should include an integrated information overview, as well as operation procedures for local control configurations. The Contractor shall provide a detailed written outline clearly describing the proposed plan for all training, for approval by the Engineer and Owner's representative.
- 3.9 Warranty service calls made by telephone to this Contractor or his designated representative shall hereby be defined as proper notification that warranty service is required.

RECORD DRAWINGS

- 3.10 The Contractor shall maintain record drawings as specified in accordance with these specifications, and as noted below.
- 3.11 Drawings shall show locations of all concealed and exposed conduit runs, giving the number and size of conduit wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all the actual changes made.
- 3.12 One set of record drawings shall be delivered to the Engineer in accordance with these specifications.

END OF SECTION

DIVISION 28
ELECTRONIC SAFETY AND SECURITY

SECTION 28 01 00

ELECTRONIC SAFETY AND SECURITY
GENERAL PROVISIONS

ARTICLE 1 - SUMMARY

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a sub contract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

SECTION 28 30 00

FIRE ALARM SYSTEM

PART 1 – GENERAL

- 1.1 Work Included:
 - 1.1.1 Furnish and install all equipment, accessories, and materials in accordance with these specifications and drawings to provide a complete and operating fire alarm system.
- 1.2 Related Work:
 - 1.2.1 Division 26 01 00: Electrical General Provisions
 - 1.2.2 Division 26 05 33: Conduit and Fittings
 - 1.2.3 Division 26 05 34: Outlet and Junction Boxes
- 1.3 The equipment and installation shall comply with the current applicable provisions of the following standards:
 - NFPA 72-2016. National Fire Alarm Code with California Amendments.
 - CBC - 2016. California Building Code (CBC), Part 2, Title 24, CCR.
 - CEC - 2016. California Electrical Code, (CEC), Part 3, Title 24, CCR.
 - CFC - 2016. California Fire Code (CFC), Part 9, Title 24, CCR.
- 1.4 The system and all components shall be listed by Underwriters Laboratories, Inc. for use in Fire Protective Signaling Systems under the following standards as applicable:
 - UL 38 Manually Actuated Signaling Boxes.
 - UL 50 Cabinets and Boxes.
 - UL 268 Smoke Detectors for Fire Protective Signaling Systems.
 - UL 268A Smoke Detectors for Duct Applications
 - UL 346 Waterflow Indicators for Fire Protective Signaling Systems.
 - UL 464 Audible Signaling Appliances.
 - UL 521. Heat Detectors for Fire Protective Signaling Systems.
 - UL 864 Control Units for Fire Protective Signaling Systems.
 - UL 1481. Power supplies for Fire Protective Signaling Systems.
 - UL 1971. Visual Signaling Appliances.
- 1.5 Only Fire Alarm Control Panel Equipment and Peripheral Field Devices have been shown on the Contract Bid Single Line Block Diagram. Specific and complete wiring between Control Equipment and Peripheral Equipment has been deleted for clarity.
- 1.6 Submittal shall be made **in accordance with Division 26 01 00 – Shop Drawings and Submittals.** This submittal shall include the following:
 - 1.6.1 Complete bills of quantities, including all materials, components, devices, and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:

- 1.6.1.1 Quantity of each type of equipment item.
- 1.6.1.2 Description of each item.
- 1.6.1.3 Manufacturer's Name and Model Number.
- 1.6.1.4 Manufacturer's Specification Sheet.
- 1.6.1.5 California State Fire Marshall Listing Sheets for all components.
- 1.6.1.6 Equipment items which have individual components, will require that all component parts be listed individually.
- 1.6.1.7 Letter indicating the contractor's intent to comply with Phase II submittal drawings.

- 1.7 Phase II Submittal shall be provided **within (20) working days** after the approval of the Phase I submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered and drawn on a CAD System. Each submission shall include 'D' or 'E' size print copies to match the contract drawings, and one (1) data disk copy with files in a AutoCAD 2000i or 2004 format. Building floor plan CAD files on disk, will be made available via express mail after the receipt of payment of \$50.00 per building floor plan, or \$300.00 minimum which ever is less. Contractor shall make the request for drawings in writing directly to Johnson Consulting Engineers, confirmation of the request and a release form will be forwarded to the contractor to include a signed copy with payment prior to release of files. Detail or riser diagram sheets or any other drawings other than floor or site plans, will not be made available to the contractor.

1.7.1 Provide complete shop drawings to include the following:

- 1.7.1.1 Complete floor plans, at scale of contract documents, showing the locations throughout the project of all receptacles, conduits, wireways, tray, pullboxes, junction boxes, equipment racks, and other devices.
- 1.7.1.2 Point to point wiring diagrams showing wiring from panel terminals to each device.
- 1.7.1.3 Scaled floor plans indicating the location of devices, conduit runs, types, and number of conductors.
- 1.7.1.4 Riser diagram indicating all wiring and circuits.
- 1.7.1.5 Current State Fire Marshal listing sheets for all components and devices.
- 1.7.1.6 Provide battery power supply calculations, indicate point of power supply connection, means of disconnect, over-current protection, etc. for each panel.
- 1.7.1.7 Provide detailed information on conductors to be used-manufacturer, type, size, insulation, etc.
- 1.7.1.8 Provide voltage drop calculations for all conductor run is from each panel (i.e., main FACP, remotes, power extenders, etc.) for each panel.
- 1.7.1.9 Provide written sequence of system operation matrix.
- 1.7.1.10 Provide list of zones. (Every device that is addressable.)

1.7.1.11 Provide detailed drawing for annunciator panel indicating all zones and initiating devices.

1.8 **Common submittal mistakes which will result in submittals being rejected:**

1.8.1 Not including the qualifications of the installing contractor.

1.8.2 Not including all items listed in the above itemized description.

1.8.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.

1.8.4 Not including actual manufacturer's catalog information of proposed products.

1.8.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.9 All equipment and material shall be new and unused, and listed by Underwriter's Laboratories for the specific intended purpose. All control panel components and field peripherals shall be designed for continuous duty without degradation of function or performance. All equipment covered by this specification or noted on Installation. Drawings shall be equipment suited for the application and shall be provided by a single manufacturer or be recognized and UL listed as compatible by both manufacturers.

1.10 It will be the responsibility of the Contractor to ensure proper specification adherence for system operation, final connection, test, turnover, warranty compliance, and after-market service. The distributor of the equipment specified must be factory-trained and certified.

1.11 Basic System Functional Operation, upon operation of any automatic, manual or other initiation device the following shall occur:

1.11.1 The system alarm LED shall flash.

1.11.2 A local piezo electric signal in the control panel shall sound.

1.11.3 A backlit 80-character LCD display shall indicate all information associated with the fire alarm condition, including the alarm point and its location within the protected premises.

1.11.4 History storage equipment shall log the information associated with each new fire alarm control panel condition, along with time and date of occurrence.

1.11.5 All system output programs assigned via control by event equations to be activated by the particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.

1.11.6 LED display and audible signaling at the remote annunciator indicating building, fire zone, and type of device. Annunciator shall also provide a separate audible signal for CO detection with a green flashing light, with classroom number indication.

- 1.11.7 Automatic retransmission to a UL central station for fire department notification.
- 1.11.8 Automatic shut down of air conditioning units and/or smoke dampers furnished with duct detectors. Each building shall shut down all A/C units and dampers within that building as one zone.
- 1.12 All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protective signaling system, meeting the NFPA 72, 2016 Edition with California State Amendments.
- 1.13 All equipment and components shall be installed in strict compliance with manufacturer's recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- 1.14 All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place. Fasteners and supports shall be adequate to support the required load.
- 1.15 All wiring shall be installed in a conduit system.
- 1.16 The contractor shall provide as a part of this contract additional control modules, heat detectors, smoke detectors, CO detector, duct detectors, manual pull stations, strobes, mini-horns and exterior horn devices etc., to equal 10% of the total quantity of devices shown on the drawings, or a minimum of three (3) for each type, whichever is greater. Installation of conduit, boxes and wiring of these devices shall be included, and required locations coordinated with CSFM final approved shop drawings. Any devices not required to be included during construction shall be delivered to the District at the completion of the project. The quantities of these devices shall be listed as a part of the Phase I submittals.
- 1.17 The installing contractor shall provide a copy of current documentation, indicating that the contractor installing the fire alarm systems or devices and wiring, is certified by Underwriters Laboratories (UL) in its product directories under the listing category "PROTECTIVE SIGNALING SERVICES - LOCAL, AUXILIARY, REMOTE STATION, AND PROPRIETARY." The contractor shall be certified by the manufacturer to install and program the system. The contractor must also provide complete installation of all wiring and equipment, and software programming. Supervised installation of the wiring, devices and/or any software programming shall not be permitted.
 - 1.17.1 The installing contractor must also be an "authorized dealer" by the equipment manufacturer and must have completed all required training prior to the bid of this project.
 - 1.17.2 The fire alarm system installation shall be warranted by the manufacturer's representative.
 - 1.17.3 The Contractor shall have a current California C-10 or C-7 Contractor's License, and all individuals working on this project shall have passed the Department of Industrial Relations Division of Apprenticeship Standards – "Fire / Life Safety Certification Program."

- 1.17.4 The installing contractor shall provide, at the time of submittal, a letter of intent to provide an extended service warranty. This warranty shall extend for a total of three (3) years, starting at the completion, testing, and training of this project. The service warranty shall cover all material and labor to keep operational all system devices installed under this project and shall include two (2) complete U.L. system's tests and cleaning of all devices at year two (2) and year three (3) of the warranty. Routine cleaning of devices, other than at the two (2) specified U.L. system's testing periods, will not be included as a part of this warranty.
- 1.17.5 The installing contractor shall provide, at the time of submittal, a letter indicating that the installation crew for this project meets the following NICET certifications:
 - 1.17.5.1 25% of the installing field personnel must have completed NICET Level 2 Certification.
 - 1.17.5.2 One of the installing field personnel and /or supervisor must have completed NICET Level 3 Certification.
 - 1.17.5.3 Contractor shop drawings shall be signed by an individual who has completed NICET Level 4 Certification.
- 1.18 All conduit and standard backboxes will be furnished and installed by the Division 26 Contractor. Specialty boxes will be furnished by the equipment supplier to be installed by the Division 26 Contractor.
- 1.19 Equipment and materials shall be the standard product of Silent Knight.

Alternate equipment as manufactured by any other manufacturer not specifically listed above will not be approved for use on this project. D.S.A approved drawings are included as a part of the drawing set

PART 2 - PRODUCTS

- 2.1 Main Fire Alarm Control Panel
 - 2.1.1 Fire alarm control panel is **EXISTING SILENT KNIGHT 5820XL**.
 - 2.1.2 The system shall be controlled and supervised by a microprocessor-based monitoring fire alarm control panel. The systems shall be addressable, field configurable, programmable and editable. The system shall continuously scan devices for change of status. Each device shall have its own unique address but shall also be grouped by building as a separate zone for remote annunciation and alarm report purposes.
 - 2.1.3 The system shall be provided with a networking card and software and modem to communicate with the District-wide diagnostic and annunciation network.
 - 2.1.4 The fire alarm control panel shall be housed in a lockable, code gauge steel cabinet with 80-character LCD display, master controller operators panel, Indicating lamps, silence switch and reset switch mounted on cabinet front. The fire alarm control panel shall be physically and visually located in the general office for monitoring by staff and shall sound the "Temporal Pattern" in all zones. Signal duration shall be field programmable and initially set at three minutes.

Provide all control modules, synchronous modules, etc., to provide a complete working system per all codes that apply.

- 2.1.5 The fire alarm control panel shall come with standardized software for on-site customization of the system. The unit shall be capable of providing a 600-event historical log with zone or point selectable alarm verification.
- 2.1.6 The unit shall support 127 addressable points per module and one output point, SPST contact per zone. Provide the number of modules necessary to control and supervise fire alarm devices as shown on the Drawings, as well as to provide 25% spare capacity.
- 2.1.7 The fire alarm control panel shall be capable of providing a walk test.
- 2.2 The power feed for the FACP shall be 3-wire, 120volt, AC, single phase (20A circuit) permanently labeled "FIRE ALARM CONTROL POWER", terminating at the master fire alarm control and supervisory panel. The label shall be red with 1/4" high white lettering. The source circuit breaker must be provided with a lock-on device.
- 2.3 In addition to the AC circuit, the panel shall be equipped with a DC battery to activate an audible alarm and pilot light in case of a power failure on the AC circuit.
- 2.4 Batteries must drive signaling devices per current requirements of California State Fire Marshal. Battery calculations are required as part of the submittal.
- 2.5 The master fire alarm panel shall be equipped with a manual pull lever type, supervised report station.
- 2.6 With the exception of the manually operated report station required at the master fire alarm panel and large assembly areas, the remainder of the school facility shall be equipped with approved, electronically supervised, automatic fire detection devices, such that every room, space, including concealed spaces, such as the attic spaces above ceilings, etc., is provided with approved coverage.
- 2.7 Automatic fire detection devices shall be addressable analog smoke and heat detectors. Where used, heat detectors shall be fixed temperature x-rate of rise, fixed at 135EF and a 15EF/min rate of rise. In janitor rooms equipped with kilns, devices shall be fixed at 170EF.
- 2.8 HORN / STROBE DEVICE shall be of the semi-flush type designed for mounting to a standard four-inch square electrical outlet box. Each device shall be provided with a semi-flush accessory plate. Exterior horns shall be weatherproof. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum flash rate of approximately one flash per second, with candela rating as per UL standard 1971. Housing shall be white.
 - 2.8.1 In areas containing two or more audible devices, or three or more visual devices, these devices shall be synchronized, Per NFPA 72, Chapter 18 California Amendments (2016).
- 2.9 STROBES. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum flash rate of approximately

- one flash per second, with candela rating as per UL standard 1971. Housing shall be white.
- 2.9.1 In areas containing two or more audible devices, or three or more visual devices, these devices shall be synchronized, per NFPA 72, Chapter 18 California Amendments (2016).
 - 2.9.2 Maximum pulse duration to be 0.20 of a second with an ADAAG 4.28.3(3). Visual alarms maximum duty cycle of 40%.
 - 2.9.3 Capable of providing minimum candela. Intensity as shown on plans (effective strength measured at the source).
 - 2.9.4 The flash rate to be a minimum of 1.Hz and a maximum of 2 Hz per NFPA 72 18.5.3.1.
- 2.10 HEAT DETECTOR DEVICES shall be addressable, fixed temperature x rate of rise, fixed at 135EF and a 15EF/min rate of rise. In janitor rooms equipped with kilns, devices shall be fixed at 170EF.
- 2.11 SMOKE DETECTOR DEVICES shall be analog addressable, photo-electric.

PART 3 - EXECUTION

- 3.1 All wiring shall be (min) #18 AWG copper or as noted on drawings. All underground conductors shall be UL wet location rated for use in wet locations, West Penn "Aquaseal" or equal. There shall be no splices in underground handholes or vaults. A multi-conductor cable rated for use in wet locations will also be acceptable. It must be labeled "FIRE ALARM" in all pull boxes, using a water-tight labeling system.
- 3.2 Interior, dry location wiring for low voltage initiating circuits shall be #18 AWG copper, twisted shielded pair minimum, signaling circuits shall be No. 14 AWG minimum, and wiring for 120 volt circuits shall be No. 12 AWG minimum. All wiring shall be color coded, solid copper conductor. Use of power limited cable shall be restricted to controls listed for this purpose. Single conductors shall be type THHN/THWN-2 insulated copper.
- 3.3 Wire markers shall be provided for each wire connected to equipment. The marker shall be of the taped bank type, of permanent material, and shall be suitable and permanently stamped with the proper identification. The markers shall be attached in a manner that will not permit accidental detachment. Changing of wire colors within circuits shall be unacceptable.
- 3.4 A terminal cabinet shall be installed in the electric room for the fire alarm systems at each building. All fire alarm wiring shall terminate on UL approved strips in this terminal cabinet. All wiring shall be labeled at each termination strip. Wiring shall be configured such that all end-of-line resistors will be installed at the terminal cabinet.
- 3.5 Fire Sprinkler Activation detecting System(s) shall each be indicated on a separate zone in the fire alarm control panel.

- 3.6 Fire Alarm Control Panel and all other equipment shall be mounted with the center of all operable reset buttons, located a maximum of 48" front approach / 54" side approach above floor level.
- 3.7 Contractor shall provide complete wiring between all equipment.
- 3.8 The Fire Alarm/Life Safety Installation shall comply fully with all Local, State and National Codes, and the Local Authority Having Jurisdiction (AHJ) DSA.
- 3.9 The Fire Alarm Control Panel and power supply shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main Power Distribution Panel as FIRE ALARM CIRCUIT.
- 3.10 The Control Panel Cabinet shall be grounded securely to a power system ground conductor. Provide a 1/2-inch conduit and 1#12 grounding conductor to the building electrical service ground bus.
- 3.11 Conduit shall enter into the Fire Alarm Control Panel back box only at those areas of the back box which have factory conduit knockouts.
- 3.12 All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; an audible and visual trouble signal will be activated until the system and its associated field wiring are restored to normal condition.
- 3.13 All cables and wiring shall be listed for Fire Alarm/Life Safety use and shall be of the type as required by and installed per CEC Article 760.
- 3.14 Final System Acceptance
 - 3.14.1 Provide an NFPA Certificate of Compliance to DSA, the School District and Local Fire Marshall. Complete fire alarm system shall comply with and be sound-tested for a "Temporal Pattern" in all zones.
 - 3.14.2 Beam detectors shall be tested by two methods:
 - 3.14.2.1 Manual slow cover test to confirm reflector alignment is correct.
 - 3.14.2.2 Software fire test per UL268.5 to demonstrate when signal level is reduced simulating obstruction the detector will go into alarm.
 - 3.14.3 The system will be accepted only after a satisfactory test of the entire system has been accomplished by a Factory-Trained Distributor in the presence of a representative of the authority having jurisdiction and the Owner's representative. This contractor shall provide all personnel, ladders and testing equipment to assist the local authority in completing this test. Actuate each device and verify that the system performs as specified.
 - 3.14.4 The Contractor will present a complete set of "as-built" Fire Alarm/Life Safety system drawings, and the factory supplied Operator's Manuals as required by the General Provisions section of this specification.

- 3.14.5 Once the system has been tested and the certificate of compliance completed, the contract shall not be considered complete until after owner training has been completed. The contractor shall notify in writing their intent to provide the training for the system. This notification shall be given to the Division 21 Contractor, Architect and the Project Engineer a minimum of 2 weeks prior to the scheduled training session. The Division 21 Contractor and/or the architect shall be responsible for notifying the owner to confirm that the appropriate District personnel will be made available for this training session. If the Division 21 Contractor does not receive confirmation that the training session can be performed on the proposed date, then another time shall be provided. The training shall consist of the following:
- 3.14.5.1 Provide a minimum of one (1) four-to-six -hour training period located at the project site, to instruct District personnel in proper operation of all systems.
 - 3.14.5.2 Provide a minimum of three (3) complete owner operation manuals for the District records.
 - 3.14.5.3 Provide a minimum of two (2) complete as built sets of drawings for the District records.
 - 3.14.5.4 Provide all spare parts as described in part 1 of these specifications
 - 3.14.5.5 Provide written confirmation and proposed scheduled dates for follow up training and 1-year complete system test.
- 3.15 Follow up Training
- 3.15.1 Provide as a part of this contract, the follow up instructional training period within six (6) months after the final acceptance of the systems. This training shall include a minimum of one four-to-six-hour training period to instruct District personnel in proper operation of all systems and shall instruct the District technicians how to repair any non-operational parts of the system as required. All defective parts shall be replaced at no cost to the owner.

END OF SECTION

DIVISIONS 29 – 31
NOT USED

DIVISION 32
EXTERIOR IMPROVEMENTS

SECTION 32 01 90

90-DAY ESTABLISHMENT PERIOD

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment to provide, and install, landscape drainage pipe, drain inlets and grates, tree pit drainage systems, and plant pit breather tubes as described herein and upon the drawings.
- B. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damage, injury, and loss due to his acts or neglect. Contractor shall continuously protect and maintain all areas included in the contract during the progress of the work, through the establishment period, and until final acceptance of the work. Contractor is responsible for all repairs or replacements caused by acts of vandalism, including theft.
- C. The Contractor shall employ only Certified Landscape Technicians (CLT's) with the California Landscape Contractors Association (CLCA), as foremen for all landscape drainage installation work.
- D. Landscape maintenance of designated areas as specified herein. During and at the end of the maintenance period, all plant material shall be in a healthy, growing condition. Contractor shall provide all equipment, labor, all landscaped areas, turf sports fields, turf playfields, lawns, mulched areas, hydroseeded areas, slopes, tree wells, and other landscaped areas constructed as a part of this contract and materials necessary for performing landscape maintenance according to the following specifications.
- E. Complete landscape maintenance of entire site, including, but not limited to: pruning, shaping and training of trees, shrubs, and ground cover plants; fertilization; weed control, control of all plant diseases and insect pests; maintenance and repairs of irrigation and drainage systems; rodents; and all other maintenance required to maintain the landscaping in safe, attractive, and usable condition, and maintain all plant materiel in good condition with horticulturally acceptable growth and color.

1.3 RELATED SECTIONS

- A. 32 84 00 Irrigation
- B. 32 91 13 Soil Preparation
- C. 32 92 23 Sodding
- D. 32 93 00 Plants
- E. 32 94 49 Tree Drainage System
- F. 32 94 53 Landscape Barrier Membranes

1.4 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Submit descriptive literature and specifications for the following:
 - 1. Any materials, which differ from that, specified, when a brand name is called for on the drawings or in these specifications.
- C. Contractor shall submit to the Landscape Architect within 30 days from notice to proceed photocopies of current CLT registration for all foremen performing work on this project.

1.5 QUALITY OF WORK

- A. All work shall be performed in accordance with the best landscape maintenance practices, and shall be in keeping with the high aesthetic level of the facilities being maintained.

1.6 DEFINITION

- A. Where “as directed”, “as required”, “as permitted”, “approved”, “acceptance”, or words of similar import are used, it shall be understood that the direction, requirement, permission, approval or acceptance of the Owner is intended unless otherwise stated. As used herein, “provide” shall be understood to mean “provide complete”, in place, that is “furnish and install”, the word “site” as used hereinafter shall be understood to mean the location receiving the service. The use of the word “Owner” shall be construed to mean Costco or its delegated representative(s). The use of the Word “Contractor” shall be held to mean the Contractor and/or any person employed by him and working under this contract. The use of the words “shall” and “may” shall be held to mean “mandatory” and “permissible”, respectively. The use of the word “pruning” shall include the practices sometimes referred to as “trimming”.

1.7 CONTRACTOR'S RESPONSIBILITIES

- A. Local Office: The contractor shall maintain a local office with a competent English-speaking company representative that can be reached during normal working hours and authorized to discuss matters pertaining to this contract with the Owner. A local office is one that can be reached by telephone without it being a toll call. An answering service or mobile telephone shall not fulfill the requirement for a local office.
- B. Licenses and Permits: The Contractor shall, prior to award of contract and without additional expense to the Owner, possess all licenses and permits required for the performance of the work required by this Contract, including C-27 Landscaping, C-61 Pest Control Advisor and Pest Control Operator, Tree Services, and applicable business license.
- C. Personnel:
 - 1. The Contractor shall furnish sufficient supervisory and working personnel capable of promptly accomplishing on schedule, to the satisfaction of the owner, all work required under this contract during the regular and prescribed hours.
 - 2. The Contractor and his employees shall conduct themselves in a proper and efficient manner at all times and shall cause the least possible annoyance to the students, faculty, and the public. They shall be fully clothed in suitable uniformed attire.
 - 3. The Contractor shall provide restroom facilities, i.e. (Porta John) at the maintenance yard for employee use.
 - 4. Lunches are to be taken off-site or at the maintenance yard.

5. All contractor maintenance vehicles shall be marked with the company name and/or logo so as to identify personnel working on the job.
6. The Owner may require the Contractor to remove from the work site any employee(s) deemed careless, incompetent, or otherwise objectionable, whose continued employment on the job is considered to be contrary to the best interests of the Owner.
7. The Contractor shall have competent English speaking supervisor, who may be a working supervisor, on the job at all times work is being performed, who are capable of discussing with the Owner matters pertaining to this contract. Supervisor must have a minimum of three years of actual field experience in landscape maintenance exclusively, and must be able to demonstrate to the satisfaction of the Owner that they possess adequate technical background. Supervisor must possess a current CLT certificate in landscape maintenance. Adequate and competent supervision shall be provided for all work being done by the Contractor's employees to ensure accomplishment of high quality work which will be acceptable to the Owner. In addition, a non-working supervisor shall inspect all areas under the contract a minimum of two (2) times each week.

D. Repairs to Existing Facilities

1. All portions of buildings, structures, equipment or other facilities, including irrigation systems, lighting, and signage which are damaged or altered in any way, as a result of the performance of work under this specification during the terms of the contract, shall be repaired or replaced in kind and in an approved manner. All work of this kind shall be performed by the Contractor at no extra cost to the Owner and shall be accomplished as directed by the Owner. Repairs to facilities shall be made immediately after damage or alteration occurs, unless otherwise directed. A comprehensive testing and check of all irrigation systems shall be made approximately 30 days before the end of the contract and any repairs deemed the responsibility of the Contractor shall be made by the Contractor to the satisfaction of the Owner.
2. The Contractor shall keep controller and valve boxes clear of soil and debris and maintain the irrigation system including the replacement, repair, adjustment, raise or lower, straighten, and any other operations required for the continued proper operation of the system from the water meter throughout the site. Repair or replacement includes, but is not limited to: sprinkler system laterals (piping), sprinkler mains (pressure lines), mainline sleeves, sprinkler control valves, sprinkler controllers, sprinkler heads, sprinkler caps, sprinkler head riser, valve covers, boxes and lids, including electrical pull boxes and lids, valve sleeves, quick coupler valves, hose bibs, and booster pumps.
3. The Owner shall be notified, within twenty-four (24) hours, of any damage caused by accident, vandalism, theft, acts of God, or mysterious causes and shall follow up notification within four (4) working days with a written description of the problem and steps taken, if any, to rectify the problems.
4. Repairs to existing structures or facilities, including irrigation systems, which are damaged or altered in any way, including acts of God, vandalism, vehicular damage, theft or mysterious damages that do not result from the performance or lack of performance of the work by the Contractor, shall be repaired by the Contractor as directed by the Owner at no cost to the Contractor except where the specifications provide otherwise. Invoices for repairs to existing facilities shall be broken down by phases and units, into parkways, medians, slopes, entry monuments or recreation areas.
5. Any replacement must conform to the type and kind of existing system. Any deviation must be submitted in writing for approval by the Owner prior to installation. Any materials installed without this approval, and subsequently rejected by the Owner, shall

- be promptly removed by the Contractor at no cost to the Owner.
- E. Safety Requirements: All work performed under this contract shall be performed in such a manner as to provide maximum safety to the public and where applicable, comply with all safety standards required by CAL-OSHA. The Owner reserves the right to issue restraint or cease and desist order to the Contractor when unsafe or harmful acts are observed or reported relative to the performance of the work under this contract.
- F. Hazardous Conditions: The Contractor shall maintain all work sites free of hazards to persons and or property resulting from his operations. Any hazardous condition noted by the Contractor, which is not a result of this operation, shall be immediately reported to the Owner.
- G. Use of Chemicals: The Contractor shall submit a list of all chemicals herbicides, rodenticides and pesticides proposed for use under this contract for approval by the Owner. Material included on this list shall be limited to chemicals approved by the State of California, Department of Agriculture, and shall include the exact brand name and generic foundation. The use of any chemicals on the list shall be based on the recommendations of a licensed pest control advisor. The use of chemicals shall conform to the current City of San Jose Department of Agriculture regulations. The Contractor shall notify the Owner in writing a minimum of four (4) working days prior to the application of any herbicide, rodenticide, or pesticide. Such notices shall include the purpose and area such chemicals are to be used. The Owner shall retain the option to disapprove the application of such chemicals before their application. The monthly report required in paragraph 1.5.2 in the General Conditions of these specifications, shall include a statement of all applications of herbicides, rodenticides, and pesticides detailing the chemical used, quantity, rate of application, area in which used and the purpose of the application. The uses of these chemicals shall be kept in an 8 1/2" x 11" ring notebook that shall be kept up to date and available for inspection by the Owner at all times.
- H. Litter
1. Contractor-Generated Trash: The Contractor shall promptly remove from the work area all debris generated by his performance of pruning, trimming, weeding, edging and other work required in the specifications. The Contractor shall clean, with suitable equipment, public streets and walks, driveways and paved areas immediately after working in the areas and at such other times as may be required by the Owner.
 2. Litter Pickup: All areas in the work site shall be kept free of, but not limited to the following items: bottles, glass, cans, paper, cardboard, metallic items and other debris. Litter pickup (litter removal from slope areas) shall be removed from the site and shall not be placed in "on-site" containers.
 3. Broken glass, a hazard, and other material or litter which may be hazard shall be picked up and removed from the site immediately by the Contractor.
 4. Seating areas, lunch courts, exercise areas, tunnel area, parking areas and other areas may on occasion be exceptionally littered and shall be cleared of litter before noon on the business day after the litter occurs.
- I. Failure to Perform Satisfactorily: Those discrepancies and deficiencies in the work that remain uncorrected may be the necessary justification for a billing adjustment in the month following in the occurrence. Billing adjustments for this unsatisfactory service shall be permanent retention of 100% of the estimated monthly cost for work that is incomplete or deficient as stated herein.

- J. Emergency Calls: The Contractor shall have the capability to receive and to respond immediately to calls of an emergency nature during normal working hours and during hours outside of normal working hours. Calls of an emergency nature received by the Owner shall be referred to the Contractor for immediate disposition.
- K. Monthly Walk-Throughs: The Contractor shall provide to the Owner a schedule of monthly walk-throughs. Any changes to this schedule shall be provided to the Owner at least two weeks prior to that meeting. Monthly maintenance walk-through to be performed with the Contractor and Owner's representative.

1.8 REPORTS / INSPECTIONS

- A. No special work shall be performed without first obtaining the written approval of the Owner.
- B. As part of the service, the Contractor shall submit a monthly "Landscape Report" to the Owner. This report shall outline the general condition of the landscape areas, any problem areas that have been found, recommendations on how the landscape should be improved and the status of projects pursuant to maintenance programs in progress.
- C. Once a month the Contractor shall accompany the Owner's Representative on a landscape inspection to review the status of maintenance, Landscape Report, and the landscape in general.

PART 2 MATERIALS

2.1 MATERIALS

- A. All replacement landscape materials shall be per Section 32 93 00 of these specifications.
- B. Fertilizer shall be per Section 32 91 13.
- C. Supplemental fertilizer shall be per Section 32 91 13. N - P - K analysis shall be determined by soils analysis reports, when needed.
- D. Replacement plant materials shall be per Section 32 93 00.
- E. Pre-emergent herbicides shall be per Section 32 93 13.
- F. Touch-up paint for site furnishings such as pots, trash/recycle containers, benches, exercise equipment and the like shall be from the corresponding site furnishings manufacturer/supplier.

PART 3 EXECUTION

3.1 SCHEDULING OF WORK:

- A. The Contractor shall accomplish all normal landscape maintenance required under this contract between the hours of 7:00 a.m. and 8:00 p.m., Monday through Saturday. Exceptions may be made to normal working hours, where incidence of use may be too great during the hours specified to allow for proper maintenance. The Owner may grant, on an individual basis, permission to perform contract maintenance at other hours. No maintenance function that generates excess noise which would cause annoyance to residences in the area shall be commenced before 8:00 a.m... The Contractor shall establish a schedule of routine work to be followed in performance of this contract. This schedule shall include, but not be limited to turf mowing and edging days, dates of weeding,

and dates for fertilizer application. This schedule shall be revised quarterly and a copy of this schedule shall be provided to the Owner prior to the performance of any work required by these specifications, and any changes in scheduling shall be reported, in writing, to the Owner immediately.

3.2 WORKFORCE

- A. For each area of maintenance responsibility the contractor shall assign the following minimum work force of competent, experienced maintenance personnel full-time to this project.

Description	Personnel Assigned
General Site Trash Removal, Sweeping, Cleaning	5.0
Irrigation System Maintenance and Repair	5.0
<u>Fertilization/Plant Replacements/Pruning</u>	<u>6.0</u>
Total personnel assigned full-time	16.0

- B. This work force shall be the minimum work force assigned to this period on a continuing day-to-day basis. If temporary conditions or emergency situations arise which prevent routine maintenance from being performed, according to the schedules and performance standards of these specifications, the Contractor shall assign additional personnel and crews on a temporary basis as required, to assure performance standards of this contract are continually being met. This includes the need to close off a lane when performing maintenance on parkways with the proper coning and significant notification to the City of San Diego. This shall be done at no additional cost to the Owner.
- C. As additional areas are added to and made part of the contract, the number of personnel assigned will be adjusted as required, to adequately maintain all landscaped areas according to the provisions and performance schedules and standards of these specifications. The Contractor shall conduct the work at all times in a manner which will not interfere with normal pedestrian traffic on adjacent sidewalks or vehicular traffic on adjacent streets. In addition, a special schedule listing exact starting date for pesticide application, fertilization pruning and other infrequent operations, shall be furnished to the Owner on a yearly basis and any changes in scheduling shall be reported in writing, to the Owner immediately.

3.3 METHOD OF PERFORMING WORK

- A. Irrigation System Maintenance & Repair
1. Irrigation shall be done by the use of automatic sprinkler systems, where available and operable; however, failure of the existing irrigation system to provide full and proper coverage shall not relieve the Contractor of the responsibility to provide adequate irrigation with full and proper coverage to all areas in the work site.
 2. Any damages to public or private property resulting from excessive irrigation water or irrigation water runoff shall be charged against the contract payment unless immediate repairs are made by the Contractor to the satisfaction of the Owner.
 3. The Contractor shall periodically inspect the operation of the system for any malfunction. The Contractor shall maintain all sprinkler systems, in such a way as to guarantee proper coverage and full working capability and make whatever adjustments may be necessary to prevent excessive runoff into street right-of-way or other areas not meant to be irrigated.
 4. This periodic inspection may occur more often, but not less frequently, than one inspection per week for turf areas and one inspection per two week period for slope

areas.

5. Contractor will inspect the irrigation system for broken and clogged heads, malfunctioning or leaking valves, or any other condition which hamper the correct operation of the system.
6. Written notice must be given to the Owner a minimum of one week before proceeding with any work not covered by this contract. The Owner retains the option to disapprove the work at any time before it is started. All areas not adequately covered by a sprinkler system shall be irrigated by a portable irrigation method. The Contractor shall furnish all hoses, nozzles, sprinkler, etc., necessary to accomplish this supplementary irrigation. Care shall be exercised to prevent a waste of water, erosion and/or detrimental seepage into existing underground improvements or structures.
7. Controllers shall be programmed, where possible, to water between 9:00 p.m. and 6:00 a.m.
8. Contractor to repair/correct malfunctions of valves, sprinklers and irrigation lines and notify the Owner a minimum of 24 hours in advance of such repairs when at the Owner's expense. Notice will be followed by a written description of repairs/corrections make within four working days of completion of work.

B. Shrubs

1. All plants shall receive sufficient water to insure healthy growth.
2. Weeds shall be removed from beds regularly, by hand. Nut Grass and Bermuda grass and other noxious weeds shall not be allowed to become established.
3. Invasive weeds – such as Pampas Grass, Fennel, Carpobrotus, Australian Saltbush, Fountain grass, Brazilian Pepper, Castor Bean, Tamarisk, Nasturtium and Mexican Fan Palm – shall be removed roots and all. For identification of invasive plants, reference the following website: http://www.asla-sandiego.org/Download/PG_08_most.pdf.
4. Prune to maintain a natural shape as a continuous operation but not when plant is in flower. Branches shall be cut individually. Cuts shall be inside the outline of foliage to thin out. All shrubs growing in the work areas shall be pruned, as required, to maintain plants healthy, growing condition and to maintain plant growth within reasonable bounds to prevent encroachment of passage ways walks, streets, views of signs or in any manner deemed objectionable by the Owner. Dead or damaged limbs or branches shall be removed immediately and all pruning cuts shall be make cleanly with sharp pruning tools, with no projections or stubs remaining. Any pruning cut which exceeds two inches in diameter shall be sealed with an approved pruning paint. Pruning shall be done in a manner to permit plants to grow naturally in accordance with their normal growth characteristics. Box hedging may be required on some hedges where authorized by the Owner. Or severe pruning of plants, shall not be permitted.
5. Replacement of plants due to circumstance beyond the Contractor's control shall be at the Owner's expense, provided and installed by the Contractor. Replacement required through negligence of the Contractor shall be at the Contractor's expense.

C. Vines: Vines shall be maintained in their intended form. Pruning shall be performed as a continuous operation so plant will not be allowed to develop a stray, undesirable growth habit. Vines will be trained and attached to buildings, fences, retaining walls, posts, etc., where required once per month using acceptable methods and avoiding damage to structures involved.

D. Ground Cover

1. Watering shall provide enough moisture to penetrate throughout the root zone and only

as frequently as necessary to maintain healthy growth.

2. Weeds shall be removed completely, on a regular basis, manually (see weeding schedule 3.02 above).
3. All ground covers shall be edged back to walks and established boundaries and kept off walks. Trim top growth to achieve an overall, even appearance, renew growth, and improve density and attractiveness.
4. Control rodents, rabbits, insects, snails, and diseases as necessary, using legally approved materials and methods.
5. Dead and missing plants will be replaced at no expense to Owner when due to Contractor's negligence. When damages are due to circumstances beyond Contractor's control, written notice shall be given to the Owner a minimum of one week before plants are to be replaced. Owner shall retain the option to not approve plant replacement before the work is done.

E. Tree Maintenance

1. All trees in the work site shall be maintained in their natural shapes. This work shall be accomplished in a manner which will ensure that each individual tree is trimmed carefully to promote the tree's health and appearance. All work shall be of the highest quality and performed in accordance with approved professional tree trimming standards, and to remove or prevent encroachment where it blocks vision or encroaches in any manner deemed undesirable by the Owner. The Contractor shall be responsible for all tree trimming.
2. Pruning
 - a. All trees on the work site shall be maintained in their natural shapes, whether specifically mentioned or not. Trees shall be pruned in a manner to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branches to which they are attached; to provide radial orientation so as not to overlay one another; to eliminate dead, diseased or damaged growth; to eliminate narrow "V" shaped branch forks that strength; to reduce toppling and wind damaged by thinning out crowns; to maintain growth within space limitations and to balance crown with roots.
 - b. All pruning cuts shall be made to cambium "collar". "Stubbing" will not be permitted. Use tree scale for cuts one inch or greater in diameter.
 - c. Deciduous species shall be pruned during the winter months except for frost-sensitive trees and blooming trees (such as *Erythrina coralloides* and *Cercis Canadensis* 'Forest Pansy') which will be pruned after blooming.
 - d. Evergreen species shall be pruned during the months of September and October to prepare them for the windy season.
3. All trees must be watered sufficiently to insure health and growth.
4. Staking and Tying: Trees shall be properly staked and tied as necessary. Tree ties shall be inspected at least three times a year to prevent girdling of trunks or branches and to prevent bark wounds caused by abrasion. When trees attain a trunk caliper of 4" removal of existing stakes and guys should be should be considered. If unstable at this time, then replacement should be recommended to Owner.
5. Provide immediate control of insects and diseases following signs of an infestation using approved methods and materials.
6. The Contractor shall bring to the attention of the Owner within twenty-four (24) hours any tree that shows sign of root heaving, leaning, or has hanger limbs, or for any reason

- is a safety hazard; and the Contractor shall submit a proposal to the Owner for the proper tree maintenance and, with the Owner's approval, proceed with the proposal.
7. The Contractor shall be responsible for the complete removal and replacement of trees lost due to Contractor's faulty maintenance or negligence. Replacement shall be made by Contractor with the size of trees being determined by the Owner. When there is a difference in value between the trees lost and the replacement trees, this difference will be deducted from the Contractor's payment. In all cases, the value of the tree lost will be determined using the latest American Shade Tree Conference guidelines for value determination.
 8. Trees lost from causes other than Contractor's negligence shall be removed and replaced by the Contractor with an approved size tree. The Owner may specify a species of tree for replacement different from the one lost.
 9. Immediately after every storm, trees shall be visually observed for damage and all trees retied as necessary.

F. Fertilization

1. Notification: The Contractor shall inform the Owner at least forty eight (48) hours before beginning any fertilization and shall have previously submitted a schedule of application showing the site, date and approximate time to application of the fertilizer.
 - a. On the 45th and 80th days of the establishment period, lawn areas shall receive top dressing of 5 pounds of 16-8-8 commercial fertilizer per 1,000 square feet.
 - b. On the 45th and 80th days of the establishment period, ground cover areas shall receive top dressing of 5 pounds of 16-8-8 commercial fertilizer per 1,000 square feet.

G. Weed Control: All landscape areas within the specified maintenance areas shall be weeded a minimum of once every 30 days or as necessary and shall include all undesirable or misplaced plants.

1. Removal of all weeds by means of hand removal at regular two week intervals. Care shall be taken so as not to damage existing ground cover. Any Bermuda grass found within slope or shrub areas, should be eradicated immediately, and replanted with same ground cover in that area.

H. Disease Control

1. The Contractor shall regularly inspect all landscaped areas for presence of disease, insects or rodent infestation. The Contractor shall advise the Owner in writing within four (4) days if disease, insect or rodent infestation is found; he shall identify the disease, insects or rodent and specify control measures to be taken. The Owner retains the option to disapprove the work before the work is started. The Contractor shall implement the approved control measures, exercising extreme caution in the application of all spray material, dusts, or other materials utilized.
2. Approved control measures shall be continued until the disease, insect or rodent is controlled to the satisfaction of the Owner. The Contractor shall utilize all safeguards necessary during disease, insect or rodent contract operations to ensure safety of the public and the employees of the Contractor.

I. Replacement of Plant Material

1. The Contractor shall notify the Owner in writing within four (4) days of the loss of plant material due to any cause.
2. The Contractor shall remove and replace any tree, shrub, turf or ground cover which is

damaged or lost due to any cause. The Owner retains the option to disapprove the work before it is started and shall be responsible for replacement costs unless plant material is lost due to faulty maintenance or negligence. The size and species of replacement shrubs, turf or ground cover plants shall be as directed by the Owner. For replacement of trees see article.

- J. Sidewalks and Concrete and Stone Paving: The Contractor shall be responsible for maintaining free of weeds all sidewalks and paving.

3.4 OPERATION OF AUTOMATIC IRRIGATION CONTROLLERS

- A. Surrender all keys furnished promptly at the end of the contract period, or at anytime deemed necessary by the Owner.
- B. Protect the security of the Owner's property by keeping controller cabinets locked at all times.
- C. The Contractor shall verify that the weather-based controller is prohibiting operation on rainy weather and when suspension of irrigation is desirable to conserve while remaining within the guidelines of horticulturally-acceptable maintenance practices.
- D. Maintain the controller charts in place (within controller cabinet), and update when required.

3.5 MULCHING:

- A. Replace shredded bark mulch in mulched areas and shrub areas on a monthly basis, as needed, to maintain a minimum 2 inch thickness.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Chain link fence framework, fabric, and accessories.
- B. Excavation and foundation for posts.
- C. Gates and related hardware.

1.2 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. Referenced Standards and Manuals:
 - 1. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
 - 2. ASTM A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
 - 3. ASTM A824 – Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain-Link Fence.
 - 4. ASTM A1011/A1011M – Standard Specification for Steel, Sheet, and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High Strength Low-Alloy with Improved Formability.
 - 5. ASTM F567 – Standard Practice for Installation of Chain-Link Fence.
 - 6. ASTM F626 – Standard Specification for Fence Fittings.
 - 7. ASTM F900 – Standard Specification for Industrial and Commercial Swing Gates.
 - 8. ASTM F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
 - 9. CLFMI Product Manual.

1.3 SUBMITTALS

- A. General: Submit in accordance with Division 01.
- B. Product Data: Submit data on fabric, posts, accessories, fittings, and hardware.
- C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware, anchorage, gates, and schedule of components.

D. Samples: Submit two 12 inch by 12 inch samples of fence fabric.

1.4 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer Qualifications: Firm specializing in manufacturing products specified in this Section with a minimum five years experience.

B. Pre-Installation Meetings

1. Conduct pre-installation meeting in accordance with Division 01.
2. Convene pre-installation meeting one week prior to commencing work of this Section.
3. Coordinate work in this Section with work in related Sections.

1.5 REGULATORY REQUIREMENTS

A. All gates shall meet all applicable requirements for doors per CBC Chapter 11B, Sections 11B-206.5, and 11B-404.1.

B. Hand-activated opening hardware, handles, pulls, latches, locks and other operating devices for accessible gates shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching or twisting of the wrist to operate per CBC Sections 11B-309.4 and 11B-404.2.7.

C. The lever of lever actuated latches or locks for an accessible gate shall be curved with a return to within 1/2 inch of the face of gate per California Referenced Standards code, Title 24, Part 12, Section 12-10-202, Item (F).

D. The bottom 10 inches of an accessible gate shall have a smooth, uninterrupted surface on each side. Bottom of the gates shall be within 3 inches of finish surface of the path of travel. Maximum effort to operate a gate shall not exceed 5 pounds per CBC Sections 11B-404.2.9 and 11B-404.2.10.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of Division 01.

B. Packaging: Final gate assemblies shall be wrapped in protective material or crated to provide adequate protection during shipment.

C. Storage and Protection: Store materials elevated from the ground and covered/protected from the weather, adequately ventilated.

PART 2 PRODUCTS

2.1 MATERIALS

A. Conform to CLFMI Product Manual.

B. Framework:

1. Round Pipe: CLFMI Type I or Type II.
2. Type I: ASTM F1083, standard weight (Schedule 40), plain ends.

3. Type II: ASTM A1011/A1011M structural steel minimum yield strength 50,000 psi; cold formed, electric welded.
4. Zinc Coating: Hot-dipped conforming to ASTM A123/A123M minimum 2.0 ounces per square foot.
5. Dimensions and Weights:

Outside Diameter (O.D.) (inch)	Type I Weight (lbs/ft)	Type II Weight (lbs/ft)
1.660	2.27	1.84
1.900	2.72	2.28
2.375	3.65	3.12
2.875	5.79	4.64
4.000	9.11	6.56
6.625	17.97	-
8.625	28.55	-

6. Terminal Posts (End, Corner, and Angle Posts):
 - a. Fabric height 6 feet or less: 2.375 inch outside diameter.
7. Intermediate Posts:
 - a. Fabric height 6 feet or less: 1.90 inch outside diameter.
8. Gate Posts:
 - a. Gate fabric height 6 feet or less:

Gate Leaf Width (foot)	Pipe Outside Diameter (inch)
Up to 4	2.375
Over 4 to 10	2.875
Over 10 to 18	4.000

9. Top and Bottom Rails and Braces: 1.660 inch outside diameter.
10. Tension Wire: ASTM A824; Type II, Class 3.

C. Fabric:

1. ASTM A392; Class 2 zinc coating.
2. 2 inch diamond mesh, No. 9 gauge wire.
3. Top selvage twisted tight, bottom selvage knuckled end closed.

D. Tie-Wire: 9 gauge galvanized steel wire.

E. Concrete: 3,000 pounds per square inch minimum compressive strength at 28 days, 3 inch to 4 inch slump; 1 inch nominal coarse aggregate.

2.2 ACCESSORIES

- A. General: Malleable steel, cast iron, or pressed steel conforming to ASTM F626; hot-dipped galvanized, minimum 2.0 ounces per square foot.

- B. Tension (Stretcher) Bars: One-piece lengths equal to full height of fabric with a minimum cross-section of 1/4 inch by 3/4 inch.
- C. Tension (Stretcher) Bar Bands: Steel, 3/4 inch x 1/10 inch nominal to secure tension bars to posts.
- D. Post Tops: Pressed steel, or malleable iron, designed as a weather tight closure cap for tubular post. Provide one cap for each exposed tubular post end.
- E. Truss Assembly: Capable of withstanding 2,000 pounds tension; consisting of minimum 3/8 inch diameter truss rod with truss tightener or turnbuckle.
- F. Boulevard Clamps: Two piece clamp, minimum 12 gauge, with 5/16 inch carriage bolts and nuts.
- G. Braces: Same material as the rails extending from the terminal, corner, or pull post to the first adjacent intermediate post. Securely fasten braces to posts by heavy pressed steel and malleable fittings (minimum 12 gauge), then securely trussed from intermediate post to base of terminal post with a 3/8 inch truss rod equipped with a galvanized turnbuckle.
- H. Rail Ends: Weathertight closure for tubular rails and braces.

2.3 GATES

- A. Framework: Conform to ASTM F900.
 - 1. Gate Frames: Type I pipe members unless otherwise indicated, pipe size as follows:
 - a. Gate fabric height up to 6 feet high and leaf width up to 8 feet: 1.660 inch outside diameter.
 - 2. Provide truss rods of 3/8 inch minimum nominal diameter to prevent sag or twist.
 - 3. Provide 1.660 inch outside diameter intermediate bracing of gate leaves, spaced so that members are no more than 8 feet apart.
 - 4. Provide horizontal gate leaf braces as required to provide rigid construction, free from sag or twist.
 - 5. Gate Fabric: Match fence fabric.
 - 6. Attach fabric to frame at intervals not exceeding 12 inches. Secure with tension bars, tension bands, and 9 gauge steel wire.
- B. Gate Hardware:
 - 1. General: Malleable steel, cast iron, or pressed steel conforming to ASTM F626; hot-dipped galvanized, minimum 2.0 ounces per square foot.
 - 2. Gate Hinges: Heavy duty and appropriately sized for the supported gate with large bearing surfaces for clamping position. Hinges shall not twist or turn under the action of the gate. Gates shall be easily operable by one person. Malleable iron, ball-and-socket type; non-lift-off type, offset to permit 180 degree swing. Provide a minimum of three hinges per gate leaf.
 - 3. Latch:
 - a. At Single Gates: Provide positive fork latch with provision for padlock.
 - 4. Keeper: Provide automatically engaging keeper for each gate leaf, holding it in the open position until manually released.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions. Verify grade provides flat surface allowing fence construction with gap no more than 1-1/2 inch between bottom of rail and the ground.
- B. Report unacceptable conditions to the Architect. Begin installation only when unacceptable conditions have been corrected.

3.2 POST SPACING, HOLE DIAMETER, AND SETTING DEPTH

- A. General: Conform to ASTM F567.
- B. Space intermediate posts equidistant at intervals not exceeding ten feet.
- C. Set terminal posts (end, corner, and gate) at the beginning of each continuous length of fence and at abrupt changes in vertical and horizontal alignments.
- D. Set fence and gate posts in concrete in holes of minimum diameter and depth as indicated on Drawings.

3.3 INSTALLATION

- A. Install in accordance with ASTM F567, manufacturer's printed instructions, and approved shop drawings.
- B. Install units plumb, level, and square, and free from warp or twist while maintaining dimensional tolerances and alignment with adjacent surfaces.
- C. Set intermediate, terminal and gates posts plumb in concrete footings with top of footing flush with finish grade.
- D. Brace each gate and corner post to adjacent intermediate post with horizontal center brace rail and diagonal truss rods. Install brace rail, one bay each side from terminal and gate posts.
- E. Provide top rail through intermediate post tops and splice with 6 inch long rail sleeves. Top rails shall be continuous, using 18 foot minimum lengths, except at corner and gate posts.
- F. Install center and bottom brace rail on corner gate leaves.
- G. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- H. Position bottom of bottom rail 1-1/2 inches maximum above finished grade.
- I. Fasten fabric to top rail, intermediate posts, braces and bottom tension wire with tie wire at maximum 15 inch on centers.
- J. Attach fabric to terminal and gate posts with tension bars and tension bar clips.
- K. Install bottom tension wire stretched taut between terminal posts.
- L. Do not swing gates from building wall; provide gate posts.
- M. Install gates with fabric to match fence. Install three hinges per leaf, latch, catches, retainer and locking clamp.

3.4 ERECTION TOLERANCES

- A. Maximum variation from plumb: 1/4 inch.
- B. Maximum offset from true position: 1 inch.
- C. Components shall not infringe adjacent property lines.

3.5 ADJUSTING

- A. Adjust parts for smooth, uniform operation.

END OF SECTION

SECTION 32 31 19
DECORATIVE METAL FENCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Ornamental Picket Fencing and Accessories.

1.2 RELATED SECTIONS

- A. Section 32 31 19.13 – Sliding Decorative Metal Gates.

1.3 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. Referenced Standards:
 - 1. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM B117 – Standard Practice for Operating Salt Spray (fog) Testing Apparatus.
 - 3. ASTM B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.

1.4 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Shop Drawings: Layout of fences and gates with dimensions, details and finishes of components, accessories and post foundations.
- C. Product Data: Manufacturer's catalog cuts indicating material compliance and specified options.
- D. Samples: Color selections for finishes. If requested, samples of materials (e.g., caps and accessories).

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Sufficient experience manufacturing similar products.
- B. Erector's Qualifications: Sufficient experience installing similar products.

1.6 PROTECTION

- A. Damage to Adjoining Property and Existing Surfaces: Contractor shall assume all responsibility for damage to building surfaces and materials and shall restore them to their original condition should damage occur.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials so as to avoid damage under provisions of Division 01.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Ameristar. Product: Ornamental Picket Fence: Aegis II, Classic Style three rail.
- B. Master Halco - Monumental Iron Works.
- C. Substitutions: Under provisions of Division 01.

2.2 ORNAMENTAL PICKET FENCE

- A. Materials for fence framework (i.e., pickets, rails and posts) shall be manufactured from coil steel having a minimum yield strength of 50,000 psi. All steel shall be galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 ounces per square foot (coating designation G-90), hot dip process.
- B. Pickets: Material for fence pickets shall be 1 inch square x 14 gauge tubing.
- C. Rails: The cross-sectional shape of the rails shall conform to the manufacturer's standard design, with outside cross section dimensions of 1.75 inches square and a minimum thickness of 14 gauge. Picket holes in rail shall be spaced 4.98 inches on center.
- D. Posts: Posts at fence shall be 3 inches square tube x 12 gauge.
- E. Preassemble panels with rods or rivets supplied by manufacturer.
- F. Finish: Galvanized framework shall be subject to six stage pretreatment/wash (with zinc phosphate) followed by an electrostatic spray application of a two coat powder system. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils to 4 mils. Top coat shall be a TGIC polyester powder coat finish with a minimum thickness of 2 mils to 4 mils. The color shall be black. Coated galvanized framework shall have a salt spray resistance of 3500 hours using ASTM B117 without loss of adhesion. Paint system used shall not contain lead.

2.3 ACCESSORIES

- A. Rail Attachment Brackets: Pressed steel or cast malleable iron.
- B. Ornamental Picket Fence Accessories: Provide indicated items required to complete fence system. Galvanize each ferrous metal item in accordance with ASTM B695 and finished to match framing.
- C. Post Caps: Formed steel, cast or malleable iron or aluminum alloy, weathertight closure cap. Provide one standard post cap for each post.
- D. Picket Tops: Provide standard steel top.

2.4 SETTING MATERIALS

- A. Concrete: Minimum 28 day compressive strength of 3,000 pounds per square inch for setting fence posts.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify areas to receive fencing are completed to final grades and elevations.
- B. Ensure property lines and legal boundaries of work are clearly established.

3.2 ORNAMENTAL PICKET FENCE INSTALLATION

- A. Install fence in accordance with manufacturer's instructions.
- B. Space posts uniformly at 8 feet on center maximum, unless otherwise noted.
- C. Concrete Footings: Drill holes in firm, undisturbed or compacted soil. Holes shall have diameter four times greater than outside dimension of posts and depths approximately 6 inches deeper than post bottom. Excavate deeper as required for adequate support in soft and loose soils and for posts with heavy lateral loads. Set post bottom below surface when in firm, undisturbed soil. Place concrete around posts in a continuous pour. Trowel finish around post and slope to direct water away from posts. Refer to Drawings for footing size.
- D. Check each post for vertical and top alignment and maintain in position during placement and finishing operations.
- E. Align fence panel posts. Panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

3.3 ACCESSORIES

- A. Install post caps and other accessories to complete fence.

3.4 CLEANING

- A. Cleaning and Finishing: Upon completion of the work, clean all exposed surfaces, removing any discoloration or foreign matter.
- B. Touch up all abraded or scraped areas with touch-up paint to match fence color. Touch-up shall not be obvious.
- C. Protect all installed work against damage from other construction work.
- D. Clean Up: Upon completion of the work of this Section, remove all surplus materials, rubbish and debris from the fence installation area.

END OF SECTION

SECTION 32 31 19.13
SLIDING DECORATIVE METAL GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Gates, framework, and accessories.

1.2 RELATED SECTIONS

- A. Section 32 31 19 – Decorative Metal Fences.

1.3 REFERENCES

- A. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
- B. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
- C. Referenced Standards:
 - 1. ASTM A513 – Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.
 - 2. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
 - 3. ASTM B117 – Standard Practice for Operating Salt Spray (fog) Testing Apparatus.

1.4 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Shop Drawings: Shop drawings shall show gate elevation, dimensions, all component parts, and all fabrication details.
- C. Product Data: Manufacturer's catalog cuts indicating material compliance and specified options.
- D. Samples: Color selections for finishes. If requested, samples of materials (e.g., caps and accessories).

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Sufficient experience manufacturing similar products.
- B. Erector Qualifications: Sufficient experience installing similar products.

1.6 PROTECTION

- A. Damage to Adjoining Property and Existing Surfaces: Contractor shall assume all responsibility for damage to building surfaces and materials and shall restore them to their original condition should damage occur.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials so as to avoid damage under provisions of Division 01.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Ameristar. Product: Ornamental Picket Sliding Gates: Passport II, Classic Style three rail with roll gate hardware kit #PGKOD. Gates, accessories, and finish shall match decorative metal fencing.
- B. Master Halco - Monumental Iron Works.
- C. Substitution under the provision of Division 01.

2.2 MATERIALS

- A. Materials for gate framework (i.e., pickets, rails and posts) shall be manufactured from coil steel having a minimum yield strength of 45,000 psi. All steel shall be galvanized to meet the requirements of ASTM A653 with a minimum zinc coating weight of 0.90 ounces per square foot (coating designation G-90), hot dip process. Gate sizes as indicated on Drawings.
- B. Pickets: Material for gate pickets shall be 1 inch square x 14 gauge tubing.
- C. Rails: The cross-sectional shape of the rails shall conform to the manufacturer's standard design, with outside cross section dimensions of 2 inches square x 11 gauge at top rails, uprights, and diagonal braces, and 2 inches x 4 inches x 11 gauge at bottom rail. Picket holes in rail shall be spaced 4-3/4 inches on center.
- D. Gate Posts: Posts at gates shall be 4 inch square x 11 gauge, ASTM A513 hot-rolled structural quality steel, 50,000 pounds per square inch tensile strength, with ASTM A653 hot-dipped galvanized G90 coating. Provide top cap at each post.
- E. Track: Galvanized steel angles sized to accommodate trucks.
- F. Trucks: Two swivel type zinc die cast trucks having four sealed lubricant ball bearing wheels, 4 inches in diameter by 1 inch in width, with two side rolling wheels to insure alignment of truck in track shall be provided for each gate leaf. Trucks shall be held to post brackets by 7/8 inch diameter ball bolts with 1/2 inch shank. Truck assembly shall be designed to take the same reaction load as the track.
- G. Guide Roller Assembly: Provide for each supporting post 4 inch rubber guide rollers. Each assembly shall consist of rubber wheels 4 inches in diameter with oil impregnated bearings and shall be attached to post so that the bottom horizontal member will roll between the wheels which can be adjusted to maintain plumb gate frames and proper alignment.

- H. Accessories: All gate hangers, latches, brackets, guide assemblies and stops shall be malleable iron or steel, galvanized after fabrication.
- I. Finish: Galvanized framework shall be subject to six-stage pretreatment/wash (with zinc phosphate) followed by an electrostatic spray application of a two-coat powder system. The base coat is a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils to 4 mils. Topcoat shall be a TGIC polyester powder coat finish with a minimum thickness of 2 mils to 4 mils. The color shall be black. Coated galvanized framework shall have a salt spray resistance of 3500 hours using Test Method B117 without loss of adhesion. Paint system used shall not contain lead.

2.3 FABRICATION

- A. Sliding gates shall be constructed as specified in this Section and as indicated on Drawings.
- B. Use materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
- C. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise indicated.
- D. 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.
- E. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners.
- F. Fabricate to design, dimensions and details indicated. Provide members formed of galvanized steel tube of sizes indicated.
- G. Interconnect members by butt-welding or welding with internal connectors, at fabricator's option. Provide closures, flanges, miscellaneous fittings and anchors for interconnections of tube and attachment of members to other work.
- H. Fabricate and furnish gates complete with all hardware.

2.4 SETTING MATERIALS

- A. Concrete: Minimum 28 day compressive strength of 3,000 pounds per square inch for setting gate posts.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify areas to receive gates are completed to final grades and elevations.

3.2 INSTALLATION

- A. Install gates in accordance with manufacturer's instructions.

- B. Workmanship: All work shall be installed level and plumb and securely anchored to the fence structure.
- C. Gate: Install gate plumb, level and secure for a full opening without interference. Gate shall operate freely and without bind.
 - 1. Adjust fencing prior to anchoring to insure matching alignment at abutting joints.
 - 2. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of gates. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Install in concrete foundations as indicated.
 - 3. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up galvanizing and shop prime coats.
 - 4. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding appearance and quality of welds made.
- D. Coordinate installation of gates with installation of fencing.

3.3 ADJUST AND CLEAN

- A. Adjusting: Adjust gate as required for smooth, unhindered operation.
- B. Cleaning and Finishing: Upon completion of the work, clean all exposed surfaces, removing any discoloration or foreign matter.
- C. Touch up all abraded or scraped areas with touch-up paint to match gate color. Touch-up shall not be obvious.
- D. Protect all installed work against damage from other construction work.
- E. Clean Up: Upon completion of the work of this Section, remove all surplus materials, rubbish and debris from the gate installation area.

END OF SECTION

SECTION 32 84 00

IRRIGATION

PART 1 GENERAL

1.1 SUMMARY

- A. It is the intent of the specifications and drawings that the finished system is complete in every respect and shall be ready for operation satisfactory to the Owner.
- B. The work shall include all materials, labor, services, transportation, and equipment necessary to perform the work as indicated on the drawings, in these specifications, and as necessary to complete the contract.

1.2 CONSTRUCTION DRAWINGS

- A. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, sleeves, etc. which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishing such fittings, etc. as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, and architectural features.
- B. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications. When an item is shown on the plans but not shown on the specifications or vice versa, it shall be deemed to be as shown on both. The Landscape Architect shall have final authority for clarification.
- C. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Landscape Architect as soon as detected. In the event this notification is not performed, the Irrigation Contractor shall assume full responsibility for any revision necessary.

1.3 QUALITY ASSURANCE

- A. Provide at least one English speaking person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the manufacturer's recommended methods of installation and who shall direct all work performed under this section.
- B. Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturer of articles used in this contract furnish directions covering points not shown in the drawings and specifications.
- C. All local, municipal, and state laws, rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is

required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence.

- D. All materials supplied for this project shall be new and free from any defects. All defective materials shall be replaced immediately at no additional cost to Owner.
- E. The Contractor shall secure the required licenses and permits including payments of charges and fees, give required notices to public authorities, verify permits secured or arrangements made by others affecting the work of this section.

1.4 SUBMITTALS

A. Submit under provisions of Division 01.

B. Submittals Materials List:

1. After award of contract and before any irrigation system materials are ordered from suppliers or delivered to the job site, submit to the Owner a complete list of all irrigation system materials, or processes proposed to be furnished and installed as part of this contract
2. The submittals materials list shall include the following information:
 - a. A title sheet with the job name, the contractor's name, contractor's address and telephone number, submittal date and submittal number
 - b. An index sheet showing the item number (i.e. 1,2,3, etc.); an item description (i.e. sprinkler head); the manufacturer's name (i.e. Hunter Industries); the item model number (i.e. I-40-ADV/36V); and the page(s) in the submittal set that contain the catalog cuts.
 - c. The catalog cuts shall be one or two pages copied from the most recent manufacturer's catalog that indicate the product submitted. Do not submit parts lists, exploded diagrams, price lists or other extra information.
 - d. The catalog cuts shall clearly indicate the manufacturer's name and the item model number. The item model number, all specified options and specified sizes shall be circled on the catalog cuts.
 - e. Submittals for equipment indicated on the legend without manufacturer names, or "as approved", shall contain the manufacturer, Class or Schedule, ASTM numbers and/or other certifications as indicated in these specifications.
 - 1) Submittal materials list format requirements:
3. The submittals materials list shall include the following information:
 - a. Submittals shall be provided as one complete package for the project. Multiple partial submittals will not be reviewed.
 - b. Submittal package shall be stapled or bound in such a way as to allow for disassembly for review processing. Submittals shall not have tabs, tab sheets, spiral binding, or any other type of binding that will interfere with automated copying of submittals.
 - c. Submittal package shall have all pages numbered in the lower right hand corner. Page numbers shall correspond with submittal index.
 - d. Re-submitted packages must be revised to include only the equipment being re-submitted. Equipment previously reviewed and accepted shall not be re-submitted in the materials list/index sheet or in the catalog cut sheet package.

- C. Substitutions: If the Irrigation Contractor wishes to substitute any equipment or materials for those equipment or materials listed on the irrigation drawings and specifications, he may do so by providing the following information to the Landscape Architect or Owner's authorized representative for approval.
 - 1. Provide a written statement indicating the reason for making the substitution.
 - 2. Provide catalog cut sheets, technical data, and performance information for each substitute item.
 - 3. Provide in writing the difference in installed price if the item is accepted.
- D. The Landscape Architect or Owner's authorized representative will allow no substitutions without prior written acceptance.
- E. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- F. The Landscape Architect or Owner's authorized representative will not review the submittal package unless provided in the format described above.

1.5 EXISTING CONDITIONS

- A. The Contractor shall verify and be familiar with the locations, size and detail of points of connection provided as the source of water, electrical supply, and telephone line connection to the irrigation system.
- B. Irrigation design is based on the available static water pressure shown on the drawings. Contractor shall verify static water on the project prior to the start of construction. Should a discrepancy exist, notify the Landscape Architect and Owner's authorized representative prior to beginning construction.
- C. Prior to cutting into the soil, the Contractor shall locate all cables, conduits, sewer septic tanks, and other utilities as are commonly encountered underground and he shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the Contractor shall promptly notify the Landscape Architect and Owner who will arrange for relocations. The Contractor will proceed in the same manner if a rock layer or any other such conditions are encountered.
- D. The Contractor shall protect all existing utilities and features to remain on and adjacent to the project site during construction. Contractor shall repair, at his own cost; all damage resulting from his operations or negligence.
- E. The Irrigation Contractor shall coordinate with the General Contractor for installation of required sleeving as shown on the plans prior to paving operations.
- F. The Contractor shall verify and be familiar with the existing irrigation systems in areas adjacent to and within the Project area of work.
- G. The Contractor shall protect all existing irrigation systems, in areas adjacent to and within the project area of work, from damage due to his operations.
- H. Contractor shall notify Owner's Representative if any existing system is temporarily shut off, capped or modified. Provide 48-hour notice, prior to turning off or modifying any existing irrigation system.

- I. The Contractor shall repair or replace all existing irrigation systems, in areas adjacent to and within the project area of work, damaged by the construction of this project. Adjacent irrigation systems shall be made completely operational and provide complete coverage of the existing landscaped areas. All repairs shall be complete to the satisfaction of the Owner's Representative.
- J. The contractor shall provide bore holes under any existing pavement or paving encountered for the required lateral, mainline and low voltage control wire sleeving. Bore holes under 2 inches in diameter and smaller shall be made with a BulletMole® underground boring tool as manufactured by Dimension Tools, LLC (Contact telephone number (888)-650-5554 or at www.bulletmole.com). Bore holes larger than 2 inches in diameter shall be made with an approved mechanical boring tool. No air jacking or hydraulic boring of any kind shall be allowed.

1.6 INSPECTIONS

- A. The Contractor shall permit the Landscape Architect and Owner's authorized representative to visit and inspect at all times any part of the work and shall provide safe access for such visits.
- B. Where the specifications require work to be tested by the Contractor, it shall not be covered over until accepted by the Landscape Architect, Owner's authorized representative, and/or governing agencies. The Contractor shall be solely responsible for notifying the Landscape Architect, Owner, and governing agencies, a minimum of 48 hours in advance, where and when the work is ready for testing. Should any work be covered without testing or acceptance, it shall be, if so ordered, uncovered at the Contractor's expense
- C. Inspections will be required for the following at a minimum:
 - 1. Pre-construction meeting.
 - 2. System layout.
 - 3. Pressure test of irrigation mainline (Four hours at 125 PSI or 120% of static water pressure, whichever is greater.) Mainline pressure loss during test shall not exceed 2 PSI.
 - 4. Coverage test of irrigation system. Test shall be performed prior to any planting.
 - 5. Final inspection prior to start of maintenance period.
 - 6. Final acceptance prior to turnover.
- D. Site observations and testing will not commence without the field record drawings as prepared by the Irrigation Contractor. Record drawings must complete and up to date for each site visit.
- E. Work that fails testing and is not accepted will be retested. Hourly rates and expenses of the Landscape Architect, Owner's authorized representative, and governing agencies for re-inspection or retesting will be paid by the Irrigation Contractor at no additional expense to Owner.

1.7 STORAGE AND HANDLING

- A. Use all means necessary to protect irrigation system materials before, during, and after installation and to protect the installation work and materials of all other trades. In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the Landscape Architect and Owner and at no additional cost to the Owner.

- B. Exercise care in handling, loading, unloading, and storing plastic pipe and fittings under cover until ready to install. Transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.

1.8 CLEANUP AND DISPOSAL

- A. Dispose of waste, trash, and debris in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Bury no such waste material and debris on the site. Burning of trash and debris will not be permitted. The Contractor shall remove and dispose of rubbish and debris generated by his work and workmen at frequent intervals or when ordered to do so by the Owner's authorized representative.
- B. At the time of completion the entire site will be cleared of tools, equipment, rubbish and debris which shall be disposed of off-site in a legal disposal area.

1.9 TURNOVER ITEMS

A. Record Drawings:

1. Record accurately on one set of drawings all changes in the work constituting departures from the original contract drawings and the actual final installed locations of all required components as shown below.
2. The record drawings shall be prepared to the satisfaction of the Owner. Prior to final inspection of work, submit record drawings to the Landscape Architect or Owner's authorized representative.
3. All record drawings shall be prepared using AutoCAD 2010 drafting software and the original irrigation drawings as a base. No manual drafted record drawings shall be acceptable. The Contractor may obtain digital base files from the Landscape Architect or Owner's authorized representative.
4. If the Contractor is unable to provide the AutoCAD drafting necessary for the record drawings the irrigation designer does provide record drawing drafting as a separate service.
5. Prior to final inspection of work, submit record drawings plotted onto vellum sheets for review by the Landscape Architect or Owner's authorized representative. After acceptance by the Landscape Architect, City Inspector or Owner's authorized representative re-plot the record drawings onto reproducible Mylar sheets. The Contractor shall also provide record drawing information on a digital AutoCAD Release 2010 drawing file. All digital files shall be provided on a compact disc (CD) clearly marked with the project name, file descriptions and date.
 - a. Record drawing information and dimensions shall be collected on a day-to-day basis during the installation of the pressure mainline to fully indicate all routing locations and pipe depths. Locations for all other irrigation equipment shall be collected prior to the final inspection of the work.
 - b. Two dimensions from two permanent points of reference such as buildings, sidewalks, curbs, streetlights, hydrants, etc. shall be shown for each piece of irrigation equipment shown below. Where multiple components are installed with no reasonable reference point between the components, dimensioning may be made to the irrigation equipment. All irrigation symbols shall be clearly shown matching the irrigation legend for the drawings. All lettering on the record drawings shall be minimum 1/8 inch in size.
6. Show locations and depths of the following items:

- a. Point of connection (including water POC, backflow devices, master control valves, flow sensors, etc.)
 - b. Routing of sprinkler pressure main lines (dimensions shown at a maximum of 100 feet along routing)
 - c. Isolation valves
 - d. Automatic remote control valves (indicate station number and size)
 - e. Quick coupling valves
 - f. Drip air relief and flush valves
 - g. Routing of control wires where separate from irrigation mainline
 - h. Irrigation controllers (indicate controller number and station count)
 - i. Related equipment (as may be directed)
- B. Controller Charts:
1. Provide one controller chart for each automatic controller. Chart shall show the area covered by the particular controller. The areas covered by the individual control valves shall be indicated using colored highlighter pens. A minimum of six individual colors shall be used for the controller chart unless less than six control valves are indicated.
 2. Landscape Architect or Owner's authorized representative must approve record drawings before controller charts are prepared.
 3. The chart is to be a reduced copy of the actual "record" drawing. In the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a readable size.
 4. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils in thickness.
- C. Operation and Maintenance Manuals:
1. Two individually bound copies of operation and maintenance manuals shall be delivered to the Landscape Architect or Owner's authorized representative at least 10 calendar days prior to final inspection. The manuals shall describe the material installed and the proper operation of the system.
 2. Each complete, bound manual shall include the following information:
 3. Index sheet stating Contractor's address and telephone number, duration of guarantee period, list of equipment including names and addresses of local manufacturer representatives:
 - a. Operating and maintenance instructions for all equipment.
 - b. Spare parts lists and related manufacturer information for all equipment.
- D. Equipment:
1. Supply as a part of this contract the following items:
 - a. Two (2) wrenches for disassembly and adjustment of each type of sprinkler head used in the irrigation system.
 - b. Three 30-inch sprinkler keys for manual operation of control valves.
 - c. Two keys for each automatic controller.

- d. Two quick coupler keys with a 3/4" bronze hose bib, bent nose type with hand wheel and two coupler lid keys.
 - e. One valve box cover key or wrench.
 - f. Six extra sprinkler heads of each size and type.
 - g. For specified ball valves if required: One (1) 5-foot long valve handle, to fit the specified ball valves.
2. The above equipment shall be turned over to Owner's authorized representative at the final inspection.

1.10 COMPLETION

- A. At the time of the pre-maintenance period inspection, the Landscape Architect, Owner's authorized representative, and governing agencies will inspect the work, and if not accepted, will prepare a list of items to be completed by the Contractor. Punch list to be checked off by contractor and submitted to Landscape Architect or Owner's Authorized representative prior to any follow-up meeting. This checked off list to indicate that all punch list items have been completed. At the time of the post-maintenance period or final inspection the work will be re-inspected and final acceptance will be in writing by the Landscape Architect, Owner's authorized representative, and governing agencies.
- B. The Owner's authorized representative shall have final authority on all portions of the work.
- C. After the system has been completed, the Contractor shall instruct Owner's authorized representative in the operation and maintenance of the irrigation system and shall furnish a complete set of operating and maintenance instructions.
- D. Any settling of trenches which may occur during the one-year period following acceptance shall be repaired to the Owner's satisfaction by the Contractor without any additional expense to the Owner. Repairs shall include the complete restoration of all damage to planting, paving or other improvements of any kind as a result of the work.

1.11 GUARANTEE

- A. The entire sprinkler system, including all work done under this contract, shall be unconditionally guaranteed against all defects and fault of material and workmanship, including settling of backfilled areas below grade, for a period of one (1) year following the filing of the Notice of Completion.
- B. Should any problem with the irrigation system be discovered within the guarantee period, it shall be corrected by the Contractor at no additional expense to Owner within ten (10) calendar days of receipt of written notice from Owner. When the nature of the repairs as determined by the Owner constitute an emergency (i.e. broken pressure line) the Owner may proceed to make repairs at the Contractor's expense. Any and all damages to existing improvement resulting either from faulty materials or workmanship, or from the necessary repairs to correct same, shall be repaired to the satisfaction of the Owner by the Contractor, all at no additional cost to the Owner.
- C. Guarantee shall be submitted on Contractors own letterhead as follows:

We hereby guarantee that the sprinkler irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted. We agree to repair or replace any defective material during the

period of one year from date of filing of the Notice of Completion and also to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the Owner. We shall make such repairs or replacements within 10 calendar days following written notification by the Owner. In the event of our failure to make such repairs or replacements within the time specified after receipt of written notice from Owner, we authorize the Owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT NAME:
PROJECT LOCATION:

CONTRACTOR NAME:
ADDRESS:

TELEPHONE:

SIGNED:

DATE:

PART 2 MATERIALS

2.1 SUMMARY

- A. Use only new materials of the manufacturer, size and type shown on the drawings and specifications. Materials or equipment installed or furnished that do not meet Landscape Architect's, Owner's, or governing agencies standards will be rejected and shall be removed from the site at no expense to the Owner.

2.2 PIPE

- A. Pressure supply line between the water meter and the backflow prevention device shall be type K copper, one size larger than backflow device.
- B. Backflow prevention assemblies, and all other above grade assemblies, shall be constructed of threaded brass pipe and threaded brass fittings the same size as the backflow device, unless otherwise directed.
- C. Pressure supply lines 1 1/2 inches in diameter and smaller downstream of the backflow prevention unit shall be Schedule 40 solvent weld PVC conforming to ASTM D1785.
- D. Pressure supply lines 2 inches in diameter and up to 3 inches in diameter downstream of backflow prevention unit shall be Class 315 solvent weld PVC. Piping shall conform to ASTM D2241.
- E. Non-pressure lines 3/4 inch in diameter and larger downstream of the remote control valve shall be Class 200 solvent weld PVC conforming to ASTM D2672.
- F. Non-pressure lines 3/4 inch in diameter and larger downstream of the remote control valve shall be SCH 40 solvent weld PVC conforming to ASTM D1785.

- G. Recycled water PVC pipe to be color-coded purple in color marked on two sides with recycled water warning statements "Caution-Recycled Water". Recycled water piping must be accepted by the local recycled water governing agencies.

2.3 METAL PIPE AND FITTINGS

- A. Brass pipe shall be 85 percent red brass, ANSI, IPS Standard 125 pounds, Schedule 40 screwed pipe.
- B. Fittings shall be medium brass, screwed 125-pound class.
- C. Copper pipe and fittings shall be Type "K" sweat soldered, or brazed as indicated on the drawings.

2.4 PLASTIC PIPE AND FITTINGS

- A. Pipe shall be marked continuously with manufacturer's name, nominal pipe size, schedule or class, PVC type and grade, National Sanitation Foundation approval, Commercial Standards designation, and date of extrusion.
- B. All plastic pipe shall be extruded of an improved PVC virgin pipe compound in accordance with ASTM D2672, ASTM D2241 or ASTM D1785.
- C. All solvent weld PVC fittings shall be standard weight Schedule 40 (and Schedule 80 where specified on the irrigation detail sheet, all mainline fittings shall be Schedule 80 PVC) and shall be injection molded of an improved virgin PVC fitting compound. Slip PVC fittings shall be the "deep socket" bracketed type. Threaded plastic fittings shall be injection molded. All tees and ells shall be side gated. All fittings shall conform to ASTM D2464 and ASTM D2466.
- D. All threaded nipples shall be standard weight Schedule 80 with molded threads and shall conform to ASTM D1785.
- E. All solvent cementing of plastic pipe and fittings shall be a two-step process, using primer and solvent cement applied per the manufacturer's recommendations. Cement shall be of a fluid consistency, not gel-like or ropy. Solvent cementing shall be in conformance with ASTM D2564 and ASTM D2855.
- F. When connection is plastic to metal, female adapters shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be non-lead base Teflon paste, tape, or equal.
- G. All pressure mainlines installed with solvent weld PVC fittings shall be installed with concrete thrust blocking at all directional changes in the mainline routing. Concrete thrust blocking shall not be required when ductile iron fittings and mechanical restraints are specified.

2.5 BACKFLOW PREVENTION UNITS

- A. The backflow prevention unit shall be of the manufacturer, size, and type indicated on the drawings.
- B. The backflow prevention unit shall be installed in accordance with the requirements set forth by local codes.
- C. The backflow enclosure shall be of the manufacturer, size, and type indicated on the drawings.

- D. The backflow freeze prevention cover shall be of the manufacturer, size, and type indicated on the drawings.

2.6 VALVES

A. Ball Valves:

1. Ball valves shall be of the manufacturer, size, and type indicated on the drawings.
2. Quick coupler valves shall be brass with a wall thickness guaranteed to withstand normal working pressure of 150 psi without leakage. Valves shall have 1" female threads opening at base, with two-piece body. Valves to be operated only with a coupler key, designed for that purpose. Coupler key is inserted into valve and a positive, watertight connection shall be made between the coupler key and valve.
3. Vinyl quick coupler cover to be purple in color with the words "Warning-Recycled Water-Do Not Drink" permanently marked on lid.

B. Quick Coupler Valves:

1. Quick coupler valves shall be of the manufacturer, size, and type indicated on the drawings.
2. Quick coupler valves shall be brass with a wall thickness guaranteed to withstand normal working pressure of 150 psi without leakage. Valves shall have 1" female threads opening at base, with two-piece body. Valves to be operated only with a coupler key, designed for that purpose. Coupler key is inserted into valve and a positive, watertight connection shall be made between the coupler key and valve.
3. Vinyl quick coupler cover to be purple in color with the words "Warning-Recycled Water-Do Not Drink" permanently marked on lid.

C. Automatic Control Valves:

1. Automatic control valves shall be of the manufacturer, size, and type indicated on the drawings.
2. Automatic control valves shall be electrically operated.
3. Provide Christy's valve ID tags for each remote control valve with valve number.

2.7 VALVE BOXES

- A. Valve boxes shall be fabricated from a durable, weather-resistant plastic material resistant to sunlight and chemical action of soils.
- B. The valve box cover shall be green in color and secured with a hidden latch mechanism or bolts.
- C. The cover and box shall be capable of sustaining a load of 1,500 pounds.
- D. Valve box extensions shall be by the same manufacturer as the valve box.
- E. The plastic irrigation valve box cover shall be an overlapping type.
- F. Automatic control valve, master valve, flow sensor, and gate/ball valve boxes shall be 17"x11"x12" 'nominal' rectangular size. Valve box covers shall be marked "RCV" with the valve identification number "RCV-A1", "RCV-B1" or "MV-A", "MV-B" for each master valve, "FS-A", "FS-B" for each flow sensor, or "BV" heat branded" onto the cover in 1-1/4 inch high letters / numbers.

- G. Drip flush valve and Air relief valve boxes shall be 6" circular size. Valve box covers shall be marked with "FV" or "ARV" "heat branded" onto the cover in 1-1/4 inch high letters.
- H. Quick coupler valve boxes shall be 10" circular size. Valve box covers shall be marked with "QCV" "heat branded" onto the cover in 1-1/4 inch high letters.
- I. Valve box cover shall be green in color and permanently marked (attached tags are not acceptable) on valve box cover plate with the words "Warning-Recycled Water-Do Not Drink".

2.8 AUTOMATIC CONTROLLER

- A. Automatic controller shall be of the manufacturer, size, and type indicated on the drawings.
- B. Controller enclosure shall be of the manufacturer, size, and type indicated on the drawings.
- C. Controller shall be grounded according to local codes using equipment of the manufacturer, size, and type indicated on the drawings; or as required by local codes and ordinances.
- D. Contractor shall clearly identify each controller enclosure with a 2" letter 'A' or 'B' sticker for identification.

2.9 ELECTRICAL

- A. All electrical equipment shall be NEMA Type 3, waterproofed for exterior installations.
- B. All electrical work shall conform to local codes and ordinances.

2.10 LOW VOLTAGE CONTROL WIRING

- A. Remote control wire shall be direct-burial AWG-UF type, size as indicated on the drawings, and in no case smaller than 14 gauge.
- B. Connections shall be of the manufacturer, size, and type indicated on the drawings.
- C. Common wires shall be white in color. Control wires shall be red (where two or more controllers are used, the control wires shall be a different color for each controller. These colors shall be noted on the "Record Drawings" plans located on controller door).
- D. Ground wires shall be green in color or bare copper and in no case smaller than 6 gauge.

2.11 IRRIGATION HEADS AND DRIP EMITTERS AND INLINE DRIP TUBING

- A. Irrigation heads, drip emitters and inline drip tubing shall be of the manufacturer, size, type, with radius of throw, operating pressure, and discharge rate indicated on the drawings.
- B. Irrigation heads, drip emitters and inline drip tubing shall be used as indicated on the drawings.
- C. Irrigation heads shall have purple recycled water warning cover.

2.12 DRIP IRRIGATION EQUIPMENT

- A. Drip tubing equipment such as flush valves, air relief valves, wye strainers and pressure regulators shall be of the manufacturer, size, and type indicated on the drawings.

2.13 MISCELLANEOUS EQUIPMENT

- A. Landscape Fabric:
 - 1. Landscape fabric for valve box assemblies shall be 5.0- oz. weight woven polypropylene weed barrier. Landscape fabric shall have a burst strength of 225 PSI, a puncture strength of 60 lbs. and capable of water flow of 12 gallons per minute per square foot.
 - 2. Type: DeWitt Pro 5 Weed Barrier or approved equal.
- B. Equipment such as flow sensors, rain sensors, freeze sensors, flush valves, air relief valves, wye strainers, and master valves shall be of the manufacturer, size and type indicated on the drawings.

PART 3 EXECUTION

3.1 SITE CONDITIONS

- A. Inspections:
 - 1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 - 2. Verify that irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.
- B. Discrepancies:
 - 1. In the event of discrepancy, immediately notify the Landscape Architect or Owner's authorized representative.
 - 2. Do not proceed with installation in areas of discrepancy until all discrepancies have been resolved.
- C. Grades:
 - 1. Before starting work, carefully check all grades to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade.
 - 2. Final grades shall be accepted by the Engineer before work on this section will be allowed to begin.
- D. Field Measurements:
 - 1. Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design. Contractor shall coordinate the installation of all irrigation materials with all other work.
 - 2. All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions prior to proceeding with work under this section.
 - 3. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities, which are caused by his operations or neglect.
- E. Diagrammatic Intent:
 - 1. The drawings are essentially diagrammatic. The size and location of equipment and fixtures are drawn to scale where possible. Provide offsets in piping and changes in equipment locations as necessary to conform with structures and to avoid obstructions or conflicts with other work at no additional expense to Owner.

F. Layout:

1. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of sprinkler heads, valves, backflow preventer, and automatic controller.
2. Layout irrigation system and make minor adjustments required due to differences between site and drawings. Where piping is shown on drawings under paved areas, but running parallel and adjacent to planted areas, install the piping in the planted areas.

G. Water Supply:

1. Connections to, or the installation of, the water supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to Owner.

H. Electrical Service:

1. Connections to the electrical supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to Owner.
2. Contractor shall make electrical connections to the irrigation controller. Electrical power source to controller locations shall be provided by others.
3. Contractor shall make electrical connections to the irrigation controller. 230-volt single-phase electrical power source to pump assembly location shall be provided by others per NEC codes.

3.2 TRENCHING

- A. Excavations shall be straight with vertical sides, even grade, and support pipe continuously on bottom of trench. Trenching excavation shall follow layout indicated on drawings to the depths below finished grade and as noted. Where lines occur under paved area, these dimensions shall be considered below subgrade.
- B. Provide minimum cover of 18 inches on pressure supply lines 2 ½ inches and smaller.
- C. Provide minimum cover of 24 inches on pressure supply lines 3 inches and larger.
- D. Provide minimum cover of 18 inches for control wires within planters.
- E. Provide minimum cover of 24 inches for control wires within sleeves below paving.
- F. Provide minimum cover of 36 inches on pressure supply lines under vehicular travel ways.
- G. Provide minimum cover of 12 inches for non-pressure lines.
- H. Pipes installed in a common trench shall have a 4-inch minimum space between pipes.

3.3 THRUST BLOCKS

- A. Thrust blocks must be constructed of Class "B" concrete.
- B. Thrust blocks shall be poured against undisturbed site soil.
- C. PVC fitting joints shall be kept free of concrete. Do not encase fitting in concrete.
- D. Thrust blocking shall be sized to provide the minimum bearing areas as shown below. Bearing areas indicated have been calculated for Class 200 PVC pipe at a test pressure of

150 PSI in soil with 2,000 PSI bearing capacity. Increase thrust block sizing as necessary for varying soil conditions.

1. Provide a minimum thrust block bearing area of 2.0 square feet on all bends (all degrees) and tees installed on pressure supply lines 4 inches and smaller.
2. Provide a minimum thrust block bearing area of 4.0 square feet on all 90 degree bends installed on pressure supply lines 6 inches in size. Bends of less than 90 degrees shall require a thrust block with a bearing area of 2.0 square feet for 6 inch mainline.
3. Provide a minimum thrust block bearing area of 3.0 square feet on all tees installed on pressure supply lines 6 inches in size.
4. Provide a minimum thrust block bearing area of 6.5 square feet on all 90 degree bends installed on pressure supply lines 8 inches in size. Bends of less than 90 degrees shall require a thrust block with a bearing area of 3.5 square feet for 8 inch mainline.
5. Provide a minimum thrust block bearing area of 4.5 square feet on all tees installed on pressure supply lines 8 inches in size.

3.4 BACKFILLING

- A. Backfill material on all lines shall be the same as adjacent soil free of debris, litter, and rocks over 1/2 inches in diameter.
- B. Backfill shall be tamped in 4-inch layers under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Backfill materials shall be sufficiently damp to permit thorough compaction, free of voids. Backfill shall be compacted to dry density equal to adjacent undisturbed soil and shall conform to adjacent grades.
- C. Flooding in lieu of tamping is not allowed.
- D. Under no circumstances shall truck wheels be used to compact backfill.
- E. Provide sand backfill a minimum of 4 inches over and under all piping under paved areas.

3.5 PIPING

- A. Piping under existing pavement may be installed by jacking, boring, or hydraulic driving. No hydraulic driving is permitted under asphalt pavement.
- B. Cutting or breaking of existing pavement is not permitted.
- C. Carefully inspect all pipe and fittings before installation, removing dirt, scale, burrs, and reaming. Install pipe with all markings up for visual inspection and verification.
- D. Remove all dented and damaged pipe sections.
- E. All lines shall have a minimum clearance of 4 inches from each other and 12 inches from lines of other trades.
- F. Parallel lines shall not be installed directly over each other
- G. In solvent welding, use only the specified primer and solvent cement and make all joints in strict accordance with the manufacturer's recommended methods including wiping all excess solvent from each weld. Allow solvent welds at least 15 minutes setup time before moving or handling and 24 hours curing time before filling.

- H. PVC pipe shall be installed in a manner, which will provide for expansion and contraction as recommended by the pipe manufacturer.
- I. Center load all plastic pipe prior to pressure testing.
- J. All threaded plastic-to-plastic connections shall be assembled using Teflon tape or Teflon paste.
- K. For plastic-to-metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded plastic-to-metal connections, except where noted otherwise. All plastic-to-metal connections shall be made with plastic female adapters.

3.6 CONTROLLER

- A. The exact location of the controller shall be approved by the Landscape Architect or Owner's authorized representative before installation. The electrical service shall be coordinated with this location.
- B. The Irrigation Contractor shall be responsible for the final electrical hook up to the irrigation controller.
- C. The irrigation system shall be programmed to operate during the periods of minimal use of the design area.

3.7 CONTROL WIRING

- A. Low voltage control wiring shall occupy the same trench and shall be installed along the same route as the pressure supply lines whenever possible.
- B. Where more than one wire is placed in a trench, the wiring shall be taped together in a bundle at intervals of 10 feet. Bundle shall be secured to the mainline with tape at intervals of 20 feet.
- C. All connections shall be of an approved type and shall occur in a valve box. Provide an 18-inch service loop at each connection.
- D. An expansion loop of 12 inches shall be provided at each wire connection and/or directional change, and one of 24 inches shall be provided at each remote control valve.
- E. A continuous run of wire shall be used between a controller and each remote control valve. Under no circumstances shall splices be used without prior approval.

3.8 VALVES

- A. Automatic control valves, quick coupler, and gate valves are to be installed in the approximate locations indicated on the drawings.
- B. Valve shall be installed in shrub areas whenever possible.
- C. Install all valves as indicated in the detail drawings.
- D. Valves to be installed in valve boxes shall be installed one valve per box.
- E. Provide valve ID tags for each remote control valve with valve number.

3.9 VALVE BOXES

- A. Valve boxes shall be installed in shrub areas whenever possible.
- B. Each valve box shall be installed on a foundation of 3/4 inch gravel backfill, 3 cubic feet minimum. Valve boxes shall be installed with their tops 1/2 inch above the surface of surrounding finish grade in lawn areas and 2 inches above finish grade in ground cover areas.

3.10 IRRIGATION HEADS DRIP EMITTERS AND INLINE DRIP TUBING

- A. Irrigation heads, drip emitters and inline drip tubing shall be installed as indicated on the drawings.
- B. Spacing of heads and inline drip tubing shall not exceed maximum indicated on the drawings.
- C. Riser nipples shall be of the same size as the riser opening in the sprinkler body.

3.11 BACKFLOW PREVENTION UNITS

- A. Backflow Prevention Units shall be installed as indicated on the drawings. The backflow prevention unit shall be installed in accordance with the requirements set forth by local codes.
- B. The exact location of the backflow device shall be approved by the Landscape Architect or owner's authorized representative before installation.
- C. The contractor shall be responsible for the testing and certification of the backflow device for proper operation. Testing and certification shall be performed by a state qualified backflow tester.

3.12 MISCELLANEOUS EQUIPMENT

- A. Install all assemblies specified herein according to the respective detail drawings or specifications, using best standard practices.
- B. Quick coupler valves shall be set approximately 18 inches from walks, curbs, header boards, or paved areas where applicable.
- C. Install devices such as rain sensors, freeze sensors, flush valves, and air relief valves, master valves and flow sensors as indicated on the drawings and as recommended by the manufacturer.

3.13 FLUSHING THE SYSTEM

- A. Prior to installation of irrigation heads, the valves shall be opened and a full head of water used to flush out the lines and risers.
- B. Irrigation heads shall be installed after flushing the system has been completed.

3.14 ADJUSTING THE SYSTEM

- A. Contractor shall adjust valves, align heads, and check the coverage of each system prior to coverage test.

- B. If it is determined by the Landscape Architect or Owner's authorized representative that additional adjustments or nozzle changes will be required to provide proper coverage, all necessary changes or adjustments shall be made prior to any planting.
- C. The entire system shall be operating properly before any planting operations commence.
- D. Automatic control valves are to be adjusted so that the irrigation heads, drip emitters and inline drip tubing operate at the pressure recommended by the manufacturer.

3.15 TEST AND OBSERVATION

- A. Do not allow or cause any of the work of this section to be covered up or enclosed until it has been observed, tested and accepted by the Landscape Architect, Owner, and governing agencies.
- B. The Contractor shall be solely responsible for notifying the Landscape Architect, Owner, and governing agencies, a minimum of 48 hours in advance, where and when the work is ready for testing.
- C. When the sprinkler system is completed, the Contractor shall perform a coverage test of each system in its entirety to determine if the water coverage for the planted areas is complete and adequate in the presence of the Landscape Architect.
- D. The Contractor shall furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from the plans, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the Landscape Architect. This test shall be accepted by the Landscape Architect and accomplished before starting any planting.
- E. Areas to be maintained for the formal maintenance period shall start maintenance at the same time, as directed by the Landscape Architect, Owner, and governing agencies. Partial areas will not be released into maintenance prior to completion of items listed in the pre-maintenance review. The maintenance period may not be phased.
- F. If, after the maintenance review, the irrigation systems are not accepted by the Landscape Architect, the contractor shall reimburse the Architect for additional site visits, or additional time required to review work. All additional time will be billed at the Architect's hourly rate and will be paid for by the contractor at no additional cost to the owner.
- G. Final inspection will not commence without record drawings as prepared by the Irrigation Contractor.

3.16 MAINTENANCE.

- A. During the maintenance period the Contractor shall adjust and maintain the irrigation system in a fully operational condition providing complete irrigation coverage to all intended plantings.

3.17 COMPLETION CLEANING

Clean up shall be made as each portion of the work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be swept, and any damage sustained on the work of others shall be repaired to original conditions.

END OF SECTION

SECTION 32 91 13
SOIL PREPARATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.2 SCOPE OF WORK

- A. Furnish labor, materials, and equipment to place imported topsoil, prepare soil for planting, and to finish grade as described herein and upon the drawings.
- B. Work not included: Rough grading and storm drainage

1.3 RELATED SECTIONS

- A. Section 32 84 00 – Irrigation
- B. Section 32 93 00 – Plants

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. American Association of State Highway and Transportation Officials (AASHTO)
- C. Standard Specifications for Public Works Construction, latest edition (Greenbook)

1.5 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Partial or incomplete submittals are not acceptable and will be returned without a review.
- C. Product Submittals -
 - 1. Organic soil amendments – Submit samples and product specifications not more than 30 days old. Specification shall include particle size evaluation, total nitrogen (N), ammonia (NH₄-N, nitrate (NO₃-N), ECe, pH, micro nutrients, and metals.
 - 2. Inorganic conditioners, fertilizers, and chemicals – Submit product literature and specifications.
 - 3. Topsoil– Submit sample and product analysis.
 - 4. Agricultural Soil Tests – Submit analysis report and recommendations for soil samples.
- D. Certifications – Submit copies of Certified Landscape Technician (CLT) registration for foremen performing work on this project.
- E. Costs for sampling, testing or inspection of materials are included in bid, and copies of inspections, certificates, and tests results shall be furnished without additional cost to the Owner.

- F. Substitutions – For materials that differ from a specified brand or product, submit samples, product specifications, and product literature. Follow procedures as prescribed under Substitutions- Division 01.

1.6 EXPERIENCE AND QUALIFICATIONS

- A. The Contractor shall employ Certified Landscape Technicians (CLT) with the California Landscape Contractors Association (CLCA), as foremen for landscape installation work.

1.7 RESPONSIBILITY

- A. The Contractor shall be responsible for the protection of public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement, and shall match in finish and dimension.
- B. Prior to starting the work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in accordance with the design, pertinent codes, regulations, and portions of the referenced standards.
- C. In the event of discrepancy, immediately notify the Landscape Architect.
- D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 PRODUCTS

2.1 SOIL AMENDMENTS

- A. Organic Soil Conditioner- Humic Compost
 - 1. Product shall be fully composted 100 percent recycled organic product, consisting of composted bio-solids and aged wood fiber with particles passing a ½ inch screen. Product shall be non-hazardous, and conform to U.S. EPA 40 CFR 503 criteria for class “A” product. Manufactured by Agri-Service, Oceanside, CA.
- B. Humate Plus
 - 1. A commercially mined and packaged soil conditioner containing 40 percent organic matter, 40 percent Carbon, and 40 percent humic acids. Manufactured by Tri- C Enterprises, Chino, CA, (800) 927-3311.
- C. Agricultural Gypsum
 - 1. A commercially processed and packaged product with a minimum 90 percent Calcium Sulfate dihydrate (CaSO₄2H₂O) and minimum 14 percent Sulfur (S). Gypsum shall be free flowing, fine granular form with 100 percent passing a 10 mesh screen. Product shall be environmentally safe and produced specifically for agricultural or landscape use.

D. Granular Fertilizer

1. Fertilizer shall be a commercial grade product, uniform and homogenous in composition, dust free, dry, and free flowing granular or pelletized form suitable for application with approved equipment, and shall contain the following minimum available percentages by weight of plant food:

Nitrogen 6.00%

Phosphorus 20.00%

Potassium 20.00%

2. Fertilizer shall be delivered to the site in original unopened containers bearing the manufacturer's guaranteed analysis. Wet or caked fertilizer is not acceptable.

E. EZ Wet 26% Sprayable Soil Penetrant

1. A commercially produced organic bio-degradable neutral PH soil penetrant packaged in liquid form.

- F. Refer to section 32 93 00 Plants for additional soil amendments used at planting pits including fertilizer tablets and mycorrhizal inoculum.

2.2 PRE-EMERGENT HERBICIDES

- A. Pre-emergent herbicides shall be a wettable powder or granule type product, suitable for use with the groundcovers specified on the plans and suitable for use with the on-site soil.
- B. Herbicides shall be selected for controlling the weeds indigenous to the site.
- C. Herbicides shall comply with requirements of local and state agencies having jurisdiction over the project.

2.3 AMENDMENTS FOR BID

- A. Quantity and procedure adjustments may be requested by the Landscape Architect, after reviewing of the Agricultural Soil Analysis report. Adjustments by the Landscape Architect will issued in writing. The following amendments and quantities are to be used as the basis for bids:

1. Soil amendments for planting areas with gradient less than 2:1 in slope. Quantity per 1,000 square feet:

4 cu. yds. Organic soil conditioner

50 lbs. Humate Plus

15 lbs. Granular fertilizer

25 lbs. Agricultural gypsum

8 oz. EZ Wet (in 12 gallons of water)

2. Soil amendments for 2:1 slopes. Quantities per 1000 square feet:

1/3 cu. yds. Organic soil conditioner

8 oz EZ Wet soil penetrant

3. Refer to Section 32 93 00 Plants for bid amendments for plant pit backfill mix.

2.4 IMPORTED TOPSOIL

- A. Topsoil for raised/mounded planters shall be "70/30 topsoil" by Agriservice (760) 439 – 9920, or approved equal.
- B. Imported soil shall be Class A topsoil (unless otherwise specifically identified on the drawings) as defined under Section 212-1.1.2 of the Standard Specifications. Provide soil free of subsoil, brush, objectionable weeds, seeds, rocks, organic or inorganic debris, silt, and clay, toxic substance, organic or inorganic; soil sterilants; salts; and soil removed from road bed excavations.
- C. The Contractor shall furnish upon the request of the Landscape Architect a soils report made from the intended import by an approved agricultural lab. The report shall include pH, N-P-K, SAR, minerals, micro-nutrients, ECe, boron levels, soil particle size, and textural elevation. Soil imported to site and found to be unsuitable by the Landscape Architect shall be removed from the site and replaced with an approved soil at the Contractor's expense. The Contractor shall pay expenses for soil testing of import materials.

PART 3 EXECUTION

3.1 GENERAL

- A. Planting operations shall not commence until completion of construction work, grading, soil preparation, weed control, and sprinkler installation.
- B. Irrigation system shall be fully operational including automatic controller, before commencing planting operations.

3.2 AGRICULTURAL SOIL TESTING

- A. The Contractor is responsible for correction of soil pH, nutrient levels, and chemical balance until final acceptance by the Owner.
- B. Soil samples shall be taken from three separate locations and submitted to a soil analysis laboratory. Separate results shall be provided for each of the 3 samples, with each having its own individual letter or number to identify it. Include with the samples the project plant material legend and a reduced scale site plan showing where each sample was taken with its letter or number shown.
- C. The analysis report shall include pH, N-P-K, SAR, ECe, boron levels, percolation rates, and soil particle size and textural evaluation. The report shall include recommendations for amendments, fertilizers, application rates, and procedures for conditioning the soil.
- D. The Landscape Architect shall review the analysis reports prior to ordering amendments.
- E. Acceptable laboratories offering soil testing services are: 1) Wallace Laboratories, 365 Coral Circle, El Segundo, CA 90245, 310-615-0116. 2) Soil & Plant Laboratories, P.O. Box 6566, Orange, CA 92883, 714-282-8777.

3.3 PERCOLATION TESTS

- A. Test for percolation prior to sending soil sample to analysis laboratory.
- B. Auger eight (3) holes four (4) feet deep at locations determined by the Landscape Architect. Fill holes with water to one half the depth of each hole. Let drain.
- C. Once holes have drained, fill holes again to one half the depth of each hole.
- D. Record drop in water level at thirty (30) minute intervals for maximum of six hours (6) or until the water has fully percolated.
- E. Submit monitoring results in a chart format to Landscape Architect for review. Each test location shall be shown on a reduced scale site plan with a letter or number identifying its location. The chart shall clearly indicate the total number of inches of percolation per test location over the six hour period. When the percolation rate is one inch per hour or less, the Landscape Architect will request alternatives with cost for improving percolation and drainage of the planting area.

3.4 WEED ABATEMENT

- A. In areas designated to receive amendments, irrigate normally for two weeks to germinate weed seeds. Apply contact herbicide per manufacturer's instructions.
- B. Repeat the application of herbicide when weeds remain or new weeds appear one (1) week after initial application.
- C. Clear and grub dead weeds and organic debris prior to commencing topsoil placement or soil preparation.

3.5 TOPSOIL PLACEMENT

- A. Refer to the Drawings and to sub-section for areas to receive topsoil and its corresponding depth.
- B. The topsoil shall be placed in maximum 6 inch lifts with the first lift placed and tilled into the top 6 inches of the existing soil. Prior to placing each lift, the area shall be thoroughly moistened but not saturated. Each succeeding lift shall be placed and compacted to until the finished grades indicated on the drawings are achieved.
- C. The finished grades shall be free of depressions, humps, rocks, debris, air pockets, and ready to receive soil amendments.

3.6 SOIL PREPARATION

- A. In planting areas with a gradient less than 2:1, mechanically rip or hand till the area in two directions to a minimum depth of 6 inches.
- B. Remove rock and hard clods 2 inches in diameter and larger, remove construction debris, roots, stumps, trash and other deleterious materials from the top 6 inches of soil.
- C. Apply soil amendments, fertilizers, and conditioners evenly and at the specified application rates.
- D. Rototill top 6 inches of soil to a loose and friable consistency.
- E. Fine grade to contours and spot elevations shown on Drawings.

3.7 LANDSCAPE FINISH GRADING

- A. Finish grading shall establish flow lines and gradients for uniform water drainage. Flow lines and gradients shall be established from the high point to the drainage structure or outfall area. Finished grades shall be of uniform slope and grade between points of fixed elevations or elevation controls. Flow lines shall have a minimum 2 percent gradient from highpoint to inlet or outfall area. Contractor shall notify the Landscape Architect when grades or flow lines conflict with other construction or when positive drainage is not achievable and request a resolution. Failure to report the conflicts prior to planting shall result in removing the plant material, re-grading to correct the discrepancy and replacement of the plant material at no cost to the Owner.
- B. Unless noted otherwise, finished grades along walkways and curbs shall maintain a constant relationship between the finished paving and finished grade. Finished grade for lawn areas shall be 1 inch below sidewalks and curbs. Finished grades for mulch or ground cover areas shall be 2 inches below sidewalks and curbs.
- C. Finished grades shall be floated to a uniform surface free of irregular dips, humps, valleys or ridges. Refer to Section 32 92 23 for additional requirements for preparing lawn areas.
- D. The finished grades shall maintain drainage away from buildings, structures, walls, paving, and towards drain inlets or outfall areas. Flow lines shall be established to drain water from behind walls and towards drain structures.
- E. When no compaction rate for planting areas is specified geotechnical report or when no report is available, compact turf and groundcover areas a minimum 85 percent to a maximum 90 percent relative density or as shown on drawings or specified elsewhere.

END OF SECTION

SECTION 32 93 00

PLANTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions of the contract apply to the work of this section the same as though written herein.

1.2 SCOPE OF WORK

- A. Furnish labor, materials, and equipment to provide, and install and maintain trees, shrubs and groundcovers as described herein and upon the drawings.

1.3 RELATED SECTIONS

- A. Section 32 84 00 – Irrigation
- B. Section 32 91 13 – Soil Preparation
- C. Section 32 94 53 – Landscape Barrier Membranes

1.4 REFERENCE AND STANDARDS

- A. American Standard for Nursery Stock – ANSI Z60.1 – 2004
- B. Sunset Western Garden Book – latest edition

1.5 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Submittal package shall include all products and materials related to the work of this Section. Partial or incomplete submittals will not be accepted and will be returned without a review.
- C. Submit descriptive literature and specifications for the following:
 - 1. Plant material list of trees, shrubs, and groundcovers to be furnished; include name of supplier or nursery source.
 - 2. Weed abatement herbicides, product literature and specifications
 - 3. Staking, tying, guying, and erosion control products
 - 4. Fertilizers, conditioners, and backfill products
 - 5. Organic and inorganic mulch
- D. Contractor shall submit to the Landscape Architect within 30 days from notice to proceed photocopies of current CLT registration for foremen performing work on this project.
- E. Submit photographs for each specie of tree and for shrubs 15 gallon or larger. Photographs shall be of an individual plant with the size, shape and structure clearly defined. The plant material in the photo shall be a representative example of the entire quantity being supplied.

1.6 SUBSTITUTIONS

- A. Follow procedures as outlined under Substitutions – Division 01.
- B. Products: When a brand name is called for on the Drawings or in these specifications, submit a letter describing the purpose for the substitution and include the product literature and specifications of the substitution.
- C. Plant Material: When a plant specie is shown to be unavailable in the size or quantity specified, a substitution will be considered provided the substitute materials are reviewed and accepted through the submittal process. Except for the variations so authorized, substitute plant materials shall conform to the requirements of these specifications. If the accepted substitute materials are of less value than those indicated or specified, the contract price will be adjusted in accordance with the provisions of the contract.

1.7 QUALIFICATIONS AND EXPERIENCE

- A. The Contractor shall employ only Certified Landscape Technicians (CLT) registered with the California Landscape Contractors Association (CLCA), as foremen for planting installation work.
- B. Sampling, testing, or inspection costs of material required by local or state agencies are to be borne by the Contractor, and copies of inspection certificates shall be furnished without additional charge.

1.8 RESPONSIBILITY

- A. The Contractor shall be responsible for the protection of the work and the public and private property adjacent to the work, and shall exercise due caution to avoid damage to such property. The work shall be protected and maintained throughout the contract period, including during suspension of work, and until final acceptance of the work. Contractor shall repair or replace damaged improvements including damages from acts of vandalism, theft, and graffiti removal. Repairs or replacements shall be at least equal to original condition of the existing improvement and shall match in finish and dimension.
- B. Prior to work of this Section, verify that previously installed work is complete to the point where this installation may properly commence. Verify that work of this Section may be installed in strict accordance with the original design, pertinent codes, regulations, and portions of the referenced standards.
- C. In the event of discrepancy, immediately notify the Landscape Architect.
- D. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

PART 2 PRODUCTS

2.1 PLANT MATERIAL

- A. Nomenclature: Plant species' names shall be per the latest edition of Sunset Western Garden Book. Botanical names shall take precedence over common names.
- B. Plant material size and quality shall conform to standards established by American Standard For Nursery Stock, ANSI 260.1-2004, May 12, 2004 Edition.

- C. Conditions: Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs, excessive abrasions or other objectionable disfigurements, and shall have healthy, normal root systems, well-filling their containers, but not to the point of being root bound. Tree trunks shall be sturdy and well hardened-off. Plants shall not be pruned prior to delivery except as authorized by the Landscape Architect.
- D. In no case shall trees or shrubs be topped or pruned within 6 months prior to delivery. Plants shall be grown by nurseries that have been inspected by the State Department of Agriculture and have complied with its regulations.
- E. Identification: Plants shall be of the variety and size shown on the drawings, and shall conform to the requirements herein. One of each bundle or lot shall be tagged with plant name in accordance with recommendations of the American Association of Nurserymen.
- F. Container plant inspection and rejection: root condition of container plants will be determined by the Landscape Architect through the removal of plant from the container of at least two plants but not more than 2 percent of the total number each species from each source.
- G. Landscape Architect will inspect trees and shrubs upon delivery. Trees and shrubs will be rejected for the following characteristics:
 - 1. Enlarged cankers or galls at the base of the trunk, just above the soil level.
 - 2. Crooked trunks
 - 3. Scars or trunk damage, broken branches, etc.
 - 4. Asymmetrical branching
 - 5. Rootbound condition
 - 6. Trees that have been recently pruned
 - 7. Trees not matching in size and shape of the representative photograph sample
- H. Quantities: Quantities of plant material shall be furnished as needed to complete work as indicated on the drawings, including reseeding, replanting, and maintenance (replacements) during the contract period.
- I. Sizes and Caliper: Minimum height (above soil level), width (average diameter of dripline), and caliper (trees only, measured at 30 inches above the soil level) of plant materials shall be as shown in expanded plant materials legend on planting detail sheet.

2.2 EROSION CONTROL MATTING

Slopes steeper than 2:1 shall be protected with jute erosion control matting, properly staked and tied at 4 feet on center, maximum.

2.3 TREE STAKES

- A. At 36" box trees and smaller, tree stakes shall be a minimum 2 inches in diameter by 10 feet long new lodge pole pine treated.
- B. At 48" box trees and larger, tree stakes shall be a minimum 3 inches in diameter by 12 feet long new lodge pole pine treated .

2.4 TREE AND VINE TIES

- A. Tree ties shall be "Cinch-Tie" as manufactured by V.I.T. Products, Escondido, CA (619) 480-6702, or approved equal.
- B. Use 30 inch long ties for 5 & 15 gallon trees, 36 inch long for 24 inch box and larger.
- C. 1 1/2 inch galvanized roofing nails to secure ties.
- D. Espalier to concrete or stucco surface: 7/8 inch diameter aluminum flat washer or clear plastic "button" with wire hook secured to surface with G.E. clear silicone rubber and 1/2 inch wide "Tye-All" tie.

2.5 BACKFILL AMENDMENTS

- A. Refer to Section 32 91 13 for specification of soil amendments and conditions.

2.6 IMPORT SOIL OR TOPSOIL

- A. Refer to Section 32 91 13 for specification.

2.7 PLANT PIT BACKFILL MATERIAL

- A. Backfill material for plant pits shall be a mixture as noted below or as indicated on drawings. The materials shall be thoroughly batch-mixed prior to placement so that they are evenly distributed and without clods or lumps. Backfill shall be so placed in the pits that the plant will be at its natural growing height after settlement. The following amendments and quantities shall be used as the basis for bids.

90 percent by volume	Excavated soil, free from rocks, etc.
10 percent by volume	Organic soil amendment
10 pounds	Agricultural gypsum per cu. yd. of mix
8 pounds	Humate Plus per cu. yd. of mix
16 pounds	Gro Power Plus Fertilizer per cu. yd. of mix

2.8 ORGANIC MULCH MATERIAL

- A. Shredded bark mulch shall consist of 100 percent recycled above ground tree products. Free of demolition wood waste, grass, weed seed, yucca, palm, bamboo, succulents or other contaminants. Mulch shall be nitrogen stabilized and shall contain no trash, hazardous waste, or toxic materials.
- B. Shredded bark mulch shall be ground and screened to 2 inch minus particle size.

2.9 PRE-EMERGENT HERBICIDE

- A. Pre-emergent herbicides shall be wettable powder or granular type.
- B. Select pre-emergent herbicide appropriate to site area, soil type, indigenous weeds to be controlled, and type of ground cover to be planted.

- C. Follow manufacturer's precautions and label instructions. Comply with local jurisdictional restrictions and ordinances.

2.10 FERTILIZER TABLETS

- A. Tablets shall be "Agriform" as manufactured by Sierra Industries.
- B. Agriform 21 gram tablets.
- C. Agriform 5 gram tablets.

2.11 MYCORRHIZAL INOCULUM

- A. Shall be Endo-Net AMI granular as manufactured by Tri-C Enterprises, Chino, CA, 1-800-927-3311.

PART 3 EXECUTION

3.1 GENERAL

- A. Planting operations shall not commence until completion of construction work, grading, soil preparation, weed control, and sprinkler installation.
- B. Irrigation system shall be fully operational including automatic controller, before commencing planting operations.

3.2 SPACING OF PLANT MATERIAL

- A. When plant materials are shown in rows, the total length of the area shall be verified and the plants equally spaced within the area. When plant materials are shown in a random pattern, the material shall be equally spaced and placed to fill the area. Ground cover material shall be triangular or square spacing as indicated on the Drawings. When spacing is not shown, use triangular spacing.
- B. Trees and specimen shrubs shall be located with a wood stake or flag. The locations shall be reviewed and accepted by the Landscape Architect prior to planting.
- C. The work shown on the Drawings is schematic with trees, shrubs and groundcovers shown in their approximate locations. Contractor shall not locate any items where it is obvious that they are in direct permanent improvements, or pedestrian and vehicular safety considerations. Contractor shall not install plant materials in locations where the ultimate growth of the plant materials will damage or affect structures or impede pedestrian or vehicular circulation. Do not locate trees or taller shrubs in locations where they will block irrigation heads and prevent adequate coverage. Where called for, obtain approval of the landscape architect for placement of trees, shrubs, and other items of work.
- D. Locate trees and taller shrubs 10 feet minimum away from rotor irrigation heads, 5 feet minimum from spray heads.

3.3 PLANT PITS AND PLANTING

- A. Plant pits shall be dug with level bottoms to widths and depths as shown on the Drawings. Pits for trees shall be dug square. Fill pits with water and allow to drain. All tree pits must meet the drainage requirement set forth in Section 32 91 13, Part 3.03, whether the area of the tree planting was tested for percolation or not. Notify Landscape Architect of any tree pit that does not meet the percolation test standard.

- B. Plant holes dug by auger method will be acceptable, but shall have side walls roughened or squared with a shovel. Slick pit walls caused by auguring in too wet soil will not be accepted for planting.
- C. Handling: no canned plant material shall be planted if the ball is broken or cracked either before or during the process of planting.
- D. Setting: plants shall be set with top of root ball 1 inch above finish grade. Each plant shall be placed in center of plant pit.

3.4 PIT BACKFILLING

- A. Build mound of compacted backfill wide enough in bottom of hole to support root ball.
- B. Backfill pit with backfill mix half-way to finish grade and water thoroughly.
- C. Place 21 gram plant tablets in plant pits, adhering to the following schedule:

1 gallon	1	30 inch box	5
5 gallon	2	36 inch box	6
15 gallon	3	42 inch box	7
16 inch box	3	48 inch box	8
24 inch box	4		

- D. Backfill to finish grade. Backfill mix shall be tamped lightly, and a shallow basin formed at perimeter of root ball to hold enough water to saturate the root ball and backfill mix.
- E. Water immediately to saturate entire root ball and backfill.

- F. Apply Granular Mycorrhizal Inoculum per manufacturers instruction, at the following schedule:

Liner / 4"	1-2 ml
1 gallon	1 tsp.
5 gallon	1 tbs.
15 gallon	3 tbs.
24 inch box	½ cup
36 inch box	1 cup
48 inch box	1 ½ cup

- G. Install tree root barriers, if called for on the plans, per details and Section 32 94 53.

3.5 TREE STAKING

- A. Stake trees as shown in details.
- B. Tree and stakes shall be vertical in cases.
- C. One gallon trees shall be planted with nursery stakes removed.

3.6 APPLICATION OF PRE-EMERGENT HERBICIDE

- A. Apply pre-emergent herbicide to shrub and planted groundcover areas only. Do not apply to hydroseeded areas. Strictly adhere to manufacturer's specifications for application rates and methods.
- B. Apply pre-emergent only after planting operations have been completed so as to minimize disturbance of the chemical "barrier." Reapply where necessary to areas disturbed by planting or repair operations after initial application.
- C. Pay careful attention to activation requirements, "watering-in", etc., per manufacturer's specifications and label instructions. Avoid excessive irrigation run-off that would move or wash away the pre-emergent "barrier" -- use repeat watering cycles and split watering times.

3.7 MULCHING

- A. After, planting operations are complete and shrubs areas have been raked and dressed, mulch shrubs and ground cover areas with a 2 inch layer of organic mulch material.
- B. Mulch layer should taper to zero at plant stem or tree trunk. Do not place mulch materials up against plant crown or trunk.

3.8 PROTECTION

- A. The Contractor shall carefully and continuously protect areas included in the contract, including lawn areas, plant material, supports, etc. until final acceptance of the work by the Owner or his representative.

3.9 CLEAN-UP

- A. After planting operations are completed, Contractor shall remove trash, excess soil, empty plant containers, or other accumulated debris from the site at no extra cost to Owner. Contractor shall repair scars, ruts, or mars in area caused by work operations. Areas shall be left in a neat and orderly condition.

3.10 OBSERVATIONS

- A. Contractor shall give forty-eight (48) hours notice and set appointment for reviews by the Landscape Architect.
- B. Review by Landscape Architect shall be scheduled for the following operations:
 - 1. Review first delivery of plant material to the site.
 - 2. Tree placement prior to digging holes.
 - 3. Review of ground cover lines and mowcurbs prior to planting.
 - 4. Start of establishment period/acceptance of installation.
- C. Reviews shall be called for at the end of planting operations for the purpose of determining compliance with drawings and specifications, intent, workmanship, and clean-up. Contractor shall secure written verification of review data, any corrections required to work, and limits of reviewed area before beginning the described establishment work.
- D. In the event the Contractor requests inspection of work, and said work is substantially incomplete, the Contractor shall be responsible for Landscape Architect's hourly charges and per diem costs.

3.11 GUARANTEE

- A. Shrubs and ground covers shall be guaranteed as to growth and health for a period of 90 days after final acceptance by the Owner or his representative; 15 gallon and box sized trees shall be guaranteed for a period of 1 year after date of substantial completion.
- B. Plants which die or lose more than 30 percent of their original leaves shall be replaced under this section.
- C. The Contractor, within 14 days of written notification by the Owner, shall remove and replace guaranteed plant materials which for any reason fail to meet the requirements of the guarantee. Plants material replaced shall be guaranteed for the original period, starting from the date of replacement.

END OF SECTION

DIVISIONS 33 – 49
NOT USED

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