

SPECIFICATIONS



County of San Benito
RESOURCE MANAGEMENT AGENCY

NEW BEHAVIORAL HEALTH CENTER

PROJECT #PWB-1810

SITE WORK PACKAGE SUBMITTAL
JANUARY 15, 2020

APPROVED AS TO LEGAL FORM:
San Benito County Counsel's Office

G. Michael Ziman,
Deputy County Counsel

Date _____

APPROVED:
San Benito County Board of Supervisors

Mark Madina,
Chair

Date _____

PROJECT MANAGER

DAMON FELICE, LEED AP
COUNTY OF SAN BENITO

2301 TECHNOLOGY PKWY.
HOLLISTER, CA 95023
T 831.636.4170
F 831.636.4176



PROJECT MANUAL

For

San Benito County
New Behavioral Health Center

1131 San Felipe Road
Hollister, CA 95023

Site Work Package Submittal

Date: January 15, 2020

Hibser Yamauchi Architects, Inc.
4602 2nd Street
Davis, CA 95618
Tel: (530)758-1270 Fax: (530)758-4789

COUNTY OF SAN BENITO RESOURCE MANAGEMENT AGENCY



Permit Center • 2301 Technology Pkwy. • Hollister, CA 95023-3840
831.636.4170 • 831.636.4176 fax • www.cosb.us

NOTICE TO CONTRACTORS

San Benito County New Behavioral Health Center – Site Work Package

PROJECT: PWB-1810

Sealed proposals shall be delivered to the San Benito County Resource Management Agency, 2301 Technology Parkway, Hollister, California, 95023-3840, no later than **2:00 P.M. on Tuesday, February 25, 2020**. Bids will be opened and will be publicly read in the **RMA conference room, 2301 Technology Parkway, Hollister, California at 2:00 P.M.** or thereafter. This project is for licensed contractors with a Type B license. The Contractor shall complete all or any designated portions of the work called for under the contract in all parts and requirements within 243 calendar days (except as modified in the technical specifications). The County of San Benito and its Board of Supervisors reserves the right to reject any or all bids received as the public good may require.

There will be two mandatory pre-bid meetings, only one of which needs to be attended by prospective bidders. The meeting(s) will take place at 1131 San Felipe Road, Hollister, CA 95023, both will start at 10AM. The first meeting will take place on **January 29, 2020** and the second will take place on **February 5, 2020**.

Each contractor shall include in their bid all labor, tools, and materials for a complete and working project for each trade component in conformance with the intent shown on the plans and specifications and specified herein.

Plans, Specifications and Proposal forms to be used for bidding on this project can only be obtained by going to the San Benito County website at www.cosb.us. On the right-hand side, under Quicklinks, you will see "Bids & RFPs". Click on this link, and go down the page until you see "Listing of Advertised Projects". Click on this link and it will take you to E-Bid Board, where you will find the project name. Click on the name to see the IFB, plans and specs for this job. If you have any questions, please call Public Works at (831) 636-4170.

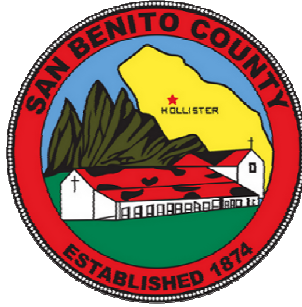
Prospective bidders must be fully qualified, licensed, certified, and insured to perform the work requested. All work performed must meet all current applicable laws and regulations.

Each bidder must submit a bid proposal for the project for which they intend to bid to the Administrative Office on the standard forms enclosed. Said proposal shall be accompanied by a cashier's check, a certified check or bidder's bond of ten percent (10%) of the amount of the bid submitted, to be made payable to the County of San Benito. Bid bonds shall be issued by a corporate surety duly admitted and authorized to issue bonds and undertakings by the State of California.

SECTION 00 01 01

PROJECT DIRECTORY

OWNER:	SAN BENITO COUNTY 1131 San Felipe Rd Hollister, CA 95023 Phone: (831) 902-2207 Contact: Damon Felice
ARCHITECTS:	HIBSER YAMAUCHI ARCHITECTS, INC. 4602 2 ND Street, Suite 3 Davis, CA 95618 Phone: (530) 758-1270 Fax: (530) 758-4789 Contact: Ken Yamauchi
CIVIL:	SAN BENITO ENGINEERING & SURVEYING, INC. 502 Monterey St Hollister, CA 95023 Phone: (831) 637-2263 Contact: Anne Hall
LANDSCAPE:	BFS LANDSCAPE ARCHITECTS 425 Pacific Street #201 Monterey, CA 93940 Phone: (831) 646443-1383 Contact: James Bishop
STRUCTURAL:	B & B STRUCTURAL ENGINEERS 600 Q Street, Suite 200 Sacramento, CA 95814 Phone: (916) 443-0303 Contact: Brian Reil
ELECTRICAL/ COMMUNICATIONS:	EDGE ELECTRICAL CONSULTING 431 30 TH Street Sacramento, CA 95816 Phone: (916) 256-2460 Contact: Donny Lee
SECURITY:	MARQUIS SYSTEMS INC. 2025 Gateway Place, Suite 482 San Jose, CA 95110 Phone: (408) 291-0001 Contact: Rizaldo Espinoza



San Benito County New Behavioral Health Center

1131 San Felipe Road
Hollister, CA 95023

Architectural

Civil

Structural

Electrical

Landscape

Security

Date: January 15, 2019

Hibser Yamauchi Architects, Inc.
4602 2nd Street
Davis, CA 95618
Tel: (530)758-1270 Fax: (530)758-4789



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http://www.dir.ca.gov/DLSR/statistics_research.html#PWD

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GENERAL CONDITIONS

1) BASIC DEFINITIONS:

A. The term "Change Order" shall refer to a written agreement in the form included in these Contract Documents, signed by the County, Owner's Representative, Construction Manager, and Contractor, modifying the Contract.

B. The term "Claim" (see Paragraph 39).

C. The term "Construction Change Directive" (C.C.D.) shall refer to a written directive, signed by County, directing Contractor to perform and/or omit certain work as specified within the Construction Change Directive. The Contractor shall promptly comply with the Construction Change Directive and promptly perform and/or omit the work specified in the Construction Change Directive.

D. The term "Contract" means the Contract Documents.

E. The term "Contract Documents" consists of all documents listed in Paragraph 2, Contract Documents, of these General Conditions.

F. The term "Contract Sum" means the total compensation specified in the Contract. The Contract Sum may be adjusted by Change Order.

G. The term "Contract Time" means the number of days set forth in the Bid Proposal within which the full completion of the Contractor's work must be achieved. The Contract Time may be adjusted by Change Order.

H. The term "Contractor" means the person or firm identified as such in the Contract, or its authorized representative.

I. The term "County" means the County of San Benito, its trustees, officers, and employees.

J. The term "Owner's Representative" means the County of San Benito, its officers, employees, and designees. The County may, at any time, without prior notice to or approval by Contractor, replace Owner's Representative with a new Owner's Representative. Upon Contractor's receipt of notice from County of such replacement, Contractor shall recognize such person or firm as Owner's Representative for all purposes under the Contract Documents.

K. The term "Project" means the total of the work and obligations agreed to be performed by Contractor under the Contract.

L. The term "day" means a calendar day unless otherwise specifically noted.

M. The term "Architect" means the design professional that prepared the Contract Documents and serves as an authorized representative. The Architect will assist the County with administration of the Contract.

2) CONTRACT DOCUMENTS: The Contract Documents consist of the Notice to Contractors; Instructions to Bidders; Bid Proposal; Bidder's Bond; Names and Titles Form; Noncollusion Affidavit; Statement of Compliance; Designation of Subcontractors; Bidder's Qualifications; Guaranty; Contractor's Certificate as to Worker's Compensation; Affidavit Concerning Employment of Undocumented Aliens; Contract; General Conditions; **Plans dated January 15, 2020 and Specifications dated January 15, 2020**; any addenda issued; Change Orders; and any other documents described as such within these Contract Documents.

3) EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK: Each bidder shall examine carefully the site of the work and the Contract Documents, and shall satisfy itself as to the character, quality, and quantity of the surface and subsurface materials or obstacles to be encountered.

The submission of a bid proposal shall be conclusive evidence that the Contractor has satisfied itself through Contractor's own investigation as to the conditions to be encountered; the character, quality, and scope of work to be performed; the materials and equipment to be furnished; and all requirements of the Contract Documents.

Where investigations of subsurface conditions have been made with respect to foundation or other structural design, and that information is made available to Contractor or shown in the Contract Documents, said information represents only the statement as to the character of materials which have been actually encountered by it in its investigation, and is only made available or included for the convenience of bidders.

Investigations of subsurface conditions are made for the purpose of design, and the County assumes no responsibility whatsoever with respect to the sufficiency or accuracy of borings, the log of test borings, or other preliminary investigations, or of the interpretation thereof, and there is no guaranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or any part of it, or that unanticipated conditions may not occur. When a log of test borings is made available to Contractor or included in the Contract Documents, it is expressly understood and agreed that said log of test borings does not constitute a part of the Contract, and represents only an opinion of the County as to the character of the materials to be encountered, and is made available or included in the Contract Documents only for the convenience of the bidders. Making such information available to bidders is not to be construed in any way as a waiver of the provisions of the first two paragraphs of this section, and bidders must satisfy themselves, through their own investigations, as to conditions to be encountered.

The Contractor shall promptly, and before the following conditions are disturbed, notify the County and Owner's Representative, in writing, of any:

A. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law, including but not limited to PCB's, lead or asbestos.

B. Subsurface or latent physical conditions at the site differing from those indicated.

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

The County shall promptly cause an investigation of the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, shall issue a Change Order or Construction Change Directive.

In the event that a dispute arises between the County and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date required by the Contract, but shall proceed with all work to be performed under the Contract.

Nothing contained within this Section or the Contract Documents relieves the Contractor of its obligations set forth in the first two paragraphs of this Section.

4) ADDENDA: If discrepancies or apparent errors are found in the Contract Documents prior to the date of bid opening, bidders shall submit a written request for clarification, which response to said request will be given in the form of addenda to all bidders, if time permits. Otherwise, in figuring the work, bidders shall consider that any discrepancies or conflict between Contract Documents shall be governed by Paragraph 21, Intent of Plans and Specifications, and Paragraph 26, Conformance with Codes and Standards, of the General Conditions.

The correction of any discrepancies in, or omissions from the drawings, specifications, or other Contract Documents, or any interpretation thereof, during the bidding period will be made only by an addendum issued by the Owner's Representative. Each such addendum issued by the Owner's Representative shall be made a part of the Contract. Any other interpretation or explanation of such documents will not be considered binding.

5) PROPOSAL: The Contractor's proposal shall be made on the form provided, with all items filled out, and properly signed. The proposal shall be signed in longhand; by the Contractor if an individual, by a member of the partnership, or by an officer of a corporation authorized to sign contracts in its behalf. If made by a corporation, the proposal shall show the name of the State under the laws of which the corporation is chartered or organized.

Bidders are warned against making erasures or alterations of any kind on their proposal. Proposals which contain omissions, erasures, alterations, conditions, or additions not called for may be rejected.

The proposal shall be enclosed in a sealed envelope having the name of the Project, as it appears on the proposal, and the name and address of the bidder shown thereon.

6) LIST OF SUBCONTRACTORS: In accordance with California Public Contract Code, Chapter 4 (commencing with Section 4100), Part 1, Division 2 of the Public Contract Code of the State of California (Subletting and Subcontracting Fair Practices Act), each proposal shall have listed on the form provided with the proposal: (a) the name and location of the place of business of 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, 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 of one percent (0.5%) of the prime contractor's total bid, and (b) the portion of the work which will be done by each subcontractor. The Contractor shall list only one subcontractor for each such portion as defined by the Contractor in Contractor's bid.

If Contractor fails to specify a subcontractor for any portion of the work to be performed under this Contract in excess of one-half of one percent (0.5%) of the total bid, Contractor agrees to perform that portion itself.

7) WITHDRAWAL OF PROPOSAL: A proposal may be withdrawn at any time prior to the hour fixed in the Notice to Contractors for the opening of bids by a written request of the bidder, filed with the County. The withdrawal of a bid will not prejudice the right of a bidder to file a new proposal within the time prescribed.

8) OPENING OF PROPOSALS: Proposals will be opened and then read publicly at the time and place indicated in the Notice to Contractors, or as soon thereafter as is reasonable. Bidders or their representatives and others interested are invited to be present.

9) BIDDER'S BOND: The proposal must be accompanied by a bidder's bond, certified check, or cashier's check in an amount not less than ten percent (10%) of the amount bid. The bidder's bond must be signed in favor of the County, and the certified check or cashier's check must be made payable to the County of San Benito. The Contractor shall pay to the County such sums from said bond, certified check, or cashier's check as necessary to reimburse the County for costs incurred for failure of the successful bidder to complete, sign and return in strict compliance with these Contract Documents, if requested to do so, Contractor Qualifications Questionnaire, or enter into a contract. The amount of said bond, certified check, or cashier's check shall not be deemed to constitute a penalty or liquidated damages. The County shall not be precluded by such bond, certified check, or

cashier's check from recovering from the defaulting bidder damages in excess of the amount of said bond, certified check, or cashier's check incurred as a result of the failure of the successful bidder to complete, sign and return in strict compliance with these Contract Documents, if requested to do so, Contractor Qualifications Questionnaire, or enter into a contract.

10) CONSIDERATION OF PROPOSALS: After the proposals have been opened and read, they will be checked for accuracy and compliance with these Contract Documents.

Bid prices shall include everything necessary for the completion of fulfillment of the Contract, including, but not limited to, furnishing all materials, equipment, tools, labor and services, except as may be provided otherwise in the Contract Documents. When a price is quoted in both words and figures, the words shall prevail in case of a discrepancy.

Bid prices shall include allowance for all taxes, including, but not limited to, all Federal, State, and local taxes.

The County reserves the right to reject any and all proposals; to waive any minor irregularity in a bid; and to accept one schedule of a proposal and reject another.

11) COMPETENCY OF BIDDER: The bidder shall be licensed under the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California to do the type of work contemplated in the Project, and shall be skilled and regularly engaged in the general class or type of work called for under this contract, with at least 5 years of experience in the project type.

12) DISQUALIFICATION OF BIDDERS: More than one proposal in the same project trade component from any individual, firm, partnership, corporation, or association, under the same or different names, will not be considered. Reasonable grounds for believing that any bidder is interested in more than one proposal for the work will cause the rejection of all proposals in which such bidder is interested. If there is reason to believe that collusion exists among the bidders, none of the participants in such collusion will be considered. Any proposal in which the prices obviously are unbalanced may be rejected.

13) RELIEF OF BIDDERS: Attention is directed to the provisions of Public Contract Code section 5100, and following, concerning relief of bidders, and in particular to the requirement therein that if the bidder claims a mistake was made in Contractor's bid, the bidder shall give the County written notice within five (5) days after opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred.

14) AWARD OF CONTRACT: Award of the Contract, if awarded at all, will be to the lowest responsible bidder whose proposal complies with the specified requirements. The award, if it be awarded, will be made by the County within sixty (60) days after opening of the proposals.

The low bid will be determined by the base bid. The County reserves the right to include in the Contract, if a Contract is awarded, the base bid only, or the base bid plus any alternate bid or combinations of alternates bid.

15) RETURN OF PROPOSAL GUARANTEES: When the award of the contract has been made, the proposal guarantees accompanying the three lowest bids shall be retained. All other guarantees for bids not to be further considered in making the award will be returned. The retained guarantees will be returned when the Contract has been fully signed.

16) SIGNING OF CONTRACT: A Contract shall be signed by the successful bidder in triplicate on the form provided and returned to the County, within ten (10) days after date of dispatch of the

Contract forms. After signing by the County, one copy will be delivered to the Owner's Representative, and one copy shall be returned to the Contractor.

If the bidder to whom the award is made fails or refuses to enter into the Contract within ten (10) calendar days from the time the Contract forms are dispatched by the County, Paragraph 9, Bidder's Bond, of these General Conditions shall apply. The County may then award the Contract to the next lowest responsible bidder. This will be done after the failure or refusal of the low bidder to enter into the Contract, as is convenient for the County. If the next lowest responsible bidder fails or refuses to enter into the Contract, then Paragraph 9, Bidder's Bond, of these General Conditions shall apply. The County may then award the Contract to the next lowest responsible bidder.

17) CONTRACT BONDS: Within ten (10) days of County's dispatch of Notice of Award, the Contractor shall furnish corporate surety bonds to the benefit of the County, issued by a surety company acceptable to the County and authorized and admitted to do business in the State of California, as follows:

A. Faithful Performance Bond -- In a sum not less than one hundred percent (100%) of the total contract price as set forth in the Contract to guarantee the Contractor's faithful performance of all covenants and stipulations of the Contract. The bond shall contain a provision that the surety thereon waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

B. Payment Bond -- In a sum not less than one hundred percent (100%) of the total contract price as set forth in the Contract to guarantee the payment of wage, and bills contracted for materials, supplies, or equipment used in the performance of the Contract. The bond shall be in accordance with the provisions of Sections 3225, 3226, and 3247 to 3252, inclusive, of the Civil Code of the State of California, and Section 13020 of the Unemployment Insurance Code of the State of California. Said bond shall also contain a provision that the surety thereon waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

Faithful Performance Bond and Payment Bond samples are contained within these Contract Documents.

18) NOTIFICATION OF SURETY COMPANIES: The surety companies shall familiarize themselves with all provisions and conditions of the Contract. It is understood and agreed that the surety or sureties waive the right of special notification of any modifications or alterations, omissions or reductions, extra or additional work, extensions of time, or any other act or acts by the County or its authorized agents under the terms of the Contract; and failure to so notify the surety companies of such changes shall in no way relieve the surety or sureties of their obligations under this Contract. The surety expressly waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

19) INSURANCE: Within ten (10) days of County's dispatch of Notice of Award, the Contractor shall furnish a Certificate of Insurance substantiating the fact that Contractor has taken out the insurance hereinafter set forth for the period covered by the Contract with an insurance carrier acceptable to the County and under terms satisfactory to the County. Insurance industry's standard Accord Certificate of Insurance or binder forms shall bear an endorsement precluding the cancellation or reduction of coverage of any policy covered by such Certificate or binder before the expiration of thirty (30) days after the County shall have received notification of such cancellation, suspension, reduction, or voided coverage. Contractor shall immediately furnish copies of its insurance policies required under this Contract to the County upon request. In the event Contractor does not have a Certificate of Insurance or binder evidencing the proper insurance coverages, the Contractor shall not be allowed on the work site.

All insurance policies shall by endorsement include the County of San Benito, its trustees, officers, employees, agents, inspectors, construction managers, project managers, consultants, subconsultants, their employees, and each of them, as additional insureds to protect, as well as to provide the defense of, from all suits, actions, damages, liability, or claims of every type and description to which they may be subjected or put by reason of, or resulting from, the Contractor's performance of the Contract. Contractor's insurance shall apply as primary insurance, and any other insurance carried by the additional insureds identified above shall apply as excess and will not contribute with this insurance.

Each insurance policy shall include the following provisions: (1) The standard severability of interest clause in the policy and when applicable the cross liability insurance coverage provision which specifies that the inclusion of more than one insured shall not operate to impair the rights of one insured against another insured, and the coverage's afforded shall apply as though separate policies had been issued to each insured; (2) It acts as primary insurance, and that no insurance held or owned by the County shall be called upon to cover, either in full or in part, any loss covered under the policy acquired by Contractor; and (3) The stated limits of liability coverage for Commercial/Comprehensive General Liability, and Business Automobile Liability, assumes that the standard "supplementary payments" clause will pay in addition to the applicable limits of liability and that these supplementary payments "are not included as part of the insurance policies limits of liability." If any of the policies indicate that defense costs are included in the general aggregate limit, then the required general aggregate limits shall be a minimum of \$2,000,000 or more at the County's discretion.

If the Contractor fails to maintain such insurance, the County may take out insurance to cover damages of the below-mentioned classes for which the County might be held liable on account of the Contractor failing to pay such damages and deduct and retain the amount of the premium for such insurance from any sums due the Contractor under the Contract. Failure of the County to obtain such insurance shall in no way relieve the Contractor from any of its responsibilities under the Contract.

Without limiting Contractor's duty to indemnify, the minimum insurance coverages to be obtained by the Contractor as hereinabove referred to are as follows:

A. Commercial General Liability Insurance, including but not limited to premises and operations, including coverage for Bodily Injury and Property Damage, Personal Injury, Contractual Liability, Broadform Property Damage, Independent Contractors, Products and Completed Operations, with a combined single limit for Bodily Injury and Property Damage of not less than \$2,000,000 per occurrence. The required endorsement form for Commercial General Liability Additional Insured is ISO Form CG 20 10 11 85 or CG 20 10 10 01 in tandem with CG 20 37 10 01 (2000).

B. All Risk Property Coverage or Builders Risk Insurance in an amount equal to or greater than the contract amount and shall cover the full replacement cost of the building and improvements in the event of loss, damage, or destruction by fire or other perils commonly covered by standard extended coverage. Such amount shall be adjusted in accordance with adjustments in the contract amount. The subject insurance policy shall protect the interest of County, Contractor, subcontractors and sub-subcontractors with respect to work performed under this contract, and shall provide broad form all-risks coverage, including insuring against perils of fire, theft, flood, vandalism, malicious mischief, collapse and debris removal. Contractor shall be responsible for all losses to the work performed under this contract until completion of the work and final payment by owner. Contractor shall maintain property insurance until such final payment has been made by owner.

C. Business Automobile Liability Insurance, covering all motor vehicles, including owned, leased, non-owned, and hired vehicles, used in providing services under this Agreement, with a combined single limit for Bodily Injury and Property Damage of not less than \$1,000,000 per occurrence. The required endorsement form for Automobile Additional Insured endorsement is ISO Form CA 20 48 02 99.

D. Workers' Compensation Insurance, The Contractor shall be a qualified self-insurer or shall carry full Workers' Compensation and Employers' Liability insurance coverage, either through the State Compensation Insurance Fund or a standard approved policy obtained from a licensed insurance carrier for all persons employed, either directly or through subcontractors, in carrying out the work under this Contract in accordance with the "Workers' Compensation and Insurance Act," Division IV thereof. Employers' limits of liability shall be the prevailing statutory limits of liability.

Any exceptions to the provisions of this section must be delineated in the Contract Documents. In addition, it is understood and agreed that an excess insurance policy or an umbrella policy (following form) may be utilized to meet the above-required limits of liability for Commercial/Comprehensive General Liability, Business Automobile Liability policy, and the Workers' Compensation Employers' Liability.

20) PRE-CONSTRUCTION CONFERENCE: Prior to the start of construction, a conference will be called by the County or Owner's Representative for the purpose of reviewing the construction program with the Contractor. At this conference, the sequence of work, methods of access to the construction site and temporary facilities shall be reviewed by the Contractor and County. Coordination of utilities within the project limits, including relocations and maintenance of existing facilities and additions thereto, shall be confirmed in writing by utility representatives and the Contractor at this conference, or within five (5) working days thereafter.

21) INTENT OF PLANS AND SPECIFICATIONS: It is the intent of these Contract Documents that the work performed under the Contract shall result in a complete operating system in satisfactory working condition with respect to the functional purposes of the installation, and no extra compensation will be allowed for anything omitted but fairly implied. The prices paid for the various items in the proposal shall include full compensation for furnishing all labor, materials, tools, equipment, overhead, profit, incidentals, and doing all work necessary to complete the finished product as provided in the Contract Documents.

The specifications and drawings are intended to be explanatory of each other. Any work shown on the drawings, and not in the specifications, or vice versa, is to be treated as if indicated in both. In the case of conflict or inconsistency, the Supplementary Conditions (if any) shall control over the General Conditions, the General Conditions shall control over the Technical Specifications, and the Technical Specifications shall control over the drawings. Figured dimensions shall control over scaled measurements. In all cases, the more costly or expensive interpretation is deemed to control and be the interpretation incorporated into the Contract Documents and Contract Sum.

Organization of the specifications into various subdivisions and the arrangement of the drawings shall not control Contractor in dividing the work among subcontractors or in establishing the extent of work to be performed by any trade.

Unless otherwise stated in the Contract Documents, technical words and abbreviations contained in the Contract Documents are used in accordance with commonly understood construction industry meanings, and nontechnical words and abbreviations are used in accordance with their commonly understood meanings.

The Contract Documents may omit modifying words such as "all" and "any", and articles such as "the" and "an", but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. The use of the word "including," when following any general statement, shall not be construed to limit such statement to specific items or matters set forth immediately following such word or to similar items or matters, whether or not nonlimiting language (such as "without limitation," "but not limited to," or words of similar import) is

used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably be deemed to fall within the broadest possible scope of such general statement.

Whenever the context so requires, the use of the singular number shall be deemed to include the plural and vice versa. Each gender shall be deemed to include any other gender, and each shall include corporation, partnership, trust, or other legal entity whenever the context so requires. The captions and headings of the various subdivisions of the Contract Documents are intended only as a matter of reference and convenience, and in no way define, limit, or prescribe the scope or intent of the Contract Documents or any subdivision thereof.

Contractor shall assume responsibility for design of systems and fabrications needed to meet performance criterion described in the Contract Documents. Design by Contractor shall include, but is not limited to, concrete form work, casework joinery, fire sprinkler systems, mechanical and electrical systems represented diagrammatically on Contract Drawings. Design shall be governed by descriptive criterion specified for each item. Contractor shall also assume responsibility for temporary structures used to implement construction such as shoring and scaffolding.

22) CLARIFICATION OF CONTRACT DOCUMENTS: Should it appear that the work to be done, or any of the matters relative thereto, are not sufficiently detailed or explained in the Contract Documents, or in the event of any doubt or question arising respecting the true meaning of the Contract Documents, the Contractor shall apply to the Owner's Representative for such further explanations as may be necessary. The Contractor shall thoroughly review all Requests for Information (RFI's) submitted by subcontractors prior to submission to the Owner's Representative to determine whether such RFI's is already answered in the Contract Documents. Contractor represents to County and Owner's Representative, that by submission of an RFI, Contractor has thoroughly reviewed the RFI and thoroughly reviewed the Contract Documents, and determined that the RFI is not answered or reasonably inferable in the Contract Documents, and that the RFI pertains to an unforeseen condition or circumstance that is not described in the Contract Documents, that there is a conflict or discrepancy in the Contract Documents, or there is an omission in the Contract Documents. In the event any RFI is answered or reasonably inferable from the Contract Documents, Contractor agrees to pay the Owner's Representative and County the reasonable cost for their time and expenses associated with reviewing and responding to RFI's which are already answered or reasonably inferable from the Contract Documents. In the event of a disagreement over such compensation, the judgment of the Owner's Representative shall control.

23) PLANS AND SPECIFICATIONS TO BE FURNISHED: The Contractor will be furnished, free of charge, *three (3)* copies of the Contract Documents. The Contractor shall retain an approved complete set of Contract Documents on the job at all times during the progress of the work.

24) SUPPLEMENTAL DRAWINGS AND INSTRUCTIONS: In addition to the drawings incorporated in the Contract at the time of signing, the architect or engineer may furnish such working drawings and supplemental drawings from time to time as may be necessary to make clear, or to define in greater detail, the intent of the Contract drawings and specifications. In furnishing such additional drawings and/or instructions, the architect or engineer shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the nature of the work. These working drawings and supplemental drawings shall become a part of the Contract Documents, and the Contractor shall make its work conform to them.

25) CONFORMANCE WITH CODES AND STANDARDS: All work and materials shall be in full accordance with the latest adopted standards and regulations of the State Fire Marshal; the Uniform Building Code; the National Electrical Code; the Uniform Plumbing Code; Americans With Disabilities Act; Cal OSHA; and all other applicable codes, laws, or regulations. Nothing in these Contract Documents is to be construed to permit work not conforming to these requirements. Contractor agrees that immediately upon signing of the Contract, Contractor will diligently review the

Contract Documents and determine if any work described or inferred within the Contract Documents is not in conformance with these requirements. Should Contractor discover work within the Contract Documents not in conformance with these requirements, Contractor agrees to immediately notify Owner's Representative in writing of said nonconformance, and to not proceed with nonconforming work. When the work detailed in the Contract Documents differs from governing codes, it is understood and agreed that the Contract Sum is based upon the more costly or expensive standard.

26) PERSONAL ATTENTION AND SUPERINTENDENCE: The Contractor shall give Contractor's personal attention to, and shall supervise the work to the end that it shall be faithfully prosecuted. Contractor shall keep on the work at all times throughout its progress, a competent superintendent who shall represent the Contractor in Contractor's absence, and shall have complete authority to represent and act for the Contractor. Whenever the Contractor or Contractor's superintendent is not present on a particular part of the work, the Owner's Representative or County may stop the work until the Contractor or Contractor's superintendent arrives.

The Contractor shall be liable for the faithful observation of any instructions delivered to Contractor or to Contractor's authorized representatives. Any order given by the Owner's Representative not otherwise required by the specifications to be in writing will, on request of the Contractor, be given or confirmed by the Owner's Representative in writing.

27) BEGINNING OF WORK: The Notice to Proceed shall constitute authority for the Contractor to enter upon the site of the work and to begin operations, upon condition that the Contractor has strictly complied with all requirements of these Contract Documents, including but not limited to, furnishing all required documentation and certificates of insurance. If Contractor has not provided County with all documents required by these Contract Documents as of the date of the Notice to Proceed, Contractor shall not be allowed on the site of the work or allowed to start work on the Project, notwithstanding the issuance of a Notice to Proceed.

When the Contractor has started work on the Project, the Contractor shall diligently prosecute the work to completion within the time limit provided in the Contract Documents.

The Contractor shall give the County and Owner's Representative at least two (2) working days' notice of Contractor's intention to start work, specifying the time, date, and location at which the Contractor intends to begin.

Contract time shall begin five (5) days after the date of dispatch of the Notice to Proceed, whether or not Contractor is allowed on the work site due to Contractor's failure to furnish County with all documentation required by these Contract Documents. In no event shall there be a period of time greater than thirty (30) days, from the time the Contract is dispatched by the County to the Contractor and the commencement of the Contract Time, regardless of the receipt or lack thereof by County of all documents required by these Contract Documents.

28) PROGRESS SCHEDULE: The County's receipt of a proposed progress schedule and monthly updated progress schedules, all in strict compliance with these Contract Documents shall be conditions precedent to the Owner's Representative's or County's approval of the Contractor's periodic pay requests and/or the County's obligation to request payment be issued to Contractor.

The Contractor shall, to every reasonable extent, carry on the work of construction of the various elements of the project concurrently, and shall not defer construction of any portion of the work in favor of any other portion without the express written approval of the Owner's Representative or County.

29) RESPONSIBILITY FOR ACCURACY: The Contractor shall obtain all necessary measurements for and from the work, and shall check dimensions, elevations, and grades for all layout

and construction work and shall supervise such work, the accuracy for all of which Contractor shall be responsible. Each subcontractor shall adjust, correct, and coordinate Contractor's work with the work of others so that no discrepancies will result in the whole work.

Contractor shall be responsible for verifying that all information and data contained and set forth in all of Contractor's submittals that may be required by the Contract Documents, comply in all respects with the Contract Documents.

30) EFFECT OF INSPECTION OR USE: Neither the inspection by an inspector, County, Owner's Representative, construction manager, architect, engineer, or anyone acting in their behalf, nor any measurement, approved modification, submittal, shop drawing, order, or certificate, nor acceptance of any part or whole of the work, or payment of money, nor any possession or use by the County or its agents, shall operate as a waiver of any provisions of the Contract or of any power or authority reserved therein, or of any right to damages thereunder; nor shall the waiver of any breach of this Contract be held to be a waiver of any subsequent or other breach.

31) INSPECTION: All work done and all materials and equipment furnished under this Contract shall be subject to the inspection and approval of the Owner's Representative and/or County. They shall at all times have access to the work during its construction, and shall be furnished with every reasonable facility and assistance for ascertaining that the materials and workmanship are in accordance with the requirements and intent of the Contract Documents. Any work constructed without inspection as provided above, except with the specific written consent or approval of the Owner's Representative and Construction Manager, or constructed contrary to the instructions or orders of the Owner's Representative, Construction Manager, or his or her authorized representative, must, if requested by the Owner's Representative or County, be uncovered for examination and properly restored at the Contractor's expense.

The inspection of the work by County, the County's inspector(s), Construction Manager, architect, engineer, consultants or anyone acting in their behalf, does not relieve the Contractor of any of Contractor's obligation to fulfill the Contract as prescribed. Any work, materials, or equipment not meeting the requirements and intent of the Contract Documents shall be rejected, and unsuitable work or materials shall be made good, notwithstanding the fact that such work or materials may have previously been inspected or approved and payment therefor may have been made. If nonconforming work, materials, or equipment not meeting the requirements and intent of the Contract Documents is discovered, and the Contractor fails to remedy the nonconforming work, materials, or equipment, or the County agrees in writing to accept the nonconforming work, materials, or equipment, Contractor agrees to sign a Change Order or otherwise reimburse County in a sum equal to the cost to remedy the nonconforming work, materials, or equipment. It is expressly understood and agreed that the County will be entitled to recover from Contractor the full cost of remedying nonconforming work, materials, or equipment, and that diminution in value will not be considered as a method for valuing the County's damages for nonconforming work, materials, or equipment, and further that the doctrine of economic waste will not be a defense to the County's recovery from Contractor of the full and complete cost and expense of remedying nonconforming work, materials, or equipment.

Re-examination of any work may be ordered by the County, Construction Manager and/or the Owner's Representative, and such work must be uncovered by the Contractor. The Contractor shall pay the entire cost of such uncovering, re-examination, and replacement if the work does not conform to the Contract Documents.

32) REMOVAL OF REJECTED MATERIALS OR WORK: The Contractor shall, upon request and without delay, remove from the site of the work, all rejected or condemned materials of any kind brought to, or incorporated in, the work. No such rejected or condemned materials shall again be offered for use in any work under the Contract. All work which has been rejected shall be remedied, or

removed and replaced, by the Contractor in a manner acceptable to the County at Contractor's expense.

Upon failure of the Contractor to comply within forty-eight (48) hours with any written order of the County or Owner's Representative made under this section, or to make satisfactory progress in so doing, the County may cause such rejected materials to be removed, or such rejected work to be remedied, or removed and replaced, and deduct and retain the costs from any sums due or to become due to the Contractor.

33) USE OF COMPLETED PORTIONS: The County shall have the right at any time during the progress of this work to take over and place in service any completed or partially completed portion of the work, notwithstanding the time for completion of the entire work or such portions which may not have expired; but such taking possession thereof shall not be deemed an acceptance of any of the work, nor work on those portions not completed in accordance with the Contract Documents.

34) MEANS AND METHODS: Neither Owner's Representative nor County will have control over, be in charge of, nor be responsible for construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs in connection with the work, since these are solely Contractor's responsibility, unless otherwise required by the Contract Documents.

35) DELAYS: The Contractor agrees to complete all of its work required in the Contract Documents, or any subsequent revisions or modifications thereto, within the time specified in the Bid Proposal, subject to Change Orders increasing or decreasing the time specified. It is agreed by the parties to this Contract that time is of the essence to the performance of this Contract by Contractor, and that in case all work called for under the Contract is not completed in all respects and requirements within the time called for in the Contract Documents, plus any agreed upon extensions of time, damage will be sustained by the County.

36) EFFECT OF EXTENSION OF TIME: The granting of an extension of time for the completion of the work on account of delays which, in the judgment of the County, are unavoidable delays, or granted for the performance of extra or additional work, shall in no way operate as a waiver on the part of the County of any of its rights under this Contract.

37) CLAIMS: A Claim is any request by Contractor to adjust, alter, modify, or otherwise change the Contract Sum or the Contract Time, or both. A Claim must be stated with specificity, including identification of the event or occurrence giving rise to the Claim, the date of the event, and the asserted affect on the Contract Sum and the Contract Time, if any. The Claim shall include adequate supporting data. Adequate supporting data for a Claim for an adjustment of the Contract Time shall include scheduling data demonstrating the impact of the event on the critical path and completion of the Project. Adequate supporting data for a Claim for an adjustment in the Contract Sum shall include a detailed cost breakdown of items included within the Claim and documentation supporting each item of cost.

Contractor shall submit all Claims to the County before proceeding to perform the work, or portions of the work, giving rise to such Claim. Contractor hereby expressly waives any Claims of which Contractor was aware, whether or not the exact amounts of such Claims were ascertainable, and that are not submitted to the County prior to Contractor proceeding to perform the work, or portions of the work, giving rise to such Claims.

All Claims shall be submitted to County and Owner's Representative for decision within fifteen (15) days after the event or occurrence giving rise to the Claim. Contractor hereby expressly waives all Claims not made within the aforesaid time limit.

Claims must be submitted to County before the date of final payment. Contractor hereby expressly waives all Claims not submitted, in complete and proper form, on or before the date of final payment.

Contractor expressly waives any Claims for delay or adjustment to the Contract Time if the Contractor fails to provide written notice to County within three (3) days of the event or occurrences giving rise to the delay. Said written notice shall include the event or occurrence giving rise to the delay, the estimated duration of the delay, and the impact of the event or occurrence upon the critical path and completion of the Project. Contractor will not be entitled to adjustments to the Contract Time for delays attributable to weather, unless such delays are attributable to weather which is abnormal and delays the completion of the Project. Abnormal is to be based upon locally recognized annual weather patterns for the month in which the abnormal weather occurs.

As used herein, the following terms shall have the following meanings:

"Excusable Delay" means any delay of the completion of the Project beyond the expiration of the Contract Time caused by conditions beyond the control and without the fault or negligence of the Contractor such as strikes, embargoes, fire, unavoidable casualties, unusual delays in transportation, national emergency, and stormy and inclement weather conditions in which the work cannot continue. The financial inability of the Contractor or any subcontractor and default of any subcontractor, without limitation, shall not be deemed conditions beyond the Contractor's control. An Excusable Delay may entitle the Contractor to an adjustment in the Contract Time.

"Compensable Delay" means any delay of the completion of the work beyond the expiration date of the Contract Time caused by the gross negligence or willful acts of the County or Owner's Representative, and which delay is unreasonable under the circumstances involved, and not within the contemplation of the parties. A Compensable Delay may entitle the Contractor to an extension of the Contract Time and/or Contract Sum. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hinderance, or disruption.

"Inexcusable Delay" means any delay of the completion of the Project beyond the expiration of the Contract Time resulting from causes other than those listed above. An Inexcusable Delay shall not entitle the Contractor to an extension of the Contract Time or an adjustment of the Contract Sum.

The Contractor may make a Claim for an extension of the Contract Time, for an Excusable Delay or a Compensable Delay, subject to the following:

A. If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last.

B. If an Inexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, by which the Excusable Delay or the Compensable Delay exceeds the Inexcusable Delay.

C. If an Inexcusable Delay occurs concurrently with both an Excusable Delay and a Compensable Delay, the maximum extension in the Contract Time shall be the number of days, if any, by which the number of days determined pursuant to Subparagraph (a) exceeds the number of days of the Inexcusable Delay.

D. For a Compensable Delay, the Contractor shall only be entitled to an adjustment in the Contract Sum in an amount equal to the actual additional labor costs, material costs, and unavoidable equipment costs incurred by the Contractor as a result of the Compensable Delay, plus the actual additional wages or salaries and fringe benefits and payroll taxes of supervisory and

administrative personnel necessary and directly employed at the Project site for the supervision of the work during the period of Compensable Delay. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hinderance, or disruption. There shall be no Compensable Delay unless the event or occurrence giving rise to the Compensable Delay extends the actual completion of the Project past the Contract Time.

The parties agree that the County's exercise of its rights to order changes in the work, regardless of the extent and number of changes, or to suspend the work, is within the contemplation of the parties and shall not be the basis for any Claim for Compensable Delay. The rights of the Contractor to adjustments of the Contract Time and the Contract Sum, based on changes ordered in the work or suspension of the work, shall be solely governed by this provision.

38) FALSE CLAIMS: California Penal Code section 72, provides that any person who presents for payment with intent to defraud any County board or officer, any false or fraudulent claim, bill, account, voucher, or writing, is punishable by fines not exceeding ten thousand dollars (\$10,000.00) and/or imprisonment in the state prison.

Government Code sections 12650, et seq., pertains to civil penalties that may be recovered from persons (including corporations, etc.) for presenting a false claim for payment or approval, presents a false record or statement to get a false claim paid or approved, or other acts, to any officer or employee of any political subdivision of the State of California. Any person or corporation violating the provisions of Government Code sections 12650, et seq., shall be liable for three times the amount of the damages of the political subdivision, plus a civil penalty, plus costs.

All Claims by Contractor, shall include the following certification, properly completed and executed by Contractor or an officer of Contractor:

I, _____, BEING THE _____ (MUST BE AN OFFICER) OF _____ (CONTRACTOR), DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA, AND DO PERSONALLY CERTIFY AND ATTEST THAT: I HAVE THOROUGHLY REVIEWED THE ATTACHED CLAIM FOR ADDITIONAL COMPENSATION AND/OR EXTENSION OF TIME, AND KNOW ITS CONTENTS, AND SAID CLAIM IS TRUTHFUL AND ACCURATE; THAT THE AMOUNT REQUESTED ACCURATELY REFLECTS THE CONTRACT ADJUSTMENT FOR WHICH THE OWNER IS LIABLE; AND, FURTHER, THAT I AM FAMILIAR WITH CALIFORNIA PENAL CODE SECTION 72 AND CALIFORNIA GOVERNMENT CODE SECTION 12650, ET SEQ, PERTAINING TO FALSE CLAIMS, AND FURTHER KNOW AND UNDERSTAND THAT SUBMISSION OR CERTIFICATION OF A FALSE CLAIM MAY LEAD TO FINES, IMPRISONMENT AND/OR OTHER SEVERE LEGAL CONSEQUENCES.

Submission of a Claim, in conformance with all of these requirements of this Contract, and rejection of all or part of said Claim by County, is a condition precedent to any action by Contractor against County, including but not limited to, the filing of a lawsuit or making demand for arbitration, if arbitration is expressly provided for in this Contract.

39) CHANGES: The County may request that Contractor provide County with estimated costs for proposed changes to the work. Contractor agrees to promptly provide County with detailed, itemized costs for proposed changes to the work and scheduling data demonstrating the impact, if any, of the proposed changes to the work on the Contract Time. Adjustments, if any, in the amount to be paid the Contractor by reason of any modifications of the work as set forth in a Contract Change Order, Construction Change Directive, or arising from Claims shall be determined by one or more of the following methods as elected by the County:

A. Lump Sum Price - By an acceptable lump proposal from the Contractor.

- B. Unit Prices - By unit prices fixed by agreement between the County and the Contractor.
- C. Force Account - By ordering the Contractor to proceed with the work and to keep and present in such form as the Owner's Representative or County may direct, a correct account of the cost of the change, together with all vouchers and associated documentation therefor. The Contractor will be paid for labor, materials, and equipment rental actually used on the Change Order work as follows:
- (1) Labor - the Contractor will be paid the reasonable cost of labor for the workmen (including foremen when authorized by the Owner's Representative), used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, subcontractor, or other forces, will be the sum of the following:
- (1-1) Actual Wages - The actual wages paid shall include any reasonable employer payments to or on behalf of the workmen for health and welfare, pension, vacation, and similar purposes.
- (1-2) Labor Surcharge - The labor surcharge to be added to the actual wages shall be the reasonable cost of all additional payments made to, or on behalf of the workers, other than actual wages, as required by State or Federal laws, including by way of example but not limited to, workers' compensation, SUTA, FUTA and FICA.
- (1-3) Subsistence and Travel Allowance - The actual reasonable and necessary subsistence and travel allowance paid to such workers.
- (2) Materials - The actual cost of the materials to the purchaser, whether the Contractor, a subcontractor, or other forces. If the Contractor does not furnish satisfactory evidence of the cost of such materials, it shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned delivered to the job site. The County reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs or profit on such County furnished materials.
- (3) Equipment - The use of equipment shall be paid for at the rates listed for such equipment in the current compilation of rental rates of the State of California, Department of Transportation (CalTrans) Division of Highways, applicable to San Benito County or competitive local rental rates of established rental agencies serving the area of the work, whichever is less. If the equipment is not shown on the above-mentioned list, Contractor shall be paid such hourly rental rates as are agreed upon by the Contractor and the Owner's Representative prior to use of the equipment, except that in no case shall such agreed hourly rate exceed the rental rates of established distributors or equipment rental agencies serving the area, plus thirty-three and one-third percent (33-1/3%) for the cost of fuel, oil, lubrication, and field repairs and maintenance.
- If the equipment is moved on to the work and used exclusively for extra work, the Contractor will be paid for the cost of transporting it to the job and returning it to its original location. The rental period shall begin when the equipment is unloaded at the site of the extra work, and shall include each day that the equipment is at the site of, and performing or utilized for, such extra work, excluding Saturdays, Sundays, and legal holidays, unless extra work is performed on such days, and shall terminate at the end of the day on which such extra work is completed or the Owner's Representative directs the Contractor to discontinue the use of such equipment.

The rental time to be paid for equipment already on the work, or which is used for other than such extra work, shall be the actual time the equipment is in operation on the extra work, plus the time required to move the equipment to the site of the extra work and return it to its original location.

To the totals as computed above, shall be added the following percentages for profit and overhead:

Labor	Fifteen Percent (15%)
Materials	Fifteen Percent (15%)
Equipment Rental	Fifteen Percent (15%)

For Change Order work performed by a subcontractor, compensation for such work shall be based on all direct costs as listed in the subcontractor's portion of the proposal plus the above percentages. The Contractor may add ten percent (10%) to the subcontractor's proposal for Contractor's overhead and profit. Contractor may also add actual cost of subcontractor's bond (if any) and a markup on such bond not to exceed one percent (1%). Overhead and profit for all tiers of Contractor and subcontractors shall in no event exceed fifteen percent (15%) of the cost of the work. Distribution of the overhead and profit among the Contractor and the subcontractors is the responsibility of the Contractor.

The allowances for overhead and profit as enumerated in the preceding subparagraphs shall include full compensation for any and all items of overhead including but not limited to, superintendence, field overhead, home office overhead (absorbed and unabsorbed), Contractor bonds, insurance, general conditions, clean-up, safety meetings, mandated programs and processing of Claim and Change Order documents.

The amount of payment agreed upon or, in the absence of agreement, selected by the County shall be set forth in the Change Order or Construction Change Directive.

40) PAYMENTS: Within ten (10) days after signing the Contract, but in any event prior to the first application for payment, Contractor shall submit to Owner's Representative and County a cost breakdown of the Contract Sum. The cost breakdown shall itemize, as separate line items, the cost of each work activity and all other costs, including warranties, record documents, insurance, bonds, overhead expenses, and the total allowance for profit, the total of which shall equal the Contract Sum. The cost breakdown shall include a separate line item cost for each activity listed on Contractor's initial (as-planned) schedule. The cost breakdown, when accepted by the County and Owner's Representative, shall become the basis for determining the cost of work performed for the Contractor's applications for payment.

On or before the first (1st) day of the month, Contractor shall submit to Owner's Representative an itemized application for payment for the cost of the work in permanent place, as approved by the Owner's Representative, which has been completed in accordance with the Contract Documents as of the twentieth (20th) day of the preceding month, less amounts previously paid. The application for payment shall be prepared in a form acceptable to County and Owner's Representative, and shall contain itemized amounts in accordance with the cost breakdown. The applications for payment shall not include requests for payment on account of changes which have not been authorized by Change Orders, or for amounts Contractor does not intend to pay a subcontractor because of a dispute or other reason. By submission of an application for payment, Contractor represents to County that all work for which Contractor is seeking compensation, has been performed in strict compliance with these Contract Documents.

If requested by the County, an application for payment shall be accompanied by a summary showing payment that will be made to subcontractors covered by such application, and unconditional

waivers and releases of claims and stop notices, from each subcontractor listed in the preceding application for payment covering sums disbursed pursuant to that preceding application for payment.

Contractor warrants that upon submittal of an application for payment, all work for which certificates of payment have been previously issued and payment has been received from County, shall be free and clear of all claims, stop notices, security interests, and encumbrances in favor of Contractor, subcontractors or other persons or firms entitled to make claims by reason of having provided labor, materials, or equipment related to the work.

Approval of all, or any part, of an application for payment may be withheld, a certificate of payment may be withheld, and all or part of a previous certificate for payment may be nullified and that amount withheld from a current certificate for payment, on account of any of the following:

- (a) Defective work not remedied;
- (b) Third-party claims against Contractor or County arising from the acts or omissions of Contractor or subcontractors;
- (c) Stop notices;
- (d) Failure of Contractor to make timely payments due to subcontractors for material or labor;
- (e) A reasonable doubt that the work can be completed for the balance of the Contract Sum then unpaid;
- (f) Damage to the County or others for which Contractor is responsible;
- (g) Reasonable evidence that the work cannot be completed within the Contract Time, and the unpaid balance of the Contract Sum would not be adequate to complete the work and cover County's damages for the anticipated delay;
- (h) Failure of Contractor to maintain, update, and submit record documents;
- (i) Failure of Contractor to submit schedules or their updates as required by the Contract Documents;
- (j) Performance of the work by Contractor without properly processed shop drawings;
- (k) Liquidated damages assessed;
- (l) Any other failure of Contractor to perform its obligations under the Contract Documents.

By action of the County's Board of Supervisors, a fund has been established, money encumbered in the current budget, and assigned to the account which is the sole source of funds available for payment of the Contract Sum. Contractor understands and agrees that Contractor will be paid only from this special fund and if for any reason this fund is not sufficient to pay Contractor, Contractor will not be entitled to payment. The availability of money in this fund, and County's ability to draw from this fund, are conditions precedent to County's obligation to make payments to Contractor.

Within thirty (30) days of receipt of an approved certificate for payment, properly executed by the Contractor, Owner's Representative, County's inspector of record for the Project (if any) and County's Auditor, County agrees to pay Contractor, subject to all of the terms and conditions of these Contract Documents, an amount equal to ninety percent (90%) of the sum of the following (less any amounts withheld as permitted by the Contract Documents):

- (a) Cost of the work in permanent place as of the end of the preceding month as set forth and approved on the certificate for payment;
- (b) Less amounts previously paid;
- (c) Less amounts withheld by County as allowed in the Contract Documents.

Within forty (40) days of recordation of a Notice of Completion, County agrees to, subject to all of the terms and conditions of these Contract Documents, pay the remaining contract balance, after all offsets and subject to the withholding of amounts due from Contractor.

41) COST AND PRICING DATA: All cost and pricing data submitted by the Contractor to the County with respect to any change, prospective or completed, or any claim for extra compensation shall be a true, complete, accurate, and current representation of actual cost and pricing of the work. The Owner's Representative or his or her authorized representative may require a formal certification as to cost and pricing data submitted by the Contractor. Certification shall be in the form acceptable to County.

42) PROCEED WITH WORK: Notwithstanding the making of any Claim or the existence of any dispute regarding any Claim, Contractor shall not cause any delay, cessation, or termination in or of Contractor's performance of the work, but shall diligently proceed with performance of the work in accordance with the Contract Documents.

43) ACCESS TO RECORDS: The Owner's Representative and/or County, or their authorized representatives, shall have access, upon reasonable notice, during normal business hours, to Contractor and subcontractors' books, documents and accounting records, including but not limited to, bid worksheets, bids, subcontractor bids and proposals, estimates, cost accounting data, accounting records, payroll records, time sheets, cancelled checks, profit and loss statements, balance sheets, project correspondence including but not limited to all correspondence between Contractor and its sureties and subcontractors/vendors, project files, scheduling information, and other records of the Contractor and all subcontractors directly or indirectly pertinent to the work, original as well as change and claimed extra work, to verify and evaluate the accuracy of cost and pricing data submitted with any Change Order, prospective or completed, or any Claim for which additional compensation has been requested or notice of potential Claim has been tendered.

Such access shall include the right to examine and audit such records, and make excerpts, transcriptions, and photocopies at County's cost.

The parties agree that in the event Contractor or any subcontractor fails to comply with this section, it would be difficult for the County to determine its actual damages; therefore, Contractor agrees to pay County, as liquidated damages, the sum of two hundred dollars (\$200.00), which Contractor agrees is reasonable under the circumstances, for each and every calendar day which Contractor or a subcontractor fails or refuses to provide the County, Owner's Representative, and/or their authorized representatives, access to the materials specified in this section.

Contractor agrees to impose upon its subcontractors by appropriate subcontract provision, the obligations of this section of the General Conditions.

44) DISMISSAL OF UNSATISFACTORY EMPLOYEES: If any person employed by the Contractor, or any subcontractor, shall fail or refuse to carry out the directions of the Owner's Representative or County; or, in the opinion of the Owner's Representative or County, is incompetent, unfaithful, intemperate, or disorderly; uses threatening or abusive language to any person representing the Owner's Representative or County on the work; or is otherwise unsatisfactory, he or she shall be removed from the work immediately, and shall not again be employed on the work.

45) TERMINATION OF UNSATISFACTORY SUBCONTRACTS: When any portion of the work which has been subcontracted by the Contractor is not being prosecuted in a satisfactory manner, the subcontract for such work shall be terminated immediately by the Contractor upon written notice from the Owner's Representative or County, and the subcontractor shall not again be employed on the type of work in which his or her performance was unsatisfactory.

46) TEMPORARY SUSPENSION OF WORK: The County shall have the authority to suspend the work wholly or in part for such period as it may deem necessary, due to unsuitable weather, lack of adherence to safety regulations, or to any other conditions it considers unfavorable for the suitable prosecution of the work, or for such time as it may deem necessary, due to the failure on the part of the

Contractor to carry out orders given or to perform any provisions of the Contract, or for any other reason. The Contractor shall immediately comply with such written order of the County to suspend the work wholly or in part. The suspended work shall be resumed only when conditions are favorable or methods are corrected, as ordered or approved in writing by the County.

If a suspension of the work is ordered by the County due to the failure on the part of the Contractor to carry out orders or to perform any provisions of the Contract, the days on which the suspension order is in effect shall count against the Contract time, and shall not in any way modify or invalidate any of the provisions of this Contract, and the Contractor shall not be entitled to any damages or compensation on account of such suspension or delay.

47) TERMINATION OF CONTRACTOR'S CONTROL OVER THE WORK: Whenever, in the opinion of the County, the Contractor has failed to supply an adequate force of labor, equipment, or materials of proper quality, or has failed in any other respect to prosecute the work with the diligence specified in the Contract; or if Contractor should refuse or fail to comply with laws, ordinances, or directions of the Owner's Representative; or if Contractor should fail to make prompt payments to subcontractors or for labor or materials; or otherwise be in breach of this Contract; the County may give written notice of at least five (5) calendar days to the Contractor and Contractor's sureties that if the defaults are not remedied within a time specified in such notice, the Contractor's control over the work will be terminated.

If the Contractor should be adjudged bankrupt, or make an assignment for the benefit of Contractor's creditors, or if a receiver should be appointed on account of Contractor's insolvency, the County may declare the Contractor's control over the work terminated, and so notify the Contractor and Contractor's sureties.

Upon such termination, the County may take possession, and use all or any part, of the Contractor's materials, tools, equipment, and appliances upon the premises to complete the work; the County assuming responsibility for the final relinquishment of such equipment at the conclusion of the work, or sooner, at its option, in as good condition as when it was taken over, reasonable wear and tear excepted; and the County agrees to pay for such materials and the use of said equipment at a reasonable compensation.

Upon such termination or the County's declaration that the Contractor is in default, the County may direct the surety to complete, or cause to be completed, the Contract work, or the County may direct that all or any part of the work be completed by day labor, or by employment of other contractors on informal contracts, or both. If the County directs the surety to complete or cause to be completed, the Contract work, Contractor's performance bond surety agrees to immediately undertake to complete or cause to be completed, all Contract work.

If the Contractor's control over the work is terminated as provided above, the Contractor is not entitled to receive any portion of the amount to be paid under the Contract until it is fully completed. After completion, if the unpaid balance exceeds the sum of the amount expended by the County in finishing the work, plus all damages sustained, or to be sustained, by the County, plus any unpaid claims on account of labor, materials, tools, equipment, or supplies contracted for by the Contractor for the work herein contemplated, the excess not otherwise required by these Contract Documents to be retained shall be paid the Contractor. If the sum so expended exceeds the unpaid balance, the Contractor and Contractor's surety are liable to the County for the amount of such excess. If the surety completes the Contract work as provided above, such surety shall be subrogated to money due under the Contract, and to money which shall become due in the course of completion by the surety. However, Contractor and Surety agree that any subrogation rights of surety are subordinate to and inferior to rights of County.

The County reserves the right to terminate the work for its convenience upon written notice to Contractor. In such event, the Contractor shall be paid its reasonable costs for that portion of the work performed to the date of termination, reasonable costs associated with demobilization, plus fifteen percent (15%) of all such costs for overhead and profit.

48) FINAL INSPECTION, FIELD ACCEPTANCE, AND ACCEPTANCE: The Contractor shall notify the Owner's Representative in writing of the completion of the work, and the architect, engineer or Construction Manager/designated County Inspector of record shall inspect the work. The Contractor, or Contractor's representatives, may be present at the inspection. The Contractor will be notified in writing of any defects or deficiencies to be remedied prior to final acceptance. Within ten (10) calendar days of such notification, the Contractor shall proceed to correct such defects or deficiencies. When notified that this work has been completed, the architect or engineer will again inspect the work to satisfy itself that all work has been done in accordance with the Contract Documents, and will issue a final acceptance letter, and will recommend to the County that they formally accept the work. Final acceptance by the County shall cause the commencement of guarantee periods. Within ten (10) days of final acceptance (approval by Board of Supervisors) of all work required by these Contract Documents, a Notice of Completion will be filed with the County Recorder of San Benito County.

49) CLEANING UP: Throughout the construction period, the Contractor shall keep the site of the work in a presentable and safe condition, dispose of any surplus materials, clean out all drainage ditches and structures, and repair any fences or other property damaged during the progress of the work, to the satisfaction of the Owner's Representative and County.

Upon completion of the work, and prior to requesting final inspection, the Contractor shall thoroughly clean the site of the work of all rubbish, excess material, and equipment, and all portions of the work shall be left in a neat and orderly condition. The final inspection will not be made until this has been accomplished.

If Contractor fails or refuses to fulfill these obligations to the County's satisfaction, County may, at its option, undertake these obligations, and withhold the cost of performing these obligations, plus an additional fee of twenty-five percent (25%) for administrative costs, from payments to Contractor.

50) COMPLIANCE WITH LAWS AND REGULATIONS: The Contractor shall keep itself fully informed of, and shall observe and comply with, and shall cause any and all persons, firms, or corporations employed by Contractor or under him, to observe and comply with all State and national laws, and County and municipal ordinances, regulations, orders, and decrees which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work. Particular attention is called to the following:

A. HOURS OF LABOR - Eight hours of labor shall constitute a legal days' work, and the Contractor or any subcontractor under him, in the performance of the Contract, shall not require more than eight hours of labor in any calendar day, and forty hours of labor in any calendar week, from any person employed by Contractor in the performance of the work under this Contract, except as permitted under the provisions of Section 1815 of the Labor Code of the State of California. The Contractor shall forfeit, as penalty to the County, fifty dollars (\$25.00) for each workman employed by Contractor or any subcontractor under Contractor in the performance of the Contract for each calendar day during which any workman is required or permitted to labor more than eight hours and for each calendar week during which any workman is required or permitted to labor more than forty hours, in violation of the provisions of such Labor Code.

No work other than overtime and shift work shall be done between the hours of 7:00PM and 7:00AM, except such work as is necessary for the proper care and protection of the work already performed or

except in case of an emergency; excepting that overtime and/or shift work may be established by the Contractor with reasonable notice and the written permission of the Owner's Representative.

B. PREVAILING WAGE - Pursuant to Section 1770, and following, of the California Labor Code, the Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. A copy of the Prevailing Wage Scale is available at the following web site: http://www.dir.ca.gov/DLSR/statistics_research.html#PWD. Failure to pay such prevailing wages shall subject the employer to the penalties set forth in Labor Code Section 1775.

C. LABOR DISCRIMINATION - Contractor shall comply with Section 1735 of the Labor Code of the State of California, which prohibits discrimination in the employment of persons upon public works because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, or sex of such persons.

D. APPRENTICES - Attention is directed to Section 1777.5 of the Labor Code of the State of California concerning employment of apprentices, and the Contractor is required to comply with the provisions of said Section.

E. TRAVEL AND SUBSISTENCE PAYMENTS - Attention is directed to the requirements of Section 1773.8 of the Labor Code of the State of California. The Contractor shall make travel and subsistence payments to each workman needed to complete the work in accordance with the requirements in said Section 1773.8.

F. WORKERS' COMPENSATION - Pursuant to the requirements of Section 1860 of the Labor Code, the Contractor is required to secure the payment of Workers' Compensation to Contractor's employees in accordance with the provisions of Section 3700 of the Labor Code.

Prior to the commencement of work, the Contractor shall sign and file with the Owner's Representative a certification in the following form:

"I am aware of the provisions of Section 3700 of the Labor Code, which requires 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."

Said certification is included in the Contract, and signature and return of the Contract as provided in Paragraph 16 of these General Conditions, "Signing of Contract," shall constitute signing and filing of the said certificate.

G. USE OF PESTICIDES - The Contractor shall comply with all rules and regulations of the Department of Food and Agriculture, the Department of Health, the Department of Industrial Relations, the County Integrated Pest Management (IPM) program, and all other agencies which govern the use of pesticides required in the performance of the work on the Contract.

Pesticides shall include, but shall not be limited to, herbicides, insecticides, fungicides, rodenticides, germicides, nematocides, bactericides, inhibitors, fumigants, defoliant, desiccants, soil sterilants, and repellents.

Any substance or mixture of substances intended for preventing, repelling, mitigating, or destroying weeds, insects, diseases, rodents, or nematodes, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant shall be considered a pesticide.

H. PAYROLL RECORDS - Attention is directed to Section 1776 of the California Labor Code, a portion of which is quoted below. Regulations implementing said Section 1776 are located in Section 16000, and Sections 16401 through 16403 of Title 8, California Administrative Code. The Contractor shall be responsible for compliance by Contractor's subcontractors.

(1) 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 conjunction with the public work.

(2) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

(a) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(b) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

(c) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection and copies thereof made; provided, however, that a request by the public shall be made through either the body awarding the contract, 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 the records at the principal office of the contractor.

(3) Each contractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within ten (10) days after receipt of a written request.

(4) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, 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.

(5) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city, and county, and shall, within five (5) working days provide a notice of a change of location and address.

(6) In the event of noncompliance with the requirements of this section, the contractor shall have ten (10) 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 the ten-day period, the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

The penalties specified in subdivision (f) of Labor Code Section 1776 for noncompliance with the provisions of said Section 1776 may be deducted from any moneys due or which may become due to the Contractor.

I. REPORTING REQUIREMENTS AND SANCTIONS - Failure to deliver to County specific information, records, reports, certifications, or any other documents required for compliance with these Contract Documents shall be considered noncompliance.

Contractors found by the County to be in noncompliance are to be advised of the specific deficiencies and urged to make immediate corrections. They should also be advised that monetary deductions may be made for failure to effect corrections or delinquencies.

If the Contractor fails to correct a deficiency within fifteen (15) days after notification, a deduction may be made. In such cases, the deduction shall be ten percent (10%) of the estimated value of the work done during the month, except that the deduction will not exceed ten thousand dollars (\$10,000.00), nor be less than one thousand dollars (\$1,000.00), and shall be deducted from the next progress payment.

Deductions for noncompliance will be in addition to all other deductions provided for in this Contract, and will apply irrespective of the number of instances of noncompliance. Deductions may be made separately and additively for each estimate period in which a new deficiency appears. When all deficiencies for a period have been corrected, the deduction covering that period will be released on the next progress payment. Otherwise, the deduction will be retained.

51) RESPONSIBILITY OF THE CONTRACTOR: The Contractor shall do all of the work and furnish all labor, materials, tools, equipment, and appliances, except as otherwise herein expressly stipulated, necessary, or proper for performing and completing the work herein required, including any Change Order work, disputed work or extra work directed by the County or Owner's Representative, within the time specified.

If the Contractor discovers any discrepancies during the course of the work between the Contract Documents and conditions in the field, or any errors or omissions in the Contract Documents and conditions in the field, or any errors or omissions in the Contract drawings, specifications, or layout given by stakes, points, or instructions, it shall be the Contractor's duty to inform the Owner's Representative immediately, and the Owner's Representative shall promptly verify the same. Any work done after such discovery until authorized in writing by the Owner's Representative will be done at the Contractor's risk.

In no case shall the use of subcontractors in any way alter the position of the Contractor or Contractor's sureties with relation to this Contract. When a subcontractor is used, the responsibility for every portion of the work shall still remain with the Contractor.

The Contractor shall pay, when due, all valid claims of subcontractors, suppliers, and workmen with respect to the project.

The mention herein of any specific duty or responsibility imposed upon the Contractor shall not be construed as a limitation or restriction of any other responsibility or duty imposed upon the Contractor by the Contract, said reference being made herein merely for the purpose of explaining the specific duty or responsibility.

52) INDEMNIFICATION:

A. CONTRACTOR'S PERFORMANCE: Contractor shall defend, indemnify, and save harmless County and Owner's Representative (including their inspectors, construction managers, project managers, trustees, officers, agents, members, employees, affiliates, consultants, subconsultants, and representatives), and each of them, of and from any and all claims, demands, suits, causes of action, damages, costs, expenses, attorneys' fees, losses, or liability, in law or in equity, of every kind and nature whatsoever arising out of, or in connection with, Contractor's operations to be performed under this Contract, including, but not limited to:

- (1) Personal injury (including, but not limited to, bodily injury, emotional injury or distress, sickness, or disease) or death to persons, including, but not limited to, any employees or agents of Contractor, County, Owner's Representative, Construction Manager, or any subcontractor, or damage to property of anyone including the work itself (including loss of use thereof), caused or alleged to be caused in whole or in part by any negligent act or omission of Contractor, County, or Owner's Representative, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable;
- (2) Penalties threatened, sought, or imposed on account of the violation of any law, order, citation, rule, regulation, standard, ordinance, or statute, caused by the action or inaction of Contractor;
- (3) Alleged infringement of any patent rights which may be brought arising out of Contractor's work;
- (4) Claims and liens for labor performed or materials used or furnished to be used on the job, including all incidental or consequential damages from such claims or liens;
- (5) Contractor's failure to fulfill any of the covenants set forth in these Contract Documents;
- (6) Failure of Contractor to comply with the provisions of the Contract Documents relating to insurance; and,
- (7) Any violation or infraction by Contractor of any law, order, citation, rule, regulation, standard, ordinance, or statute in any way relating to the occupational, health, or safety of employees.

The indemnities set forth in this section shall not be limited by the insurance requirements set forth in these Contract Documents.

Contractor's indemnification of County will not include indemnification for claims which arise as the result of the active negligence of County, or the sole negligence or willful misconduct of County, its agents, servants or independent contractors who are directly responsible to County, or for defects in design furnished by such persons.

53) PERMITS AND LICENSES: The Contractor shall procure all permits and licenses necessary for the normal conduct of its business and construction operations, and all costs associated therewith shall be paid by Contractor.

The Environmental Quality Act of 1970 may be applicable to permits, licenses, and other authorizations which the Contractor must obtain from local agencies in connection with performing the work of the Contract. The Contractor shall comply with the provisions of said statutes in obtaining such permits, licenses, and other authorizations, and they shall be obtained in sufficient time to prevent delays to the work.

In the event that the County has obtained permits, licenses, or other authorizations applicable to the work in conformance with the requirements in said Environmental Quality Act of 1970, the Contractor shall comply with the provisions of said permits, licenses, and other authorizations.

54) PROTECTION OF COUNTY AGAINST PATENT CLAIMS: The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work.

55) PROTECTION OF WORKERS: The Contractor shall conform to the rules and regulations pertaining to safety established by the California Division of Industrial Safety and any other governing body having jurisdiction over the work. The Contractor shall immediately replace or repair any unsafe ladder, scaffolding, shoring, or bracing, or correct any other dangerous or hazardous situation that may exist or that the Owner's Representative may indicate. Failure of the Owner's Representative to suspend the work or notify the Contractor of the inadequacy of the safety precautions or noncompliance with the law shall not relieve the Contractor of this responsibility.

The Contractor is warned that when the work involves existing sewers and appurtenances that have been exposed to sewage and industrial wastes, these facilities shall be considered contaminated with disease-causing organisms. Personnel in contact with contaminated facilities, debris, waste water, or similar items shall be advised by the Contractor of the necessary precautions that must be taken to avoid becoming diseased. It is the Contractor's responsibility to urge his/her personnel to observe a strict regimen of proper hygienic precautions, including any inoculations recommended by the local public health officer.

Because of the potential danger of solvents, gasoline, and other hazardous material in the existing sewers and storm drain pipes, these areas shall be considered hazardous. The Contractor shall be aware of these dangers and shall comply with Article 108, "Confined Spaces," of the General Industrial Safety Orders contained in Title 8 of the California Administrative Code.

In the event that this Contract requires the excavation of any trench or trenches in excess of five feet in depth, Contractor shall prepare a detailed design plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trenches. Said detailed design plan and subsequent excavating operations shall fully comply with all local, state and federal regulations including, but not limited to, the Construction Safety Orders, Section 1539, Permits and Section 1540 et seq., Excavation.

A. Safety Program. When requested by County, Contractor shall submit a proposed safety program which outlines the precautions to be taken by contractor to insure the safety of County employees and the public.

B. Material Safety Data Sheets.

(1) Contractor shall provide the County with copies of current Material Safety Data Sheets (MSDS) on all products subject to the requirements of California Code Section 5144. The MSDS submittals will be required prior to the issue of a Notice to Proceed.

(2) Contractor shall conduct operations in such a way as to comply with manufacturers' recommendations contained in Material Safety Data Sheets.

56) PROTECTION OF MATERIALS AND EQUIPMENT: The Contractor shall protect the work, materials, and equipment from damage due to the nature of the work, the action of the elements, trespassers, or other causes. The Contractor shall properly store materials and equipment, and erect such temporary structures as are required to protect them from damage, including, but not limited to, construction fencing.

57) SANITARY PROVISIONS: The necessary sanitary conveniences for the use of the workers on the project, properly obscured from public observance, shall be constructed and maintained by the Contractor.

58) EXISTING UTILITIES: It is recognized by the Contractor that the location of existing utility facilities as shown on Contract drawings and specifications are approximate; their exact location is unknown.

Recognition is given to the fact that there may be additional utilities existing on the property unknown to either party to the Contract. Location of utilities as shown on drawings and specifications represent the best information obtainable from utility maps and other information furnished by the various agencies involved. The County warrants neither the accuracy nor the extent of actual installations as shown on the drawings and specifications.

Because of this uncertainty, it may become necessary for the Owner's Representative to make adjustments in the line or grade of sewers or storm drains. Installation of such adjusted lines shall be made at the regular unit price bid for the work, and no additional compensation will be paid therefor, unless the scope and character of the work has been changed.

The Contractor agrees and is required to coordinate and fully cooperate with the County and utility owners for the location, relocation, and protection of services and utilities. The Contractor's attention is directed to the existence of services and utilities, underground and overhead, necessary for normal house and commercial service for all buildings along the line of work. The Contractor shall make arrangements with utility owners and Underground Service Alert (USA) for the location of all service or utility lines in advance of the actual construction and for the relocation of such facilities, if necessary, by the utility owner or the Contractor.

In accordance with Section 4215 of the Government Code of the State of California, the County shall make provisions to compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such main and trunk line utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work. Compensation will be in accordance with Paragraph 41, Changes, and subject to all of the requirements of Paragraph 39, Claims, of the General Conditions. In the event the Contractor discovers utilities not identified in the Contract Documents, the Contractor shall immediately notify the Owner's Representative and the utility owner by the most expeditious means available and later confirm in writing.

It is understood and agreed that the failure of the Contractor or its subcontractor to comply fully with these provisions constitutes failure of the Contractor to exercise reasonable care and precludes Contractor's recovery from County for any related costs or damages.

59) COOPERATION WITH OTHERS: The County or adjacent property owner may perform other work adjacent to or within the project area, concurrent with the Contractor's operations. The Contractor shall cooperate fully with County in all operations which coincide with other work being performed, and provide County with such scheduling and other information as may be required by County to perform such other work. The Contractor shall conduct operations to minimize interference with the work of other forces or contractors performing such work. This work performed by a second contractor may include work which is incomplete or in dispute with the Contractor.

Any disputes or conflicts which may arise between the Contractor and any other forces or contractors retained by the County, causing delays or hindrance to each other, shall be referred to the Owner's Representative for resolution.

If the work of the Contractor is delayed because of any acts or omissions of any other forces or contractor, the Contractor shall on that account have no claim against the County other than for an extension of time.

60) AIR POLLUTION CONTROL: The Contractor shall comply with all air pollution control rules, regulations, ordinances, and statutes which apply to any work performed pursuant to the Contract, including any air pollution control rules, regulations, ordinances, and statutes specified in Section 11017 of the Government Code.

Unless otherwise provided in the Contract Documents, material to be disposed of shall not be burned.

61) WATER POLLUTION: The Contractor shall comply with all rules, regulations, ordinances, and statutes which apply to water pollution, including but not limited to, erosion control and Section 7-1.G of the State specifications.

62) SOUND CONTROL REQUIREMENTS: The Contractor shall comply with all sound control and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the Contract.

Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

63) UNFAVORABLE WEATHER AND OTHER CONDITIONS: During unfavorable weather and other conditions, the Contractor shall pursue only such portions of the work as will not be damaged thereby. No portions of the work the satisfactory quality or efficiency of which will be affected by any unfavorable conditions shall be constructed while these conditions remain, unless, by special means or precautions acceptable to the Owner's Representative, the Contractor shall be able to overcome these conditions.

64) WEEKEND, HOLIDAY, AND NIGHT WORK: No work shall be done between the hours of 7:00PM and 7:00AM, or on Sundays or legal holidays, except with written permission of the County and Owner's Representative. Requests to work between 7:00PM and 7:00AM, or on Sundays or legal holidays, must be submitted in writing at least two working days in advance of the intended work. In case of an emergency, the Contractor will be allowed to work at night or on Sundays or legal holidays, but must notify the Owner's Representative immediately. An emergency shall be considered an unforeseen event that poses a danger to the public or to the uncompleted work.

It is understood, however, that two or three shift operations may be established as a regular procedure by the Contractor if Contractor first obtains written permission from the County and Owner's Representative. Such permission may be revoked by the County or Owner's Representative at any

time, without cause, or if the Contractor fails to maintain adequate force and equipment for reasonable prosecution and to justify inspection of the work, or fails to provide sufficient artificial light to permit the work to be carried on properly and safely and to permit proper inspection.

The Contractor shall give the County and Owner's Representative two working days prior written notice of any work to be done on a Saturday, with the location and type of work to be done specified; and any work done without such notice and without the supervision of an inspector may be ordered removed and replaced at the Contractor's expense.

65) OVERLOADING: The Contractor shall determine safe loading capacities and shall not overload any structure beyond its safe capacity during construction. In addition to assuming full responsibility for bodily injury resulting from any such overloading, the Contractor shall repair to the Owner's Representative's satisfaction or reimburse the County for the costs of repairing damage resulting therefrom.

66) SUBCONTRACTING AND ASSIGNMENT: The performance of the Contract may not be assigned except upon written consent of the County, and no assignment shall be permitted which would relieve the original Contractor or Contractor's surety of their responsibilities under the Contract.

67) NON-RECOGNITION OF SUBCONTRACTORS: No subcontractor will be recognized as such, and all persons engaged in the work under this Contract will be considered as employees of the Contractor, and their work shall be subject to all the provisions of the Contract. The County and its representatives will deal only with the Contractor, who shall be responsible for the proper performance of the entire work. Except as otherwise provided in the Contract Documents, or when direct communications have been specifically authorized, the County and Contractor shall communicate through Owner's Representative. Communications by Contractor with the County's consultants and architect or engineer's consultants shall be through the Owner's Representative. Communications by the Owner's Representative with subcontractors shall be through the Contractor.

68) LANDS AND RIGHTS OF WAY: The County shall provide the lands, rights of way, and easements upon which the work under this Contract is to be done, and such other lands as may be designated on the Contract drawings for the use of the Contractor, and the Contractor shall confine Contractor's operations to within these limits.

The Contractor shall provide, at Contractor's own expense, any additional land and access thereto that may be required for temporary construction facilities or storage of materials.

69) LIABILITY OF COUNTY OFFICIALS: Neither the Owner's Representative, nor officers, employees, agents, or representatives of the County, nor any of them, shall be responsible for any liability arising under this Contract, except such obligations as are specifically set forth herein.

70) CONTRACTOR NOT AN AGENT OF THE COUNTY: The right of general supervision shall not make the Contractor an agent of the County, and the liability of the Contractor for all damages to persons or to public or private property arising from the performance of the work shall not be lessened because of such general supervision.

71) THIRD-PARTY CLAIMS: The Contractor shall be responsible for all third-party claims, and for costs or injuries incurred by a third party which result from the operations of the Contractor, or its performance under the Contract.

72) GUARANTEE: Should any failure of the work occur within a period of one year after recordation of the notice of completion of the project or portions thereof or within any designated warranty period, which can be attributed to faulty materials, poor workmanship, or defective equipment, the Contractor shall promptly make the needed repairs at Contractor's expense.

The County is hereby authorized to make such repairs if the Contractor fails to make or undertake with due diligence the aforesaid repairs within ten (10) days after Contractor is given written notice of such failure and without notice to the surety provided, however, that in case of emergency where, in the opinion of the County, delay would cause serious loss or damages, or a serious hazard to the public, the repairs may be made or lights, signs, and barricades erected, without prior notice to the Contractor or surety, and the Contractor shall pay the entire costs thereof.

73) ASSIGNMENT OF ANTITRUST ACTIONS: Pursuant to Section 4552 of the Government Code of the State of California, the following provisions shall be a part of this Contract:

In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body 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. Sec. 15), or under 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, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor without further acknowledgment by the parties.

74) LEGAL ADDRESS OF THE CONTRACTOR: Both the address given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, letters, notices, or other articles or communications to the Contractor may be mailed, transmitted electronically or delivered. The mailing, electronic transmission, or delivery to either of these places shall be deemed sufficient notice thereof upon the Contractor. Nothing herein contained shall be deemed to preclude the service of any drawing, letter, notice, article, or communication to, or upon, the Contractor or Contractor's representative personally. The address named in the proposal may be changed at any time by written notice from the Contractor to the Owner's Representative.

75) SURVEYS: When set forth in the Contract Documents that the Contractor is to provide all staking and engineering services, the Contractor shall be responsible to do all necessary staking and engineering services to layout and control the work to the elevations, lines, and dimensions shown on the plans. Any deviations must receive prior written acceptance of the Owner's Representative. All staking and engineering services affecting the line or elevation of underground drainage, sewers, or utilities, and all other work within public rights of way or easements shall be performed by or under the direction and supervision of a Registered Civil Engineer or Licensed Land Surveyor, licensed by the state of California.

The Contractor shall keep the Owner's Representative informed, at least two working days in advance, of the times and places at which Contractor will need lines, elevations, and reference points. Unless authorized by the Owner's Representative, any work done without line and grade will be done at the Contractor's risk. The Contractor shall be responsible for the accuracy of Contractor's own layout work, and shall be liable for the preservation of all established lines and grades. Stakes damaged or destroyed by the operations of the Contractor will be replaced at Contractor's expense.

76) MATERIALS OR EQUIPMENT SPECIFIED BY NAME: When any materials or equipment is indicated or specified by patent or proprietary name or by the name and catalogue number of the manufacturer, it shall be considered as used for convenience in describing the material or equipment desired. The use of an alternative material or equipment which is of equal quality and of the required characteristics for the purpose intended may be permitted. Request for such substitution shall be made in writing by the Contractor within thirty (30) days of the Notice to Proceed. Failure by the Contractor to request substitution within thirty (30) days of the Notice to Proceed constitutes an agreement by Contractor to furnish only the materials or equipment listed in the Contract Documents. Until and unless such substitutions are accepted by the Owner's Representative, no deviations from

the specifications shall be allowed. The burden of proof as to the quality and suitability of the alternative shall be upon the Contractor. The County shall be the sole judge as to the quality and suitability of alternative materials or equipment, and its decision shall be final.

77) PROPERTY RIGHTS IN MATERIAL: Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used, after they have been installed, attached, or affixed to the work, but all such materials shall be the property of the Contractor and the County jointly as their interest may appear, and cannot be removed from the work without the consent of the County.

78) CONTRACTOR'S EQUIPMENT: The Contractor shall provide adequate and suitable equipment and means of construction to meet all the requirements of the work, including completion within the time allotted. Only equipment suitable to produce the quality of work required will be permitted to operate on the project, and specific types of equipment may be requested on component parts of the work.

In any case where the use of a particular type or piece of equipment has been banned, or in cases where the Owner's Representative has condemned for use on the work, any piece or pieces of equipment, the Contractor shall promptly remove such equipment from the site of the work. Failure to do so within a reasonable time may be considered a breach of contract.

79) MISCELLANEOUS PROVISIONS: This Contract shall bind and inure to the heirs, devisees, assignees, and successors in interest of Contractor, and to the successors in interest of County, in the same manner as if such parties had been expressly named herein.

If any claim or dispute arises between the parties, the claim or dispute shall first be submitted to mediation utilizing the services of a neutral mediator. If the parties cannot agree upon the selection of a neutral mediator, the matter shall be submitted to Judicial Arbitration and Mediation Services for the selection of a neutral mediator. The parties shall share equally the costs associated with the mediation.

This Contract shall be governed by the laws of the State of California.

If any one or more of the provisions contained in the Contract should be invalid, illegal, or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired thereby.

This Contract constitutes the full and complete understanding of the parties, and supersedes any previous agreements or understandings, oral or written, with respect to the subject matter hereof. The Contract may only be modified by a written instrument signed by both parties.

Contractor hereby assigns to County all its first-tier subcontracts now or hereafter entered into by Contractor for performance of any part of the work. The assignment will be effective upon acceptance by County in writing, and only as to those subcontracts which County designates in writing. Such assignment is part of the consideration to County for entering into the Contract with Contractor, and may not be withdrawn.

80) PUBLIC CONTRACT CODE SECTION 20104, ET SEQ.:

Public Contract Code section 20104, et seq., requires that the following language be set forth in the specifications:

§ 20104 Application of article; provisions included in plans and specifications

- (a) (1) This article applies to all public works claims of three hundred seventy-five thousand dollars (\$375,000) or less which arise between a contractor and a local agency.
- (2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.
- (b) (1) "Public work" has the same meaning as in Sections 3100 and 3106 of the Civil Code, except that "public work" does not include any work or improvement contracted for by the state or the Regents of the University of California.
- (2) "Claim" means a separate demand by the contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public work 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 local agency.
- (c) The provisions of this article or a summary thereof shall be set forth in the plans or specification for any work which may give rise to a claim under this article.
- (d) This article applies only to contracts entered into on or after January 1, 1991.

§ 20104.2. Claims; requirements; tort claims excluded

For any claim subject to this article, the following requirements apply:

- (a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.
- (b) (1) For claims of less than fifty thousand dollars (\$50,000), the local agency shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.
- (2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.
- (3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.
- (c) (1) For claims of over fifty thousand dollars (\$50,000) and less than or equal to three hundred seventy-five thousand dollars (\$375,000), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

- (d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.
- (e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.
- (f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

§ 20104.4. Civil action procedures; mediation and arbitration; trial de novo; witnesses

The following procedures are established for all civil actions filed to resolve claims subject to this article:

- (a) Within 60 days, but no earlier than 30 days, following the filing of responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.
- (b) (1) 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 Code of Civil Procedure, notwithstanding Section 1141.11 of that 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 subdivision consistent with the rules pertaining to judicial arbitration.

(2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(3) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(4) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

§ 20104.6. Payment on undisputed portion of claim; interest on arbitration awards or judgments

- (a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.
- (b) In any suit filed under Section 20104.4, the local agency 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 a court of law.

SUPPLEMENTAL CONDITIONS

1) **TIME OF COMPLETION**. The Contractor shall complete all or any designated portions of the work called for under the contract in all parts and requirements within 243 calendar days (except as modified in the technical specifications). The contractor shall submit a time line for construction within 10 working days upon award of the contract. Contract time shall begin five (5) days after the date of dispatch of the Notice to Proceed.

It is the intent of the County to minimize disruptions to ongoing County operations during construction projects. A total of 243 calendar days have been allowed for this project.

The bidding and construction schedule for this project is as follows:

January 15, 2020 – February 25, 2020	Bidding Period
February 25, 2020	Bid Opening
March 10, 2020	Contact Award (Anticipated)
March 11, 2020	Contract Notice to Proceed
April 1, 2020 – November 30, 2020	Construction period (Anticipated)

For the purpose of computing liquidated damages all days in excess of the allowed number of construction days, that the contract is in the construction phase, shall be considered in excess of the allowed number of calendar days for the overall project.

2) **LIQUIDATED DAMAGES**. Time is of the essence in this contract. It is agreed by the parties to the contract that in case all the work called for under the contract in all parts and requirements is not finished or completed within the number of calendar days as set forth in the Special Conditions, damage will be sustained by the County, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the County will sustain in the event of and by reason of such delay; and it is therefor agreed that the Contractor will pay to the County the sum set forth below per day for each and every calendar day's delay in finishing the work in excess of the number of calendar days prescribed; and the Contractor agrees to pay said liquidated damages herein provided for, and further agrees that the County may deduct the amount thereof from any moneys due or that may become due the Contractor under the contract.

If adverse weather conditions are the basis for a Claim for additional time, such claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated and that weather conditions had an adverse effect on the critical path schedule.

Claims due to adverse weather, when approved, shall be excusable but not compensable.

It is further agreed that in the event the Contractor fails to complete work and all requirements under this. Agreement within the number of calendar days specified, the County shall have the right (but not the obligation) to increase the number of calendar days, as the County may in its sole discretion deem best to serve its interests.

The Contractor will be granted an extension of time and will not be assessed with liquidated damages for any portion of the delay in completion of the work beyond the time named in the Special Conditions for the completion of the work caused by acts of God or of the public enemy, fire, storms, floods, tidal waves, earthquakes, shortage of materials and freight embargoes, provided that the Contractor shall notify the Engineer in writing of the causes of delay within fifteen (15) days from the

beginning of any such delay. The Engineer shall ascertain the facts and the extent of the delay, and his findings thereon shall be final and conclusive.

The Contractor shall pay to the County of San Benito a sum of \$500 per day for each and every calendar day's delay in finishing the work in excess of the number of calendar days prescribed in the Time of Completion. Completion of the project includes correction of any punch list items identified by the Project Design Team.

3) FACILITIES WITH ASBESTOS CONTAINING MATERIALS The County of San Benito has conducted limited surveys of its facilities to determine the presence of Asbestos Containing Materials (ACM).

The contractor shall be responsible for ensuring that any subcontractors, workmen, or others associated with the work on this project have been notified of the presence of asbestos containing materials at the construction site if known, and have been properly instructed to approach all work with caution. If during the course of construction, materials are discovered that are suspected to contain ACM, the contractor shall stop work and notify the County project manager immediately. Within one (1) week of the project manager's notification to the Occupational Safety and Health Division (OSH) of the County, material will be sampled and the results posted at the construction site. Construction shall not resume until approval to proceed has been obtained from OSH. The time accrued during the period when the contractor first notifies the County of a bona fide suspicion that a project area contains ACM until the time when construction is allowed to proceed, shall not count towards the required time of completion as indicated in Section 1 of the Supplemental Conditions, provided the contractor is unable to perform work as specified during the delay and all other provisions of the specifications.

The contractor shall be responsible for informing all subcontractors, workmen or other persons associated with the project of the contents of this notification letter and any special safety precautions to be taken. If no notification letter is attached, then either the building area has not been surveyed or no ACM have been detected in areas sampled. The contractor shall bring any questions or concerns regarding ACM to the immediate attention of the County project manager.

Asbestos notification letters are included in these bid documents for any ACM previously discovered in the area of construction. The asbestos notification letter identifies areas that have been surveyed for asbestos. However, it should be noted that the surveys conducted are not comprehensive wall-to-wall surveys. Any materials not surveyed and noted within the letters may be suspect to contain asbestos.

Under no circumstances shall a contractor remove asbestos on County facilities, unless that contractor is properly licensed and has been specifically hired by the County for the sole purpose of asbestos abatement as directed by the County's Occupational Safety & Health Division.

4) SAFETY REQUIREMENTS ON ALL COUNTY PROJECTS All General or Prime Contractors will be responsible for their Employees, and subcontractors. It will be up to them to enforce all safety regulations set forth by the County and Cal-OSHA. This will include all safety ware and equipment necessary to provide a safe work environment for all workers and the public in and around the job site.

1. The use of safety ware and equipment, such as eye protection, ear protection, and other required safety equipment would be strictly enforced.
2. Work areas will be marked off and safe paths provided for county employees and the general public.
3. Noise and dust will need to be contained and kept to a minimum when working in occupied areas, and may require after hours work.
4. When work above the floor or ground is required, proper use of ladders and safety harness or railing will be enforced.
5. All welding, cutting or brazing will require a fire-watch with a fire extinguisher.

6. All Contractors are responsible for their equipment and must ensure that it is safe and in good working order. All electrical equipment to be used on site will be checked by the Project Manager.
7. All Contractors are required to clean up their work area daily. Materials not used will be stored neatly or removed from the site.
8. Material Safety Data Sheets for any materials used on the project are required per OSHA standards. **No storage or disposal of hazardous materials on site is allowed.**
9. For any work site/facility that is equipped with a security system, or that has doors that must remain locked, the entering of this site/facility or shutdown of the security system will need to be authorized by the Project Manager and/or the Building Maintenance Superintendent.
10. The Project Manager will explain all policies and procedures regarding emergency alarms and exits and will also give a tour of the fire exits.
11. A dress code is required within the county facilities. Work attire will be neat and clean, and will meet OSHA requirements. No t-shirts, shorts, or open-toed shoes will be permitted.
12. The County of San Benito has all non-smoking facilities. Smoking is permitted only in designated areas outside of work site.



**COUNTY OF SAN BENITO
STATE OF CALIFORNIA**

THIS CONTRACT, made and entered into this ____ day of _____, 20 between County of San Benito, a political subdivision of the State of California, hereinafter referred to as County, and _____, hereinafter referred to as Contractor;

WHEREAS, the San Benito County Board of Supervisors caused plans and specifications for the work hereinafter mentioned to be prepared, and approved and adopted the plans and specifications; and

WHEREAS, the San Benito County Board of Supervisors caused to be noticed for the time and in the manner required by law a Notice inviting sealed Bids for the performance of the work described in the adopted plans and specifications; and

WHEREAS, Contractor, in response to the Notice, submitted a sealed Bid for the performance of the work specified in the adopted plans and specifications to the San Benito County Board of Supervisors within the time and in the manner specified in the Notice; and

WHEREAS, in the manner provided by law, the San Benito County Board of Supervisors received, publicly opened and canvassed the Bids submitted in response to the Notice, including the Bid submitted by Contractor; and

WHEREAS, Contractor was the lowest responsive, responsible Bidder for the performance of said work, and the San Benito County Board of Supervisors, as a result of the canvass of Bids submitted, determined and declared Contractor to be the lowest responsive, responsible Bidder for the work and awarded to it a contract therefore.

NOW, THEREFORE, in consideration of the above, it is mutually agreed between the parties hereto as follows:

1. The CONTRACTOR will commence and complete the construction of the following public work project:

NEW BEHAVIORAL HEALTH CENTER – MODULAR BID #PWB-1810

2. The CONTRACTOR shall do all of the work and furnish all of the materials, supplies, tools, equipment, labor, and other services necessary to construct and complete in a good, workmanlike and substantial manner and to the COUNTY'S satisfaction, the project as described in the Invitation for Bids package, including all of the CONTRACT DOCUMENTS.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 5 calendar days after the date of the Notice To Proceed and will complete the same within 60 calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all of the work described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of _____ (\$_____).

5. The term "CONTRACT DOCUMENTS" means and includes the following, all of which documents are incorporated herein by reference:
- a. INVITATION FOR BIDS "THE BID PACKAGE" INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - (1) INVITATION FOR BIDS
 - (2) CONTRACTING AND PROCUREMENT REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - (a) NOTICE TO CONTRACTORS
 - (b) INSTRUCTIONS TO BIDDERS
 - (c) GENERAL CONDITIONS
 - (d) SUPPLEMENTAL CONDITIONS
 - (3) SPECIFICATIONS AND REQUIREMENTS
 - (4) PLANS
 - (5) ADDENDA:
 - No. _____, dated _____, 20_____
 - No. _____, dated _____, 20_____
 - b. THE ACCEPTED BID INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - (1) SIGNATURE SHEET
 - (2) BID SCHEDULE
 - (3) NAMES AND TITLES FORM
 - (4) BIDDER'S BOND
 - (5) REFERENCE LIST
 - (6) SUBCONTRACTOR LIST
 - (7) NON-COLLUSION AFFIDAVIT
 - (8) STATEMENT OF COMPLIANCE
 - (9) BIDDER QUALIFICATIONS
 - (10) GUARANTY
 - (11) CERTIFICATE AS TO WORKER'S COMPENSATION
 - (12) AFFIDAVIT CONCERNING EMPLOYMENT OF UNDOCUMENTED ALIENS
 - c. NOTICE OF AWARD
 - d. CONTRACT, SIGNED BY THE COUNTY AND THE CONTRACTOR

- e. PERFORMANCE BOND
- f. PAYMENT BOND
- g. NOTICE TO PROCEED
- h. FUTURE CHANGE ORDERS

All CONTRACT DOCUMENTS are intended to cooperate, so that any work called for in one and not mentioned in another is to be executed the same as if mentioned in all. However, should there be any conflict between the terms of this instrument and the CONTRACTOR'S Bid, then this instrument shall control. It is further expressly agreed by and between the parties hereto that should there be any conflict between the terms of this instrument and the CONTRACTOR'S Bid, then this instrument shall control and nothing herein shall be considered as an acceptance of the said terms of the Bid conflicting herewith. Where the specific terms and conditions in any of the referenced CONTRACT DOCUMENTS conflict with general terms and conditions in any referenced CONTRACT DOCUMENTS, the more specific terms and conditions shall be deemed to control. However, the general terms and conditions in any referenced CONTRACT DOCUMENTS shall remain in full force and effect, to the extent they do not conflict with the specific terms and conditions in any referenced CONTRACT DOCUMENTS.

- 6. The COUNTY will pay to the CONTRACTOR in the manner and at such times set forth in the CONTRACT DOCUMENTS such amounts as required by the CONTRACT DOCUMENTS.
- 7. In lieu of the COUNTY retaining a portion of progress payments due the CONTRACTOR, the CONTRACTOR may elect to deposit qualifying securities equivalent to the amount to be withheld. Upon such deposit under an escrow agreement substantially in the form specified in section 22300(e) of the Public Contracts Code, the funds shall be released.
- 8. Eight (8) hours of labor shall constitute a legal day's work, and the CONTRACTOR or any subcontractor under him, in the performance of the contract, shall not require more than eight (8) hours of labor in any calendar day, or more than forty (40) hours of labor in any calendar week, from any person employed by the CONTRACTOR in the performance of the work under this Contract, except as permitted under the provisions of Section 1815 of the Labor Code of the State of California. The CONTRACTOR shall forfeit, as penalty to the County, twenty-five dollars (\$25.00) for each worker employed by the CONTRACTOR or any subcontractor under the CONTRACTOR in the performance of the contract for each calendar day during which any worker is required or permitted to labor more than eight (8) hours and for each calendar week during which any worker is required or permitted to labor more than forty (40) hours, in violation of the provisions of such Labor Code.
- 9. The Contractor and subcontractors shall comply with the requirements of Labor Code sections 1777.5 and 1777.6 in the employment of apprentices. 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.
- 10. Pursuant to Section 1770 et seq. of the California Labor Code, the CONTRACTOR shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. The statement of prevailing wages appearing in the General Prevailing Wage Rates, as established by the California Department of Industrial Relations, is hereby specifically referred to and by this reference is made a part of this contract. Copies of the Prevailing Wage Scale are available at the following website: http://www.dir.ca.gov/DLSR/statistics_research.html#PWD. Those copies shall be made available to any interested party upon request. Failure to pay such prevailing wages shall subject the employer to the penalties set forth in Labor Code section 1775. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which the worker was paid less than the prevailing wage rate shall be paid to each worker by the

CONTRACTOR or subcontractor. An error on the part of the COUNTY does not relieve the CONTRACTOR or any subcontractor from responsibility for payment of the prevailing rate of per diem wages and penalties pursuant to Labor Code sections 1770 through 1775.

11. The CONTRACTOR and each subcontractor must keep accurate payroll records of employees on public contracts and certify these records upon request, pursuant to Section 1776 of the California Labor Code and implementing regulations set forth in Title 8, Division 1, Chapter 8, Subchapter 3, sections 16000 and 16400 through 16404 of the California Code of Regulations. Payroll records must be made available for inspection by employees, the County, and the Division of Labor Standards Enforcement. The CONTRACTOR shall be responsible for compliance by the CONTRACTOR'S subcontractors.
12. The CONTRACTOR shall be subject to the examination and audit of the State auditor, at the request of the County or as part of any audit of the County, for a period of three (3) years after final payment under the contract.
13. During the performance of this Contract, Contractor agrees as follows:
 - a. During the performance of this Contract, Contractor and its subcontractors shall not unlawfully discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical disability, medical condition (cancer related), marital status, pregnancy, age (over 18), sex, sexual orientation, veteran's status or any other non-merit factor unrelated to job duties. Contractor and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.
 - b. The Contractor shall, in all solicitations or advertisements for employees by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, physical or mental disability, medical condition (cancer related), marital status, pregnancy, sex, sexual orientation, age (over 18), veteran status, or any other non-merit factor unrelated to job duties.
 - c. The Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under this Contract.
14. The CONTRACTOR offers and agrees to assign to the COUNTY 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 California Business and Professions Code), arising from purchases of goods, services, or materials pursuant to this CONTRACT. This assignment shall be made and become effective at the time the COUNTY tenders final payment to the CONTRACTOR, without further acknowledgment by the parties.
15. This CONTRACT shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

16. The following individuals are the parties CONTRACT Administrators:

COUNTY'S Contract Administrator:

Name: Harry Mavrogenes
Title: RMA Director
Address: 2301 Technology Parkway
Hollister, CA 95023
Phone: 831-636-4170
Fax: 831-636-4176
E-mail: hmavrogenes@cosb.us

CONTRACTOR'S Contract Administrator:

Name: _____
Title: _____
Address: _____

Phone: _____
Fax: _____
E-mail: _____

This CONTRACT shall not be effective unless and until approved by a duly authorized representative of County of San Benito and San Benito County Counsel.

IN WITNESS WHEREOF, County of San Benito and Contractor have caused this Agreement to be signed as of the day and year first above written.

CONTRACTOR (FIRM)

Date _____
Address: _____

Phone: _____
Fax: _____

COUNTY OF SAN BENITO

Date _____
Harry Mavrogenes, RMA Director

APPROVED AS TO LEGAL FORM:
San Benito County Counsel's Office

Date _____
G. Michael Ziman, Deputy County Counsel



PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, THAT WHEREAS the County of San Benito, State of California, hereinafter designated as the "Obligee," has on _____, 20____, awarded to _____ hereinafter designated as "Principal," a contract for the construction of _____ (Contract No.) _____, and

WHEREAS, said Principal is required to furnish a bond in connection and with said contract, providing that if said Principal, or any of his or its subcontractors, shall fail to pay for any materials, provisions, or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, the Surety on this bond will pay the same to the extent hereinafter set forth:

NOW, THEREFORE, We, the Principal, and _____ as Surety, are held and firmly bound unto the Obligee in the penal sum of _____ lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, or any of his or its subcontractors, shall fail to pay any of the persons named in Section 3181 of the Civil Code of the State of California, or any amounts due under the Unemployment Insurance Code with respect to such work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department of the State of California, from the wages of employees of the Principal and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code of the State of California with respect to such work or labor, as required by the provisions of Section 3225 and following of the Civil Code of the State of California, then said Surety will pay the same in, or to an amount not exceeding the amount, hereinabove set forth, and also will pay, in case suit is brought upon this bond, reasonable attorneys' fees to such claimant and to the Obligee as shall be fixed by the Court.

This bond is issued pursuant to Civil Code Sections 3247 through 3252, inclusive, of the State of California, and shall inure to the benefit of any and all persons, companies, and corporations named in Section 3181 of said Civil Code so as to give a right of action to them or their assigns in any suit brought upon this bond.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or the specifications accompanying the same shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract, or to the work or to the specifications. Said Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above-bounden parties have signed this instrument under their seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed, and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

(SEAL)

Principal

Signature for Principal

Title of Signatory

(SEAL)

Surety

Signature of Surety

Title of Signatory

(This bond must be submitted in sets of four, each bearing original signatures. The signature of the Attorney-In-Fact for the Surety must be acknowledged by a Notary Public. These bonds must be accompanied by a current Power of Attorney appointing such Attorney-In-Fact.)



Bond Number:
Premium:

FAITHFUL PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS, that WHEREAS the County of San Benito, State of California, hereinafter designated as the "Obligee," has on _____, 20____, awarded to _____ hereinafter designated as the "Principal," a contract for the construction of _____

_____ (Contract No. _____), and

WHEREAS said Principal is required, under the terms of the Contract, to furnish a bond for the faithful performance of said Contract:

NOW, THEREFORE, We, the Principal, and _____ as Surety, are held and firmly bound unto the Obligee in the penal sum of _____ Dollars (\$_____) lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, if the above bounden 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 faithfully perform the covenants, conditions, and agreement in the said Contract, and any alterations 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 Obligee, 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 Principal and Surety, in the event suit is brought on this bond, will pay to the Obligee such reasonable attorneys' fees as may be fixed by the Court.

As a condition precedent to the satisfactory completion of the said Contract, the above obligation in said amount shall hold good for a period of one (1) year after the completion and acceptance of the said work, during which time if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns shall fail to make full, complete, and satisfactory repair and replacements or totally protect the said Obligee from loss or damage made evident during said period of one (1) year from the date of acceptance of the work, and resulting from or caused by defective materials or faulty workmanship in the prosecution of the work done, the above obligation in the said sum shall remain in full force and effect. However, anything in this paragraph to the contrary notwithstanding, the obligation of the Surety hereunder shall continue so long as any obligation of the Principal remains.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or the specifications accompanying the same, shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract, or to the work or to the specifications. Said Surety hereby waives the provisions of Section 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above bounden parties have signed this instrument under their seals this _____ day of _____, 20____, 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.

(SEAL)

Principal

Signature for Principal

Title of Signatory

(SEAL)

Surety

Signature of Surety

Title of Signatory

(The signature of the Attorney-In-Fact for the Surety must be acknowledged by a Notary Public, and this bond must be accompanied by a current Power of Attorney appointing such Attorney-In-Fact. This bond must be submitted in sets of four, each bearing original signatures.)

PROCUREMENT REQUIREMENTS

COUNTY OF SAN BENITO RESOURCE MANAGEMENT AGENCY



Permit Center • 2301 Technology Pkwy. • Hollister, CA 95023-3840
831.636.4170 • 831.636.4176 fax • www.cosb.us

NOTICE TO CONTRACTORS

San Benito County New Behavioral Health Center – Site Work Package

PROJECT: PWB-1810

Sealed proposals shall be delivered to the San Benito County Resource Management Agency, 2301 Technology Parkway, Hollister, California, 95023-3840, no later than **2:00 P.M. on Tuesday, February 25, 2020**. Bids will be opened and will be publicly read in the **RMA conference room, 2301 Technology Parkway, Hollister, California at 2:00 P.M.** or thereafter. This project is for licensed contractors with a Type B license. The Contractor shall complete all or any designated portions of the work called for under the contract in all parts and requirements within 243 calendar days (except as modified in the technical specifications). The County of San Benito and its Board of Supervisors reserves the right to reject any or all bids received as the public good may require.

There will be two mandatory pre-bid meetings, only one of which needs to be attended by prospective bidders. The meeting(s) will take place at 1131 San Felipe Road, Hollister, CA 95023, both will start at 10AM. The first meeting will take place on **January 29, 2020** and the second will take place on **February 5, 2020**.

Each contractor shall include in their bid all labor, tools, and materials for a complete and working project for each trade component in conformance with the intent shown on the plans and specifications and specified herein.

Plans, Specifications and Proposal forms to be used for bidding on this project can only be obtained by going to the San Benito County website at www.cosb.us. On the right-hand side, under Quicklinks, you will see "Bids & RFPs". Click on this link, and go down the page until you see "Listing of Advertised Projects". Click on this link and it will take you to E-Bid Board, where you will find the project name. Click on the name to see the IFB, plans and specs for this job. If you have any questions, please call Public Works at (831) 636-4170.

Prospective bidders must be fully qualified, licensed, certified, and insured to perform the work requested. All work performed must meet all current applicable laws and regulations.

Each bidder must submit a bid proposal for the project for which they intend to bid to the Administrative Office on the standard forms enclosed. Said proposal shall be accompanied by a cashier's check, a certified check or bidder's bond of ten percent (10%) of the amount of the bid submitted, to be made payable to the County of San Benito. Bid bonds shall be issued by a corporate surety duly admitted and authorized to issue bonds and undertakings by the State of California.

Pursuant to Section 1700, and following, of the California Labor Code, the Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages are available at the following web site: http://www.dir.ca.gov/DLSR/statistics_research.html#PWD. Those copies shall be made available to any interested party upon request. The Contractor shall forfeit, as penalty, to the County of San Benito, fifty dollars (\$50.00) for each calendar day or portion thereof, for each workman paid less than the stipulated prevailing rates for any work done under the contract by it or by any subcontractor under it, in violation of the provisions of such Labor Code.

County will be the sole judge as to the technical acceptability of any proposals and any award will be as determined most advantageous to the County considering such factors as completeness and responsiveness to Request for Proposal, experience, references, and anticipated costs. The County reserves the right to reject any or all proposals or parts thereof and to waive any informality or irregularity in any proposal.

Insurance requirements for the project shall be the amounts set forth in the General Conditions, Section 19, unless expressly modified below:

Commercial General Liability Insurance	\$ _____
All Risk Property Coverage or Builders Risk Insurance	\$ _____
Business Automobile Liability Insurance	\$ _____

PROJECT DIRECTORY

PROJECT NAME:	San Benito County New Behavioral Health Center – Site Work Package
OWNER:	County of San Benito Resource Management Agency 2301 Technology Parkway Hollister, CA 95023
PROJECT MANAGER:	Damon Felice, LEED AP County of San Benito
ARCHITECT:	Ken Yamauchi HY Architects
CIVIL ENGINEER:	Anne Hall, RCE, QSD San Benito Engineering & Surveying, Inc
LANDSCAPE ARCHITECT:	James Bishop BFS landscape Architects
STRUCTURAL ENGINEER:	Brian Reil, S.E., LEED AP Buehler Engineering
ELECTRICAL ENGINEER:	Donny Lee, P.E. EDGE Electrical Consulting
SECURITY:	Rizaldo Espinoza Marquis Systems Inc.

INSTRUCTIONS TO BIDDERS

1) All portions of the Bid Proposal must be completed before the bid is submitted. Failure to do so may result in the bid being rejected as nonresponsive. Attached to and submitted with this Bid Proposal, bidder must provide: (1) the Bidders Bond; (2) Names and Titles Form; (3) Noncollusion Affidavit, completed and signed by bidder; (4) Statement of Compliance; (5) Designation of Subcontractors; (6) Bidder's Qualifications; (7) Guaranty; (8) Contractor's Certificate as to Worker's Compensation; and, (9) Affidavit Concerning Employment of Undocumented Aliens. Failure to submit all required documents may result in the bid being rejected as nonresponsive.

2) An original of the Bid Proposal shall be filled in and submitted as the bid.

3) County of San Benito has obtained report(s) that may contain facts that may materially effect bidders' bids. County of San Benito has constructed other public works projects throughout the County of San Benito, and obtained reports and other information in the course of the design and construction of those other public works construction projects, all of which may contain facts that may materially effect bidders' bids. Bidders are strongly encouraged to inspect applicable County of San Benito reports, records and documents. Said reports and documents will be made available upon written request at the Administrative Office, 481 Fourth Street, Hollister, California, 95032 for inspection and copying at bidders' sole cost and expense, during normal working hours.

4) If a pre-bid conference has been scheduled at the site of the work, all bidders, subcontractors, material suppliers, and others who may be working on the work of improvement are strongly encouraged to attend this pre-bid conference. Due to the facts and circumstances of this particular project, the on-site pre-bid conference may be the only opportunity to conduct the pre-bid investigation of the site and satisfy the pre-bid obligations set forth in these Contract Documents. If a bidder (or others) attend the entirety of a scheduled pre-bid on-site conference and need additional time to complete their investigation of the site or other pre-bid obligations set forth in these Contract Documents, bidder must notify the County of San Benito in writing, via certified or registered mail, within three days of the on-site pre-bid conference, to request additional time to complete its investigation of the site. The written request must include an estimate of the amount of additional time required by bidder at the site. County of San Benito retains discretion to determine additional time requirements, if any.

5) Investigations of subsurface conditions or otherwise, are made for the purpose of design, and the County of San Benito assumes no responsibility whatsoever with respect to the sufficiency or accuracy of borings, the log of test borings, or other preliminary investigations, or of the interpretation thereof, and there is no guaranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or any part of it, or that unanticipated conditions may not occur. When a log of test borings or other report is made available to Contractor or included in the Contract Documents, it is expressly understood and agreed that said log of test borings or other reports does not constitute a part of the Contract, and represents only an opinion of the County of San Benito as to the character of the materials to be encountered, and is made available or included in the Contract Documents only for the convenience of the bidders. Bidders must satisfy themselves, through their own investigation, as to conditions to be encountered.

6) In addition to other minimum qualifications, the County of San Benito has determined that the successful low bidder must demonstrate to the satisfaction of the County of San Benito, the following minimum experience to be qualified to perform the work described in the Contract Documents:

- a. Have possessed a valid, active and in good standing, State of California Department of Consumer Affairs, Contractor's License Board license, appropriate for trade being bid, for a minimum of five (5) continuous years prior to the date of bid opening.

- b. Not have any pending disciplinary proceedings or investigations by the Contractor's State License Board.
- c. Currently (as of the date of bid opening) or within the past year, not have any suspensions, disbarments, or similar proceedings (including stipulated agreements), restricting, limiting or prohibiting Bidder from bidding or performing other public works projects for any other public agency.

7) Following the opening of bids, the County of San Benito may request in writing that the apparent low bidder complete a Contractor Qualifications Questionnaire and furnish all required supporting documentation to enable the County of San Benito to determine whether the apparent low bidder is qualified to perform the work described in the Contract Documents. By submission of a bid, Bidder agrees to complete the Contractor Qualifications Questionnaire, furnish all required attachments, sign the Contractor Qualifications Questionnaire, all in strict conformance with the requirements of the Contract Documents and Contractor Qualifications Questionnaire, and return to the County of San Benito within ten (10) days of County of San Benito's written request. If bidder fails or refuses to complete the Contractor Qualifications Questionnaire, furnish all required attachments, sign the Contractor Qualifications Questionnaire, or return it to the County of San Benito within ten (10) days of date of dispatch of County of San Benito's written request, bidder may not be considered for award of the contract, and further, bidder agrees that the County of San Benito may either award the work to another bidder or call for new bids. In such event, the bidder shall be liable to the County of San Benito for the difference between the amount of the disqualified bid and the larger amount for which the County of San Benito procures the work plus all of the County of San Benito's costs, damages, expenses, and liabilities.

8) If for any reason the County of San Benito elects to not award the contract to the apparent low bidder, the County of San Benito may request in writing that the apparent second lowest bidder complete the Contractor Qualifications Questionnaire and furnish all required supporting documentation to enable the County of San Benito to determine whether the second low bidder is qualified to perform the work described in the Contract Documents. If for any reason the County of San Benito elects to not award the contract to the apparent second lowest bidder, the County of San Benito may request the third lowest bidder complete the Contractor Qualifications Questionnaire and furnish all required supporting documentation, and so on.

9) If the County of San Benito receives from a bidder within the time set forth in these Contract Documents, a complete Contractor Qualifications Questionnaire and all required supporting documentation as required by the Contract Documents, and if the County of San Benito determines that a bidder is not qualified to perform the work required by the Contract Documents, and if the County of San Benito elects to not award the Contract to that bidder, the County of San Benito will promptly return that bidder's bid security.

10) Bid protests shall be filed in writing with the County Administrative Officer, County of San Benito, Administrative Office, 481 Fourth Street, Hollister, California, 95023, by certified or registered mail, not later than three (3) days after the bid opening or, if the protest is based on the selection of the apparent lowest responsible bidder, not later than three (3) days after selection of the apparent lowest responsible bidder. The protest shall specify the reasons and facts upon which the protest is based.

BID PROPOSAL

For: **NEW BEHAVIORAL HEALTH CENTER – SITE WORK PACKAGE**

Name of Bidder _____

Business Address _____

Place of Residence _____

Telephone / Fax : () / ()

Email: _____

DIR PWC#: _____

1) All portions of the Bid Proposal must be completed before the bid is submitted. Failure to do so may result in the bid being rejected as nonresponsive. Attached to and submitted with this Bid Proposal, bidder must provide (1) the Bidders Bond; (2) Names and Titles Form; (3) completed Noncollusion Affidavit signed by bidder; (4) Statement of Compliance; (5) Designation of Subcontractors; (6) Bidder's Qualifications; (7) the Guaranty; (8) Contractor's Certificate as to Worker's Compensation; and, (9) Affidavit Concerning Employment of Undocumented Aliens. Failure to submit all required documents may result in the bid being rejected as nonresponsive.

2) One copy of the Bid Proposal shall be filled in and submitted as the bid.

3) The Bidder, having the appropriate active license required by the State of California; and having carefully read and examined the plans, specifications, and all related bidding documents as prepared by Damon Felice, County of San Benito for the **SBC New Behavioral Health Center** having carefully and fully examined the site of the proposed work and all information available to bidder, and being familiar with all the conditions related to the proposed work, including the availability of materials, equipment, and labor, hereby offers to furnish all labor, materials, tools, transportation, services, and equipment necessary to complete the work of the described project in accordance with the Contract Documents, and to complete all requirements of the Contract Documents for the sums quoted in this Bid Proposal. The bidder agrees that it will not withdraw its bid within sixty (60) days after the bid deadline. Bidder agrees, if requested by County of San Benito, to complete and sign the Contractor Qualification Questionnaire, furnishing all required attachments, and return it to County of San Benito within ten (10) days of date of dispatch by County of San Benito. If the bidder is selected as the apparent lowest responsible bidder, the bidder agrees, within ten (10) days after date of dispatch of Notice of Award, to sign and deliver the Contract, and to furnish the Performance Bond, the Payment Bond, Certificates of Insurance, and other required items. If awarded the Contract, the bidder agrees to complete the work within the number of calendar days specified by the Project Manager after the date of the commencement specified in the Notice to Proceed.

4) The bidder agrees that if the bidder is selected as the apparent lowest responsible bidder, and the bidder fails to sign the Contract and furnish (1) the **Performance Bond**, (2) the **Payment Bond**, (3) **Certificates of Insurance**, and (4) **other required items** within the time limit specified in the Contract Documents, the County of San Benito may award the work to another bidder or call for new bids. In such event, the bidder shall be liable to the County of San Benito for the difference between the amount of the disqualified bid and the larger amount for which the County of San Benito procures the work plus all of the County of San Benito's costs, damages, expenses and liabilities arising from bidder's failure to sign the Contract and/or furnish the required documents.

BID SCHEDULE

I will perform the work of the **SBC New Behavioral Health Center** as set forth in the Contract Documents, prepared by the County of San Benito, for the following lump sum price:

BASE BID \$ _____

5% of BASE BID (OWNER CONTINGENCY) \$ _____

BASE BID + OWNER CONTINGENCY \$ _____

The work for the **SBC New Behavioral Health Center** specifically includes: Various building and improvements and site improvements.

The bidder acknowledges receipt of the following Addenda:

Addendum #_____, dated _____	_____	_____
	Signature	Date
Addendum #_____, dated _____	_____	_____
	Signature	Date
Addendum #_____, dated _____	_____	_____
	Signature	Date
Addendum #_____, dated _____	_____	_____
	Signature	Date

AUTHORIZED SIGNATURE OF BIDDER: _____

DATE: _____

NOTE:

Where quantities are shown they are engineers estimated quantities. Variations may occur between actual quantities and engineers estimated quantities. Bidder is responsible to calculate quantities when preparing bid. Payment will be based on lump sum bid amount(s) and no allowance will be made for variations between actual quantities and engineers estimated quantities.

BIDDER'S BOND

Know All Persons by These Presents, That we, _____

_____, As PRINCIPAL, and _____

_____,
as SURETY, are held and firmly bound unto the County of San Benito of the State of California, hereinafter called the County, in the penal sum of TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the County for the work described below for the payment of such sum in lawful money of the United States, well and truly to be made, and we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

In no case shall the liability of the surety exceed the sum of _____
_____ (\$ _____) Dollars.

THE CONDITION OF THIS OBLIGATION IS SUCH, That whereas the Principal has submitted the above mentioned bid to the County for certain construction specifically described as follows: SBC NEW BEHAVIORAL HEALTH CENTER; for which bids are to be opened at Hollister, California on February 25, 2020 @ 2:00 p.m.

NOW, THEREFORE, If the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files two bonds with the Purchasing Agent, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; or should the aforementioned contract be awarded to other than the herein named Principal, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, We have hereunto set our hands and seals on this _____ day
of _____ A.D. 20____.

_____(SEAL) _____(SEAL)

_____(SEAL) _____(SEAL)

_____(SEAL) _____(SEAL)

Surety

Principal

(Note: Signatures of those executing
for the Surety must be properly
acknowledged.)

Address

NAMES AND TITLES FORM

NAMES AND TITLES OF KEY MEMBERS OF FIRM:

(Name of person signing the bid on behalf of the bidder and all general partners, if a partnership, must be included.)

Bidder is a: (circle one)

Corporation Partnership Individual Joint Venture Other _____
(Specify)

NAME OF PRESIDENT IF A CORPORATION: _____

NAME OF SECRETARY IF A CORPORATION: _____

CALIFORNIA CONTRACTORS LICENSE(S):

Name of License(s):

Classification(s)	Number	Expiration Date
-------------------	--------	-----------------

Classification(s)	Number	Expiration Date
-------------------	--------	-----------------

(For Joint Ventures, list Joint Venture's license or licenses for all Joint Venture partners.)

The following documents are submitted with and made a condition of this bid:

Bid security in the form of _____ (fill in type of bid security)

Corporation is organized under the laws of the State of _____.

Corporate Seal:

NAMES AND TITLES FORM (continued)

NAME OF BIDDER'S FIRM: _____

Address: _____

Phone: _____

Fax: _____

Email: _____

By: _____
(Signature)

(Print or Type Name)

(Print or Type Title)

By: _____
(Signature)

(Print or Type Name)

(Print or Type Title)

(If signature is by other than the sole proprietor, general partner, or corporate officers, attach an original Power of Attorney.)

NONCOLLUSION AFFIDAVIT

TO BE SIGNED BY BIDDER AND SUBMITTED WITH BID

Pursuant to Section 7106 of the Public Contract Code,

(Name)

being first duly sworn, deposes and says that he or she is _____
(Title)

of _____,
(DBA)

the party making the foregoing bid; the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; the bid is genuine and not collusive or sham; the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, 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; 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; 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 sham bid.

Signature

STATEMENT OF COMPLIANCE

(Company Name)

(hereinafter referred to as "prospective Contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 and California Administrative Code, Title II, Division 4, Chapter 5, in matters relating to the development, implementation, and maintenance of a nondiscrimination program. Prospective Contractor agrees not to unlawfully discriminate against any employee or applicants for employment because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, sex, sexual orientation, physical and mental disabilities, or age (over forty).

I, _____
(Name of Official)

hereby swear that I am duly authorized to legally bind the prospective Contractor to the above-described certification. I am fully aware that this certification, signed on

(date)

in the County of _____, is made under the penalty of perjury under the
(County)
laws of the State of California.

(Signature)

(Print or Type Title)

SUBCONTRACTOR LIST

In compliance with the provisions of Section 4100 through 4114, inclusive, of the Public Contract Code, and any amendments thereto, each bidder shall set forth in his or her bid, **the name and location of the place of business** of 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, 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 of 1 percent of the prime contractor's total bid and the portion of the work which will be done by each subcontractor under this act. The prime contractor shall list only one subcontractor for each portion as is defined by the prime contractor in his or her bid.

Trade	1.	2.	3.
Name			
Location			
CSLB & DIR PWC #:			
Trade	4.	5.	6.
Name			
Location			
CSLB & DIR PWC #:			
Trade	7.	8.	9.
Name			
Location			
CSLB & DIR PWC #:			
Trade	10.	11.	12.
Name			
Location			
CSLB & DIR PWC #:			

BIDDER QUALIFICATIONS

This form must be completed, signed by bidder, and submitted to County of San Benito with bidder's bid. Failure to complete, sign, and submit with bidder's bid may result in bidder's bid being rejected as not responsive.

County of San Benito has determined that bidders must meet the following minimum qualifications to bid the work of improvement contemplated herein:

1. Have possessed a valid, active and in good standing, State of California Department of Consumer Affairs, Contractor's License Board license, appropriate for trade being bid, for a minimum of five (5) continuous years prior to the date of bid opening.
2. Not have any pending disciplinary proceedings or investigations by the Contractor's State License Board.
3. Currently (as of the date of bid opening) or within the past year, not have any suspensions, disbarments, or similar proceedings (including stipulated agreements), restricting, limiting or prohibiting Bidder from bidding or performing other public works for any other public agency.

I, being the _____ (insert title) of bidder herein, declare that bidder meets all of the minimum criteria set forth above.

Signature

Print Name

Date

GUARANTY
TO THE COUNTY OF SAN BENITO

The undersigned, as prime Contractor, guarantees the construction and installation of the following work included in this project:

SAN BENITO COUNTY NEW BEHAVIORAL HEALTH CENTER

Should any of the materials or equipment prove defective, due to faulty workmanship, material furnished or methods of installation or should the work or any part thereof fail to operate properly as originally intended and in accordance with the plans and specifications, due to any of the above causes, all within **one year** after the date on which this contract work is accepted by the County, the undersigned agrees to reimburse the County, upon demand, for County's expenses incurred in restoring said work to the condition contemplated in said project, including the cost of any such equipment or materials replaced and the cost of removing and replacing any other work necessary to make such replacement or repairs, or, upon demand by the County, to replace any such material and to repair said work completely without cost to the County so that said work will function successfully as originally contemplated. (Ordinary wear and tear and unusual abuse or neglect excepted).

The County shall have the unqualified option to make any needed replacement or repairs itself or to have such replacements or repairs done by the undersigned. In the event the County elects to have said work performed by the undersigned, the undersigned agrees that the repairs shall be made and such materials as are necessary shall be furnished and installed within a reasonable time after the receipt of demand from the County. If the undersigned shall fail or refuse to comply with his obligations under this guaranty, the County shall be entitled to all costs and expenses, including attorney's fees, reasonably incurred by reason of said failure or refusal.

Contractor, Name and Address

Date

By _____

Signature of Principal

CONTRACTOR'S CERTIFICATE AS TO WORKER'S COMPENSATION

(Labor Code section 1861)

Labor Code section 3700 provides, in relevant part:

"Every employer except the state shall secure the payment of compensation in one or more of the following ways:

(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.

(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure, either as an individual employer, or as one employer in a group of employers, 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 or her employees."

I certify that I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Worker's 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.

Dated: _____

Bidder's business name

By: _____

Print Name: _____

And Title: _____

AFFIDAVIT CONCERNING EMPLOYMENT OF UNDOCUMENTED ALIENS
TO BE SUBMITTED WITH BID

(Public Contract Code section 6101)

Public Contract Code section 6101 provides that,

"No state agency or department, as defined in [Public Contract Code] Section 10335.7, that is subject to this code, shall award a public works or purchase contract to a bidder or contractor, nor shall a bidder or contractor be eligible to bid for or receive a public works or purchase contract, who has, in the preceding five years, been convicted of violating a state or federal law respecting the employment of undocumented aliens.

_____(Name), being first duly sworn, deposes and says (1) that he or she is the _____(Title) of _____(DBA), the party making the foregoing bid; and (2) that the party making the foregoing bid has not, within the preceding five years, been convicted of violating a state or federal law respecting the employment of undocumented aliens.

Dated: _____

Bidder's business name

By: _____

Print Name: _____

And Title: _____

SECTION 01 11 00 SUMMARY OF WORK

PART 1 - GENERAL

a. SECTION INCLUDES

- i. Work Included – description of scope and shown on Drawings and Specifications.
- ii. Work by County or by Others
- iii. Owner (County)-furnished products.
- iv. Work Not Included
- v. Contractor's use of site.

b. WORK INCLUDED

- i. Work of this Contract is for the site-work construction of the San Benito County Modular Behavioral Health Building, based on the following general scopes of work (Work specified on construction documents dated **January 15th, 2020**, including subsequent addenda, unless otherwise indicated):
 - 1. Site Work Construction:
 - a) Grub and grade the site in preparation for a depressed perimeter foundation and concrete peer supports.
 - b) Site utilities brought to the building within 5ft of the building footprint. (Utility connections will be the responsibility of the modular building trade contractors.)
 - c) Security monitoring.
 - d) Privacy fence around staff patio.
 - e) Paving, walks, landscape, & site furnishings.
 - f) Sight lighting.
 - g) Fiber backbone from existing facility to new behavioral health center.
 - h) Trash enclosure.
 - i) Fire Alarm system within the building.
 - j) White noise system within the building.
 - k) Building signage.
 - l) Site demolition.
 - m) Exterior electrical equipment

c. WORK NOT INCLUDED

1. Depressed perimeter foundation and concrete peer supports for a modular steel frame with corrugated steel deck and light weight concrete topping. Modular company responsible for setting the onsite constructed foundation/footings.
2. Utility connections will be the responsibility of the modular building trade contractors.
3. Modular company to include installation of design-build fire sprinkler system.
4. All furniture will be Owner Furnished Owner Installed.
5. Modular company to include the design and installation of the entrance canopy & back staff patio canopy.
6. Equipment not specified in Construction Documents will be Owner Furnished Owner Installed.

a. CONTRACTOR'S USE OF SITE AND PREMISES

- i. Contractor shall have limited use of the site and premises throughout the construction period. Refer to Division 0 – General Conditions.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 11 09 CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cash Allowances.
- B. Schedule of Values.
- C. Application for Payment.
- D. Defect assessment.
- E. Non-payment for rejected Work.
- F. Change procedures.
- G. Alternates.
- H. Unit prices.

1.2 MATERIAL AND LABOR CASH ALLOWANCES

- A. Include in the Contract Sum all Allowances stated herein.
- B. Costs Included in Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts; delivery to site and applicable taxes.
- C. Funds will be drawn from Allowance amount only by written authorization of the County.
- D. At closeout of Contract, funds remaining in Allowance amount will be credited to County by Change Order.
- E. Whenever costs are more than Allowance amount, the Contract Sum will be adjusted accordingly by Change Order.
- F. Contractor Responsibilities:
 - 1. Assist Architect in selection of products and suppliers.
 - 2. Obtain proposals from suppliers and offer recommendations.
 - 3. On notification of selection by County, execute agreement with designated supplier.
 - 4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery and product handling at site.

5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for damage.

1.3 SCHEDULE OF VALUES

- A. Submit Schedule of Values.
- B. Format: Submit typed schedule based upon the attached Schedule of Values augmented by the Table of Contents of this Project Manual. Identify each line item with number and title of the major Specification Section.
- C. Include in each line item, the amount of Allowances specified in this Section.
- D. Include within each line item, a directly proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, on continuation sheet, with each Application for Payment.

1.4 NON-PAYMENT FOR REJECTED WORK

- A. Payment will not be made for any of the following:
 1. Products wasted or disposed of in a manner that is not acceptable.
 2. Products determined to be unacceptable before or after placement.
 3. Products not completely unloaded from the transporting vehicle.
 4. Products placed beyond the lines and levels of the required Work.
 5. Products remaining on hand after completion of the Work.
 6. Loading, hauling and disposing of rejected products.

1.5 CHANGE PROCEDURES

- A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the General Conditions.
- B. The Architect may issue a Price Request (PR) which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications. Contractor shall prepare and submit a detailed estimate within 14 days.
- C. Any change in the Work which involves the adjustment to Contract Sum or Contract Time shall be properly certified by the Contractor as indicated in the General Conditions of the Contract.
- D. The Contractor may propose a change by submitting a Proposed Change Order (PCO) to the Architect, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and

Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors if applicable.

- E. Stipulated Sum Change Order: Based on Price Request and Contractor's fixed price quotation or Proposed Change Order Request as approved by Architect.
- F. Time and Material/Force Account Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the General Conditions of the Contract.
- G. Maintain detailed records of Work done on Time and Material/Force Account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work as indicated in the General Conditions of the Contract.
- H. Construction Change Directive: Architect may issue a directive, signed by the County and Architect, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum or Contract Time. Promptly execute the change.
- I. Force Account Directive: Architect may issue a directive, signed by the County and Architect, to proceed with a change in the Work on a direct cost basis as indicated in the General Conditions of the Contract.
- J. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- K. All Addenda (changes and/or revisions prior to Award of Contract) and Change Orders (changes and revisions after Award of Contract) shall be approved by the Architect and the County of San Benito prior to start of construction covered by those changes and/or revisions.
- L. Promptly revise Schedule of Values and Application for Payment forms to record each authorized PCO as a separate line item and adjust the Contract Sum.
- M. Promptly revise progress schedules to reflect any changes in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change and resubmit.
- N. Promptly enter changes in Project Record Documents.

1.6 ALTERNATES

- A. An Alternate is an amount proposed by the bidder and stated on the Bid Form for certain Work defined herein that may be added to or deducted from the Base Bid amount if the County decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
- B. The cost for each Alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work.

- C. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not specifically mentioned as part of the Alternate.
- D. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.
- E. Coordinate related Work and modify surrounding Work as required to integrate the Work of each Alternate.
- F. Execute accepted Alternates under the same conditions as other Work of this Contract.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

FORM A (Sample)
Schedule of Values
Modernization/New Construction

Project:

Project Manager:

General Contractor:

Date:

Item No.	Description of Work	% of Total Contract	Total Dollar Amount Value
1	Hazardous Material Abatement	%	\$
2	Buildings Demolition and Clearing	%	\$
3	Site Work	%	\$
4	Foundation	%	\$
5	Structural Steel	%	\$
6	Rough Carpentry	%	\$
7	Custom Wood Case Work	%	\$
8	Finish Carpentry	%	\$
9	Insulation and Thermal Protection	%	\$
10	Roofing	%	\$
11	Sheet Metal Flashing and Trim	%	\$
12	Doors	%	\$
13	Windows	%	\$
14	Finish Hardware	%	\$
15	Glazing	%	\$
16	Ceramic Tile Wall Finish	%	\$
17	Acoustical Ceilings	%	\$
18	Flooring	%	\$
19	Interior Painting	%	\$
20	Exterior Painting	%	\$
21	Restrooms and Toilet Partitions	%	\$
22	Marker Boards and Tackboards	%	\$
23	Toilet and Bath Accessories	%	\$
24	Furniture and Equipment	%	\$
25	Window Shades	%	\$
26	Fire Alarm System	%	\$
27	Plumbing and Fixtures	%	\$
28	HVAC	%	\$
29	Electrical	%	\$
30	Interior Lighting	%	\$
31	Technology / Computers	%	\$
32	Security Systems	%	\$
33	Telecommunications	%	\$

34	Wall Systems		%	\$
35	Painting		%	\$
36	Stage Upgrade		%	\$
37	Kitchen Upgrade		%	\$
38	Exterior Lighting		%	\$
39	Portable Installation		%	\$
40	Fire Life Safety		%	\$
41	Elevator		%	\$
42	Closeout 5% of total		%	\$
43	Submittals		%	\$
	Totals:		%	\$

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 1 OF 4

One separate form shall be used by Contractor, each first tier subcontractor and each lower tier subcontractor. One form for each shall be used for each Change Order. One form for each, for each day shall be used for Force-Account Work.

CHANGE ORDER NUMBER: DATE:

CHANGE ORDER DESCRIPTION:

CONTRACTOR:

LABOR				
NAME	CLASSIFICATION	HOURS	RATE	TOTAL
TOTAL LABOR COSTS (Enter here and on Line 1 of Sheet 4)				

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 2 OF 4

MATERIALS	
DESCRIPTION	COST
TOTAL MATERIAL COSTS (Enter here and on Line 4 of Sheet 4)	

COST BREAKDOWN FOR CONTRACT MODIFICATION

SHEET 3 of 4

EQUIPMENT RENTAL				
SIZE & TYPE OF EQUIPMENT	IDENT. NO.	HOURS	RATE	TOTAL
TOTAL EQUIPMENT RENTAL COSTS (Enter here and on Line 8 of Sheet 4)				

SPECIALIST	
DESCRIPTION OF WORK	COST
TOTAL SPECIALIST COSTS (Enter here and on Line 11 of Sheet 4)	

COST BREAKDOWN FORM FOR CONTRACT MODIFICATION

SHEET 4 OF 4

TOTAL COSTS		
1.	TOTAL LABOR COSTS	\$
2.	15% of Line 1	\$
3.	ADD Lines 1 and 2	\$
4.	TOTAL MATERIAL COSTS	\$
5.	15% of Line 4	\$
6.	8.25% of Line 4	\$
7.	ADD Lines 4, 5, and 6	\$
8.	TOTAL EQUIPMENT RENTAL COSTS	\$
9.	15% of Line 8	\$
10.	ADD Lines 8 and 9	\$
11.	TOTAL SPECIALIST COSTS	\$
12.	15% of Line 11	\$
13.	ADD Lines 11 and 12	\$
14.	TOTAL COST OF EXTRA WORK (Add Lines 3, 7, 10 and 13.)	\$

CONTRACTOR OR AUTHORIZED REPRESENTATIVE

APPROVED BY INSPECTOR

RECAPITULATION COSTS FORM FOR CONTRACT MODIFICATION

Use this form to add total costs of extra Work of Contractor, first tier subcontractors and lower tier subcontractors. One form shall be used for each Change Order. One form shall be used each day for Force Account Work.

1. TOTAL COST OF CONTRACTOR'S EXTRA WORK (Line 14 from Sheet 4 of 4)		
2. First Tier Subcontractor	Cost of Extra Work	
2a.	\$	
2b.	\$	
2c.	\$	
2d.	\$	
2e.	\$	
2f.	\$	
3. Total Costs of First Tier Subcontractors' Extra Work (Add Lines 2a through 2f.)		\$
4. 10% of Line 3		\$
5. Lower Tier Subcontractor	Cost of Extra Work	
5a.	\$	
5b.	\$	
5c.	\$	
5d.	\$	
6. Total Costs of Lower Tier Subcontractors' Extra Work (Add Lines 5a through 5f.)		\$
7. 5% of Line 6		\$
8. CONTRACT CHANGE ORDER AMOUNT (Add Lines 1, 3, 4, 6, and 7.)		\$

CONTRACTOR OR AUTHORIZED REPRESENTATIVE

APPROVED BY INSPECTOR

CHANGE ORDER

CHANGE ORDER #:

PROJECT:

CONTRACT #:

CONTRACTOR:

CHANGE ORDER SCOPE:

CHANGE ORDER AMOUNT:

CONTRACT TIME ADJUSTMENT:

ADJUSTED COMPLETION DATE:

The signatures of the County and Contractor below indicate acceptance by both parties of the costs and time adjustments noted above as a part of this change to the Work. In conformance with the requirements of the Contract Documents, the Contractor agrees that said cost and time adjustments are full satisfaction for the extra Work described in this Change Order. No other costs arising out of or connected with the performance of the extra Work described in this Change Order, of any nature, may be recovered by the Contractor, except as authorized under the Contract Documents.

Approved by:

Contractor

Owner

Title

Title

Date

Date

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SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Change Procedures.
- B. Schedule of Values.

1.2 CHANGE PROCEDURES

- A. Written Order: Architect may make minor changes in Work not involving adjustment to Contract Price or Contract Time as authorized by General Conditions, by issuing Architect's Supplemental Instructions or Instruction Bulletins.
- B. Request For Proposal: Architect may issue a Request For Proposal or Instruction Bulletin that includes detailed description of proposed change with supplementary or revised drawings and specifications, change in Contract Time for executing change and period of time during which requested price will be considered valid. Contractor shall prepare and submit the proposal within 7 days from issuance of the Request for Proposal or Instruction Bulletin.
- C. Change Order Request: Contractor may propose changes by submitting Change Order Request to Architect, describing proposed change and its full effect on the Work. Include statements describing reason for change, and effect on Contract Price and Contract Time with full documentation and statement describing effect on Work by separate or other contractors. Document any requested substitutions in accordance with Division 01, General Requirements.
- D. Construction Change Directive: Architect may issue Construction Change Directives or Instruction Bulletins signed by Owner and Architect directing Contractor to proceed with change in Work expeditiously without delay. Document will describe changes in Work and may designate method of determining any change in Contract Price or Contract Time, if any. Contractor shall promptly execute the change.
- E. Change Order: Issued in accordance with the General Conditions and Supplementary Conditions.
- F. Stipulated Price Change Order: Based on a Request For Proposal or Instruction Bulletin and Contractor's fixed price quotation or Contractor's for Change Order Request as approved by Architect.
- G. Time and Material Change Orders: Submit itemized account and supporting data after completion of change within time limits indicated in Conditions of Contract. Architect will determine change allowable In Contract Price and Contract Time as provided in Contract Documents.
 - 1. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in

- Work.
2. Refer to the General Conditions for additional requirements.
- H. Change Order Forms: AIA G701 Change Order or other form agreed with County of San Benito.
- I. Execution of Change Orders: Architect will issue Change Orders for signature of parties as provided in Conditions of the Contract.

1.3 SCHEDULE OF VALUES

- A. Submit printed schedule on AIA Forms G702 and G703 -Application and Certificate for Payment and Continuation Sheet. Contractor's standard form or electronic media printout will be considered, submit sample forms to Architect for approval.
1. Submit application for progress payment in accordance with the General and Supplementary Conditions.
- B. Submit Schedule of Values in duplicate within 15 calendar days after date of Owner-Contractor Agreement for Architect's approval.
- C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of the major Specification Section. Identify site mobilization and bonds and insurance. List mechanical, electrical, plumbing and fire protection Work separately for each building and for site Work.
- D. Break down the plumbing and mechanical portions of the work at a minimum into a rough, finish, Including air balance and electrical portion.
- E. Include separate line items, showing amount of General Contractor's overhead and profit, bonds and insurance, supervision, and then remainder of general items.
- F. Revise schedule to list approved PCO with each Application for Payment.

PART 2 – PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION

SECTION 01 25 00 PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Product options.
- B. Substitutions.

1.2 DEFINITIONS

- A. Requests for changes in products, materials, or equipment required by Contract Documents proposed by the Contractor prior to and after award of the Contract are considered requests for substitutions. Contractor must refer to the Instructions to Bidders and the General Conditions for limitations on when requests for substitution(s) are permitted on this Project. The following are not considered substitutions:
 - 1. Revisions to Contract Documents requested by the Owner or Architect.
 - 2. Specified options of products, materials, and equipment included in Contract Documents.
- B. Whenever in the Specifications any material, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be used for the purpose of facilitating the description of that material, process, or article desired, and shall be assumed to be followed by the words "or approved equal," except when the product is designated to match others in use on a particular public improvement whether completed or in the course of completion.

1.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description may be used.
- B. Products Specified by Naming One or More Manufacturers with or without Provision for Substitution: Provide products of manufacturers named and meeting Specifications, with substitution of products or manufacturers only when submitted under provisions of this Section.

1.4 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

- A. The bid shall be based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.
- B. Architect may consider requests for substitutions of specified equipment and/or materials only prior to bid and only when requests are received by Architect within the time indicated in the Instructions to Bidders.
- C. Consideration by Architect of a substitution request will be made only if request is made in strict conformance with provisions of this Section.

- D. Burden of proof of merit of requested substitution is the responsibility of the entity requesting the substitution.
- E. It is the sole responsibility of the entity requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- F. Architect's decision on substitution requests are final and do not require documentation or justification.
- G. When substitution is not accepted, provide specified product.
- H. Substitute products shall not be included within the bid without written acceptance by Addendum.

1.5 LIMITATIONS ON SUBSTITUTIONS

- A. Owner will not consider any substitution requests submitted after the bids are opened. All requests for substitutions shall be submitted prior to the date the bids are opened and in compliance with the provisions stated herein in the Contract Documents.
- B. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.
- C. Consideration by Architect will be made only if request is made in strict conformance with provisions of this Section.

1.6 REGULATORY REQUIREMENTS

- A. It shall be the responsibility of the entity requesting the substitution to obtain all regulatory approvals required for proposed substitutions.
- B. All regulatory approvals shall be obtained for proposed substitutions prior to submittal of substitution request to Architect.
- C. All costs incurred by the Owner in obtaining regulatory approvals for proposed substitutions to include the costs of the Architect and any authority having jurisdiction over the project shall be reimbursed to the Owner. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.

1.7 SUBSTITUTION REPRESENTATION

- A. In submitting a request for substitution, the entity requesting the substitution makes the representation that he or she:
 - 1. Has investigated the proposed substitution and has determined that it meets or exceeds the quality level of the specified product.
 - 2. Has determined that all components of the proposed substitution are identical and fully interchangeable with the product name and number specified.

3. Will provide the same warranty or guarantee for the substitution as for the specified product.
 4. Will coordinate installation and make changes to other Work which may be required for the Work to be completed with no additional cost to the Owner.
 5. Waives claims for additional cost or time extension which may subsequently become apparent.
 6. Will reimburse Owner for the cost of Architect's review or redesign services associated with substitution request, including reviews by agencies having jurisdiction. Additional time required for Architect or agency reviews shall not be construed as construction delay.
- B. Maximum of two substitutions may be proposed.
- C. If specified product is no longer available, Contractor shall provide proof from the specified manufacturer indicating the product is not available.

1.8 SUBMITTAL PROCEDURE

- A. Submit two digital copies of each request.
- B. Submit request with Architect's Substitution Request Form. Form may be obtained at the office of the Architect. Substitution requests received without request form will be returned unreviewed.
- C. Limit each request to one proposed substitution.
- D. Request to include sufficient data so that direct comparison of proposed substitution can be made.
- E. Provide complete documentation for each request. Documentation shall include the following information, as appropriate, as a minimum:
1. Statement of cause for substitution request.
 2. Identify product by Specification Section and Article Number.
 3. Provide manufacturer's name, address, and phone number. List fabricators, suppliers, and installers as appropriate.
 4. List similar projects where proposed substitution has been used, dates of installation and names of Architect and Owner.
 5. List availability of maintenance services and replacement materials.
 6. Documented or confirmation of regulatory approval.
 7. Product Data, including drawings and descriptions of products.
 8. Fabrication and installation procedures.
 9. Samples of proposed substitutions.

10. Itemized comparison of significant qualities of the proposed substitution with those of the product specified. Significant qualities may include size, weight, durability, performance requirements and visual effects.
 11. Coordination information, including a list of changes or modifications needed to other items of Work that will become necessary to accommodate proposed substitution.
 12. Statement on the substitutions effect on the construction schedule.
 13. Cost information including a proposal of the net reduction in cost to the Contract Sum if the proposed bid substitution is accepted.
 14. Certification that the substitution is equal to or better in every respect to that required by the Contract Documents and that substitution will perform adequately in the application intended.
 15. Waiver of right to additional payment or time that may subsequently become necessary because of failure of substitution to perform adequately.
- F. Inadequate warranty, vagueness of submittal, failure to meet specified requirements, or submittal of insufficient data will be cause for rejection of substitution request.

1.9 ARCHITECT'S REVIEW

- A. The Architect will accept or reject proposed substitution within a reasonable amount of time.
- B. If a decision on a substitution cannot be made prior to the date set for bid opening, the product specified shall be used.
- C. There shall be no claim for additional time for review of proposed substitutions.
- D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an addendum.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- A. Coordination and project conditions.
 - B. Field engineering.
 - C. Preconstruction meeting.
 - D. Site mobilization meeting.
 - E. Progress meetings.
 - F. Pre-installation meetings.
 - G. Cutting and patching.
- 1.2 COORDINATION AND PROJECT CONDITIONS
- A. Coordinate scheduling, submittals, and Work of various sections of Project to ensure efficient and orderly sequence of installation of interdependent construction elements.
 - B. Verify utility requirements and characteristics of operating equipment are compatible with available utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
 - C. Coordinate trench requirements, supports, and installation of utility and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes and conduit, as closely as practicable.
 - D. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- 1.3 FIELD ENGINEERING
- A. Employ Land Surveyor registered in State of California and acceptable to City Engineer.
 - B. Contractor will protect survey control and reference points. Promptly notify Architect/Engineer of discrepancies discovered.
 - C. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
 - D. Maintain complete and accurate log of control and survey work as Work progresses.
 - E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
 - F. Promptly report to Architect/Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
 - G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.
- 1.4 PRECONSTRUCTION MEETING
- A. City Engineer will schedule meeting after Notice of Award.
 - B. Attendance Required: Owner, Architect/Engineer, and Contractor.
 - C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing parties in Contract, and Architect/Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

- 7. Scheduling.
 - D. The City Engineer shall record minutes and distribute copies within two days after meeting to participants, with one copy to the Contractor and Owner. The Contractor is responsible for distributing copies to those sub-contractors affected by decisions made.
- 1.5 SITE MOBILIZATION MEETING
- A. City Engineer will schedule meeting at Project site prior to Contractor occupancy.
 - B. Attendance Required: Owner, Architect/Engineer, Special Consultants, and Contractor, Contractor's Superintendent, and major Subcontractors.
 - C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls.
 - 4. Survey and building layout.
 - 5. Security and housekeeping procedures.
 - 6. Schedules.
 - 7. Application for payment procedures.
 - 8. Procedures for testing.
 - 9. Procedures for maintaining record documents.
 - 10. Requirements for start-up of equipment.
 - 11. Inspection and acceptance of equipment put into service during construction period.
 - D. The City Engineer shall record minutes and distribute copies within two days after meeting to participants, with one copy to the Contractor and Owner. The Contractor is responsible for distributing copies to those sub-contractors affected by decisions made.
- 1.6 PROGRESS MEETINGS
- A. City Engineer will schedule and administer meetings throughout progress of the Work at maximum two-week intervals.
 - B. City Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
 - C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.
 - D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
 - E. The City Engineer shall record minutes and distribute copies within two days after meeting to participants, with one copy to the Contractor and Owner. The Contractor is responsible for distributing copies to those sub-contractors affected by decisions made.

1.7 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. The City Engineer shall record minutes and distribute copies within two days after meeting to participants, with one copy to the Contractor and Owner. The Contractor is responsible for distributing copies to those sub-contractors affected by decisions made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated and fire resistant material to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

**END OF SECTION 01 30 00*

SECTION 01 31 19 COORDINATION AND MEETINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Field engineering.
- C. Preconstruction conference.
- D. Progress meetings.
- E. Preinstallation conferences.
- F. Post construction dedication.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Prior to commencement of a particular type or kind of Work examine relevant information, Contract Documents, and subsequent data issued to the Project.
- C. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. In locations where several elements of mechanical and electrical Work must be sequenced and positioned with precision in order to fit into available space, prepare coordination drawings showing the actual conditions required for the

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installation. Prepare coordination drawings prior to purchasing, fabricating or installing any of the elements required to be coordinated.

- G. Closing up of walls, partitions or furred spaces, backfilling and other covering up operations shall not proceed until all enclosed or covered Work and inspections have been completed. Verify before proceeding.
- H. Coordinate completion and clean up of Work of separate Sections in preparation for completion and for portions of Work designated for County occupancy.
- I. After County occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of County's activities.
- J. Coordinate all utility company work in accordance with the General Conditions.

1.3 FIELD ENGINEERING

- A. Contractor shall employ a Land Surveyor registered in the State of California and acceptable to the County.
- B. Control datum for survey is that established by County provided survey. Contractor shall locate and protect survey control and reference points.
- C. Replace dislocated survey control points based on original survey control.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- E. Upon completion of Work, submit certificate, signed by the Land Surveyor, that elevations and locations of Work are in conformance with Contract Documents. Record deviations on Record Drawings.

1.4 PRECONSTRUCTION CONFERENCE

- A. The County will schedule a conference immediately after receipt of fully executed Contract Documents prior to project mobilization.
- B. Mandatory Attendance: County, Inspector of Record, Architect, Contractor, Contractor's Project Manager, and Contractor's Job/Project Superintendent.
- C. Optional Attendance: Architect's consultants, subcontractors, and utility company representatives.
- D. Architect and Construction Manager will preside at conference, and Architect will review and approve minutes prior to distribution of copies.
- E. Agenda:

1. Execution of County-Contractor Agreement.
2. Issue Notice to Proceed.
3. Submission of executed bonds and insurance certificates.
4. Distribution of Contract Documents.
5. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
6. Designation of responsible personnel representing the parties.
7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.

1.5 PROGRESS MEETINGS

- A. Construction Manager will schedule and administer meetings throughout progress of the Work at a minimum of once per week.
- B. Construction Manager will make arrangements for meetings, prepare agenda, preside at meetings, record minutes (Field Reports), and distribute copies. Architect will review and approve all minutes prior to distribution.
- C. Attendance Required: Job Superintendent, Construction Manager, Inspector of Record, Architect, and subcontractors and suppliers as appropriate to agenda topics for each meeting.
- D. Agenda:
 1. Review minutes of previous meetings. (Field Reports)
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems, which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of construction schedule.
 8. Corrective measures to regain projected schedules.

9. Planned progress during succeeding Work period.
10. Coordination of projected progress.
11. Maintenance of quality and Work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

1.6 PREINSTALLATION CONFERENCES

- A. When required in individual Specification Section, Contractor shall convene a preinstallation conference prior to commencing Work of the Section. Refer to individual Specification Section for timing requirements of conference.
- B. Require attendance of parties directly affecting, or affected by, Work of the specific Section.
- C. Notify Architect four (4) days in advance of meeting date.
- D. Preinstallation conference to coincide with regularly scheduled progress meeting wherever possible.
- E. Architect shall prepare agenda, preside at conference, record minutes, and distribute copies within two (2) days after conference to participants.
- F. Review Contract Documents, conditions of installation, preparation and installation procedures, and coordination with related Work and manufacturer's recommendations.
- G. Preinstallation Schedule: As a minimum, Work being installed under the following Sections will require preinstallation conferences. Contractor shall review the technical Specifications and add all additional requirements for preinstallation meetings contained in those Sections.

Section 02 41 16 – Building Demolition

Section 03 36 00 – Concrete Testing and Inspection

Section 07 13 00 – Weather Resistive Barrier and Flashing

Section 23 80 00 – Heating, Ventilating and Air-Conditioning.

Section 26 05 00 – Basic Electrical Materials and Methods.

1.7 POST CONSTRUCTION DEDICATION

- A. Attendance Required: Project Superintendent, Project Manager, major subcontractors, County, and Architect.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

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SECTION 01 32 16 CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. References.
- B. Performance requirements.
- C. Quality assurance.
- D. Qualifications.
- E. Project record documents.
- F. Submittals.
- G. Review and evaluation.
- H. Format.
- I. Cost and schedule reports.
- J. Early work schedule.
- K. Construction schedule.
- L. Short interval schedule.
- M. Requested time adjustment schedule.
- N. Recovery schedule.
- O. Updating schedules.
- P. Distribution.

1.2 REFERENCES

- A. Construction Project Planning and Scheduling Guidelines, latest edition, available from The Associated General Contractors of America (AGC). (916) 371-2422.
- B. CSI - Construction Specifications Institute MP-2-1 Master Format.

- C. United States National Weather Service - Local Climatological Data.

1.3 PERFORMANCE REQUIREMENTS

- A. Ensure adequate scheduling during construction activities so Work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.
- B. Ensure coordination of Contractor and subcontractors at all levels.
- C. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of materials and equipment.
- D. Ensure on-time delivery of County-furnished materials and equipment.
- E. Ensure coordination of jurisdictional reviews.
- F. Assist in preparation and evaluation of applications for payment.
- G. Assist in monitoring progress of Work.
- H. Assist in evaluation of proposed changes to Contract Time.
- I. Assist in evaluation of proposed changes to Construction Schedule.
- J. Assist in detection of schedule delays and identification of corrective actions.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Construction Planning and Scheduling Manual published by the AGC.
- B. Maintain one copy of document on site.
- C. In the event of discrepancy between the AGC publication and this Section, provisions of this Section shall govern.

1.5 QUALIFICATIONS

- A. Scheduler: Contractor shall engage trained personnel or specialist consultant with five years minimum experience in scheduling construction work of a complexity and size comparable to this Project, who can demonstrate proficiency in the system used.
- B. Administrative Personnel: Five years minimum experience in using and monitoring schedules on comparable projects. Submit resume with experience for approval.

1.6 PROJECT RECORD DOCUMENTS

- A. Submit Record Documents under provisions of Section 01 78 39.
- D. Submit one reproducible and two copies of final Record Construction Schedule which reflects actual construction of this Project.
- C. Record Construction Schedule shall be certified for compliance with actual way Project was constructed.
- D. Receipt of Record Construction Schedule shall be a condition precedent to any retainage release or final payment.

1.7 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Within ten (10) days from the Notice to Proceed submit proposed Early Work Schedule and preliminary Cost Report defining activities for first 60 days of Work.
- C. Within 45 days from Notice of Award submit proposed Construction Schedule and final Cost Report.
- D. Submit updated Construction Schedule with each Application for Payment.
- E. Submit Short Interval Schedule at each Construction Progress Meeting.
- F. Submit Time Adjustment Schedule within five days of commencement of a claimed delay.
- G. Submit Recovery Schedules as required by completion of Work.
- H. Submit one reproducible and two copies of each schedule and cost report.

1.8 REVIEW AND EVALUATION

- A. Early Work Schedule shall be reviewed during Preconstruction Conference with County and Architect.
- B. Within five days of receipt of County and Architect's comments provide satisfactory revision to Early Work Schedule or adequate justification for activities in question.
- C. Acceptance by County of corrected Early Work Schedule shall be a condition precedent to making any progress payments for first 60 days of Contract.
- D. Cost loaded values of Early Work Schedule shall be basis for determining progress payments during first 60 days of Contract.

- E. Participate in joint review of Construction Schedule and Reports with County and Architect. Draft Schedule Update to be submitted to Construction manager for review prior to submitting Formal Update.
- F. Within seven days of receipt of County and Architect's comments provide satisfactory revision to Construction Schedule or adequate justification for activities in question.
- G. In the event that an activity or element of work is not detected by County or Architect review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.
- H. Acceptance by County of corrected Construction Schedule shall be a condition precedent to making any progress payments after first 60 days of Contract.
- I. Cost-loaded values of Construction Schedule shall be basis for determining progress payments.
- J. Review and acceptance by County and Architect of Early Work Schedule or Construction Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules, nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, manpower, cost or equipment loading stated, or implied on schedules.

1.9 FORMAT

- A. Prepare diagrams and supporting mathematical analyses using Precedence Diagramming Method, under concepts and methods outlined in AGC Construction Planning and Scheduling Manual.
- B. Listings: Reading from left to right, in ascending order for each activity.
- C. Diagram Size: 42 inches maximum height x width required.
- D. Scale and Spacing: To allow for legible notations and revisions.
- E. Illustrate order and interdependence of activities and sequence of Work.
- F. Illustrate complete sequence of construction by activity.
- G. Provide legend of symbols and abbreviations used.

1.10 COST AND SCHEDULE REPORTS

- A. Activity Analysis: Tabulate each activity of network diagram and identify for each activity:
 - 1. Description.
 - 2. Interface with outside contractors or agencies.

3. Number.
4. Preceding and following number.
5. Duration.
6. Earliest start date.
7. Earliest finish date.
8. Actual start date.
9. Actual finish date.
10. Latest start date.
11. Latest finish date.
12. Total and free float.
13. Identification of critical path activity.
14. Monetary value keyed to Schedule of Values.
15. Manpower requirements.
16. Responsibility.
17. Percentage complete.
18. Variance positive or negative.

B. Cost Report: Tabulate each activity of network diagram and identify for each activity:

1. Description.
2. Number.
3. Total cost.
4. Percentage complete.
5. Value prior to current period.
6. Value this period.
7. Value to date.

- C. Required Sorts: List activities in sorts or groups:
1. By activity number.
 2. By amount of float time in order of early start.
 3. By responsibility in order of earliest start date.
 4. In order of latest start dates.
 5. In order of latest finish dates.
 6. Application for payment sorted by Schedule of Values.
 7. Listing of activities on critical path.
 8. Listing of basic input data which generates schedule.

1.11EARLY WORK SCHEDULE

- A. Shall establish Scope of Work to be performed during first 60 days of Contract.
- B. Shall designate critical path or paths.
- C. Shall contain the following phases and activities:
1. Procurement activities to include mobilization, Shop Drawings and Sample submittals.
 2. Identification of key and long-lead elements and realistic delivery dates.
 3. Construction activities in units of whole days limited to 14 days for each activity except non-construction activities for procurement and delivery.
 4. Approximate cost and duration of each activity.
- D. Shall contain seasonal weather considerations. Seasonal rainfall shall be 10-year average for the month as evidenced by Local Climatological Data obtained from United States National Weather Service.
- E. Activities shall be incorporated into Construction Schedule.
- F. No application for payment will be evaluated or processed until Early Work Schedule has been submitted and reviewed.
- G. Shall be updated on a monthly basis while Construction Schedule is being developed.

- H. Failure to submit an adequate or accurate Early Work Schedule or failure to submit on established dates will be considered a breach of Contract.

1.12 CONSTRUCTION SCHEDULE

- A. Include Early Work Schedule as first 60 days of Construction Schedule.
- B. Shall be a computer generated, time-scaled network diagram of activities.
- C. Indicate a completion date for Project that is no later than required completion date subject to any time extensions processed as part of a Change Order.
- D. Conform to mandatory dates specified in the Contract Documents.
- E. Should schedule indicate a completion date earlier than any required completion date, County or Architect shall not be liable for any costs should Project be unable to be completed by such date.
- F. Seasonal weather shall be considered in planning and scheduling of all Work. Seasonal rainfall shall be 10-year average for the month as evidenced by Local Climatological Data obtained from United States National Weather Service.
- G. Level of detail shall correspond to complexity of Work involved.
- H. Indicate procurement activities, delivery, and installation of County- furnished material and equipment.
- I. Designate critical path or paths.
- J. Subcontractor Work at all levels shall be included in schedule.
- K. As developed shall show sequence and interdependence of activities required for complete performance of Work.
- L. Shall be logical and show a coordinated plan of Work.
- M. Show order of activities and major points of interface, including specific dates of completion.
- N. Duration of activities shall be coordinated with subcontractors and suppliers and shall be best estimate of time required.
- O. Shall show description, duration, and float for each activity.
- P. Failure to include any activity shall not be an excuse for completing all Work by required completion date.

- Q. Activities of long intervals shall be broken into increments no longer than 14 days, or a value over \$20,000.00 unless approved by the County or it is non-construction activity for procurement and delivery.
- R. An activity shall meet the following criteria:
1. Any portion or element of Work, action, or reaction that is precisely described, readily identifiable, and is a function of a logical sequential process.
 2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.
 3. Responsibility shall be identified with a single performing entity.
 4. Additional codes shall identify building, floor, bid item, and CSI classification.
 5. Assigned dollar value (cost-loading) of each activity shall cumulatively equal total Contract Amount. Mobilization, bond and insurance costs shall be separate. General Requirement costs, overhead, profit, shall be prorated throughout all activities. Activity costs shall correlate with Schedule of Values.
 6. Each activity shall have manpower-loading assigned.
 7. Major construction equipment shall be assigned to each activity.
 8. Activities labeled start, continue or completion is not allowed.
- S. For major equipment and materials show a sequence of activities including:
1. Preparation of Shop Drawings and Sample submissions.
 2. Review of Shop Drawings and Samples.
 3. Finish and color selection.
 4. Fabrication and delivery.
 5. Erection or installation.
 6. Testing.
- T. Include a minimum of 15 days prior to completion date for punch lists and clean up. No other activities shall be scheduled during this period.

1.13 SHORT INTERVAL SCHEDULE

- A. Shall be fully developed horizontal bar-chart-type schedule directly derived from Construction Schedule.
- B. Prepare schedule on sheet of sufficient width to clearly show data.
- C. Provide continuous heavy vertical line identifying first day of week.
- D. Provide continuous subordinate vertical line identifying each day of week.
- E. Identify activities by same activity number and description as Construction Schedule.
- F. Show each activity in proper sequence.
- G. Indicate graphically sequences necessary for related activities.
- H. Indicate activities completed or in progress for previous two-week period.
- I. Indicate activities scheduled for succeeding two-week period.
- J. Further detail may be added if necessary to monitor schedule.

1.14 REQUESTED TIME ADJUSTMENT SCHEDULE

- A. Updated Construction Schedule shall not show a completion date later than the Contract Time, subject to any time extensions processed as part of a Change Order.
- B. If an extension of time is requested, a separate schedule entitled "Requested Time Adjustment Schedule" shall be submitted to County and Architect.
- C. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of Work.
- D. Extension request shall include forecast of Project completion date and actual achievement of any dates listed in the Agreement.
- E. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.
- F. Schedule shall be a time-scaled network analysis.
- G. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.
- H. Time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time and event time computation of all affected activities. Event times shall be those as shown in latest Construction Schedule.

- I. Activity delays shall not automatically constitute an extension of Contract Time.
- J. Failure of subcontractors shall not be justification for an extension of time.
- K. Float is not for the exclusive use or benefit of any single party. Float time shall be apportioned according to needs of project, as determined by the County.
- L. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall be apportioned according to benefit of Project.
- M. Extensions will be granted only to extent that time adjustments to activities exceed total positive float of the critical path and extends Contract completion date.
- N. County] shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements are complied with.
- O. County shall not be responsible or liable for any construction acceleration due to failure of County to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirements of Contract for time extension requests.
- P. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within 10 days after commencement of a delay, it is mutually agreed that delay does not require a Contract Time extension.

1.15 RECOVERY SCHEDULE

- A. When activities are behind Construction Schedule a supplementary Recovery Schedule shall be submitted.
- B. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule.
- C. Maximum duration shall be one month and shall coincide with payment period.
- D. Ten days prior to expiration of Recovery Schedule verification to determine if activities have regained compliance with Construction Schedule will be made. Based upon this verification the following will occur:
 - 1. Supplemental Recovery Schedule will be submitted to address subsequent payment period.
 - 2. Construction Schedule will be resumed.

1.16 UPDATING SCHEDULES

- A. Review and update schedule at least 10 days prior to submitting an Application for Payment.
- B. Maintain schedule to record actual prosecution and progress.
- C. Approved Change Orders that affect schedule shall be identified as separate new activities.
- D. Change Orders of less than \$5,000.00 value or less than three days duration need not be shown unless critical path is affected.
- E. No other revisions shall be made to schedule unless authorized by County.
- F. Provide narrative Progress Report at time of schedule update that details the following:
 - 1. Activities or portions of activities completed during previous reporting period.
 - 2. Actual start dates for activities currently in progress.
 - 3. Deviations from critical path in days ahead or behind.
 - 4. List of major construction equipment used during reporting period and any equipment idle.
 - 5. Number of personnel by craft engaged on Work during reporting period.
 - 6. Progress analysis describing problem areas.
 - 7. Current and anticipated delay factors and their impact.
 - 8. Proposed corrective actions and logic revisions for Recovery Schedule.
 - 9. Proposed modifications, additions, deletions, and changes in logic of Construction Schedule.
- G. Schedule update will form basis upon which progress payments will be made.
- H. County will not be obligated to review or process Application for Payment until schedule and Progress Report have been submitted.

1.17 DISTRIBUTION

- A. Following joint review and acceptance of updated schedules distribute copies to County, Architect, and all other concerned parties.
- B. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedule.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Processing Time.
- C. Proposed products list.
- D. Shop Drawings.
- E. Product Data.
- F. Samples.
- G. Manufacturers' instructions.
- H. Manufacturers' certificates.
- I. Deferred approval requirements.
- J. Submittal schedule.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal in conformance with requirements of this Section.
- B. Sequentially number the transmittal forms. Resubmittals to have original number with a numerical suffix. Architect will not review more than 1 resubmittal for a specified product.
- C. Identify Project and Architect's project number, Contractor, subcontractor or supplier; pertinent Drawing sheet and detail number(s), and Specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without Contractor's stamp and signature will be returned without review. Incomplete submittals will be returned without review.
- E. Schedule submittals to expedite the Project, and deliver to Architect. Schedule shall include all items requiring color selection to be simultaneously submitted.
- F. Make submittals in groups containing associated and related items to make sure that information is available for checking each item when it is received. Submittals for all items requiring color selection must be received before any will be approved.

- G. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- H. Make submittals far enough in advance of scheduled dates for installation to provide time for review and possible revisions and resubmission prior to approval and subsequent placement of orders.
- I. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- J. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the completed Work.
- K. Provide space for Contractor and Architect review stamps.
- L. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- M. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- N. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.

1.3 PROCESSING TIME

- A. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise contractor when submittal being processed must be delayed for coordination.
- B. Resubmittal Review: Allow 15 days for review of each resubmittal.
- C. Submission Times:
 - 1. General: After issuance of Notice to Proceed make submissions no later than the following number of days, unless specified otherwise in individual specification sections.
 - 2. Deferred Approval Items: 21 Calendar Days.
 - 3. Early Start and/or Long-Lead Time Items: 30 Calendar Days.
 - 4. Color Selection Items: 30 Calendar Days.
 - 5. Electrical, Mechanical and Equipment Items: 60 Calendar Days.
 - 6. All Other Items: 90 Calendar Days.

1.4 PROPOSED PRODUCTS LIST

- A. Within 10 calendar days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 SHOP DRAWINGS

- A. Submit (5) five sets of printed Shop Drawings in accordance with the submittal list. Review comments will be shown on the transparency and Contractor may make and distribute such copies as are required for his purposes.
- B. After review, distribute in accordance with procedures specified above and for Record Documents described in Section 01 78 39, Project Record Documents.
- C. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- D. Do not use or allow others to use Shop Drawings which have been submitted and have been rejected.

1.6 PRODUCT DATA

- A. When specified in individual Specification Sections, submit as a PDF and email to Architect and copy Owner staff and IOR.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review, distribute in accordance with procedures specified above and provide copies for Record Documents described in Section 01 78 39, Project Record Documents.

1.7 SAMPLES

- A. Submit Samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate Sample submittals for interfacing Work.
- B. Where specific colors or patterns are not indicated, provide materials and products specified in the full range of color, texture and pattern for selection by Architect. Range shall include standard stocked color/texture/pattern, standard color/texture/pattern not stocked, but available from manufacturer, and special color/ texture/pattern available from manufacturer as advertised in Product Data and brochures. Unless otherwise indicated in individual Specification Sections, Architect may select from any range at no additional cost to Owner.
- C. Include identification on each Sample, with full Project information.
- D. Submit (5) full samples.
- E. Reviewed Samples which may be used in the Work are indicated in individual Specification Sections.

1.8 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual Specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.9 MANUFACTURER'S CERTIFICATES

- A. When specified in individual Specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

1.10 MOCK-UP

- A. Where indicated, provide mock-ups as required. Mock-ups shall be prepared per the Specifications and shall accurately and reasonably represent the quality of construction the Contractor will provide. If the mock-up or portions thereof do not adequately represent the quality of the Work specified, the Contractor shall modify the mock-up as needed.
- B. Once completed to the Architect's satisfaction, the mock-up shall serve as the standard of quality for the Work.
- C. All mock-ups, at the Owner's option, shall remain the property of the Owner. If not required by the Owner, Contractor shall remove and dispose of the mock-up.
- D. Where indicated, on-site mock-ups, if accepted, may be integrated into the Work.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 42 00 REFERENCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Specification format and content.
- C. Industry standards.
- D. Codes and standards.
- E. Governing regulations/authorities.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the General Conditions.
- B. Regulations: Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

1.3 SPECIFICATION FORMAT AND CONTENT

- A. Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's most current format.
- B. The Sections are placed in the Project Manual in numeric sequence; however, this sequence is not complete and the Table of Contents of the Specifications must be consulted to determine the total listing of Sections.
- C. The Section title is not intended to limit the meaning or content of the Section, nor to be fully descriptive of the requirements specified therein.
- D. The organization of the Specifications shall not control the division of the Work among subcontractors or establish the extent of Work to be performed by any trade.
- E. Specifications use certain conventions regarding style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are:
 - 1. Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural, and plural words interpreted as singular, where applicable to maintain the context of the Contract Document indicated.

2. Imperative and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. Subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
3. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.
4. The words "Contractor shall" are implied wherever a sentence or phrase begins without a clear subject (e.g., "Transmit each submittal..." means "Contractor shall transmit each submittal...") and the requirement is not clearly that of Owner Architect, Construction Manager, Project Inspector, or other agent and/or representative.

1.4 INDUSTRY STANDARDS

- A. Except where Contract Documents include more stringent requirements, applicable construction industry standards shall apply as if bound into the Contract Documents to the extent referenced. Such standards are made part of Contract Documents by reference.
- B. Conform to reference standard by date of issue current on date for receiving bids [or date of Owner Contractor Agreement when there are no Bids] except when a specific date is indicated.
- C. Where compliance with two or more standards is specified and where standards may establish different or conflicting requirements for quantities or quality levels, the more stringent, higher quality and greater quantity of Work shall apply.
- D. The quantity or quality level shown or specified shall be the minimum provided or performed. Indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements.
- E. Each entity engaged in construction of the Work is required to be familiar with industry standards applicable to its construction activity.
- F. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required activity, Contractor shall obtain copies directly from publication source.
- G. Trade association names and titles of general standards are frequently abbreviated. Where such abbreviations are used in the Specifications or other Contract Documents, they shall mean the recognized trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the content of the text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.
- H. Refer to individual Specification Sections and related Drawings for names and abbreviations of trade associations and standards applicable to specific portions of the Work. In particular, refer to Division 15 for names and abbreviations applicable to mechanical Work, and refer to Division 16 for names and abbreviations applicable to electrical Work.
- I. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 CODES AND STANDARDS

- A. Latest edition of pertaining ordinances, laws, rules, codes, regulations, standards, and others of public agencies having jurisdiction of the Work are intended wherever reference is made in either the singular or plural to Code or Building Code except as otherwise specified, including but not limited to the latest edition of those in the following listing.
- B. Refer to Construction Documents, Sheet A0.01 for Applicable Codes.

1.6 GOVERNING REGULATIONS/AUTHORITIES

- A. Authorities having jurisdiction have been contacted where necessary to obtain information for preparation of Contract Documents. Contact authorities having jurisdiction directly for information having a bearing on the Work.
- B. Comply with all federal, state and local laws, ordinances, rules and regulations indicated and which bear on the conduct of the Work.

PART- 2 PRODUCTS

Not used

PART- 3 EXECUTION

Not used

END OF SECTION

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SECTION 01 45 00 QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. Tolerances.
- C. Field samples.
- D. Mock-up.
- E. Manufacturers' field services and reports.
- F. Observation and supervision.

1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Project Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce workmanship of specified quality.
- F. Comply with journeyman/apprentice ratios as applicable and as required by the County's findings.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 TOLERANCES

- A. Monitor tolerance control of installed products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturer's tolerances. Should manufacturer's tolerance conflict with Contract Documents, request clarification from Project Engineer before proceeding.

- C. Adjust products to appropriate dimensions; position before securing products in place.
- D. No tolerances related to disabled access requirements allowed or accepted beyond the tolerances defined in Chapter 11B of the current California Building Code.

1.4 FIELD SAMPLES

- A. Install field samples at the site as required by individual Specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect of Record.

1.5 MOCK-UP

- A. Tests will be performed under provisions identified in this Section and identified in the respective product Specification Sections.
- B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals and finishes.
- C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect of Record.

1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Provide if individual Specification Sections require material or product suppliers or manufacturers to provide qualified staff personnel to observe the tests and/or mock-up as applicable, and initiate corrective instructions when necessary.
- B. Individuals shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 15 days of observation to Project Architect for review.

1.7 OBSERVATION AND SUPERVISION

- A. The County and Architect of Record or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Project Engineer and any consulting structural engineer will be in accordance with applicable regulations, including, without limitation, CCR, Title 24.

- B. One or more Project Inspector(s) appointed by the City or in contract with the County, referred to hereinafter as the "Project Inspector", will observe the Work in accordance with CCR, Title 24 regulations:
 - 1. The Project Inspector shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.
 - 2. The Project Inspector will notify the County and Architect of Record and call the attention of the Contractor to any observed failure of Work or material to conform the Contract Documents.
 - 3. The Project Inspector shall observe and monitor all testing and inspection activities required.
- C. The Contract shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Title 24. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by CCR, Title 24.

1.8 TESTING AGENCIES

- A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of CCR, Title 24.
- B. Testing and inspection in connection with earthwork shall be under the direction of the County's consulting civil engineer.
- C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory". The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the County.

1.9 TESTS AND INSPECTIONS

- A. The Contractor shall be responsible for notifying the County and Project Inspector of all required tests and inspections. Contractor shall notify the County and Project Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.

- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. The County will pay for the first inspections and tests required by the “CCR”, and other inspections or tests that the County and/or the Project Architect may direct to have made, including but not limited to the following principal items:
 - 1. Tests and observations for earthwork and paving.
 - 2. Tests for concrete mix designs, including tests of trial batches.
 - 3. Tests and inspections for structural steel Work.
 - 4. Additional tests directed by the County that establish that materials and installation comply with the Contract Documents.
 - 5. Test and observation of welding and expansion anchors.
- D. The County may, at its discretion, pay and back charge the Contractor for:
 - 1. Retests or re-inspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.
 - 2. Uncovering of Work in accordance with Contract Documents.
 - 3. Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime position.
 - 4. Testing done off site.
- E. Testing and inspection reports and certifications.
 - 1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - a. The County.
 - b. The Construction Manager, if any.
 - c. Architect of Record
 - d. The Consulting Engineer, if any.
 - e. Other Engineers on the Project, as appropriate.
 - f. The Project Inspector.
 - g. The Contractor.

2. When the test or inspection is one required by the CCR, a copy of the report shall be provided as requested by the Project Inspector and/or Architect of Record.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

SECTION 01 45 29 TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Selection and payment.
- B. Contractor submittals.
- C. Laboratory responsibilities.
- D. Laboratory reports.
- E. Limits on testing laboratory authority.
- F. Contractor responsibilities.
- G. Schedule of inspections and tests.

1.2 REFERENCES

- A. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- B. ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. CBC - California Building Code.
- D. Title 24, Part 2, of the California Code of Regulations.

1.3 OBSERVATIONS AND SUPERVISION

- A. The Owner and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting structural engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 7-141.
- B. One or more Project Inspector(s) employed by or in contract with the Owner, referred to hereinafter as the "Project Inspector", will observe the work in accordance with CCR, Part 1, Title 24, Section 7-144(a)(b)(c), 7-145(a):

1. The Project Inspector shall have access to the tests wherever it is in preparation or progress for ascertaining that the tests is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.
 2. The Project Inspector will notify the Owner and Architect and call the attention of the Contractor to any observed failure of tests or material to conform to Contract Documents.
 3. The Project Inspector shall observe and monitor all testing and inspection activities required.
- C. The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 7-143. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 7-151.

1.4 TESTING AGENCIES

- A. Testing agencies and tests shall be in conformance with the Contract Documents and the requirements of Part 1, Title 24, Section 7-149.
- B. Testing and inspection in connection with earthwork shall be under the direction of the Owner's consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."
- C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the Owner.

1.5 TESTS AND INSPECTIONS

- A. The Contractor shall be responsible for notifying the Owner and Project Inspector of all required tests and inspections. Contractor shall notify the Owner and Project Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.
- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.

- C. The Owner will pay for first inspections and tests required by the "CCRs", and other inspections or tests that the Owner and/or the Architect may direct to have made, including, but not limited to, the following principal items:
 - 1. Tests and observations for earthwork and paving.
 - 2. Tests for concrete mix designs, including tests of trial batches.
 - 3. Tests and inspections for structural steel capitalize Work.
 - 4. Field tests for framing lumber moisture content.
 - 5. Additional tests directed by the Owner that establish that materials and installation comply with the Contract Documents.
 - 6. Test and observation of welding and expansion anchors.
 - 7. Factory observation of components and assembly of modular prefabrication structures and buildings.
- D. The Owner may, at its discretion, pay and back charge the Contractor for:
 - 1. Retests or reinspections, if required, and tests or inspection required due to test failures Contractor error or lack of required identifications of material.
 - 2. Uncovering of Work in accordance with Contract Documents.
 - 3. Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
 - 4. Testing done off site.
- E. Testing and inspection reports and certifications:
 - 1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - a. The Owner.
 - b. The Construction Manager, if any.
 - c. The Architect.
 - d. The Consulting Engineer, if any.
 - e. Other Engineers on the Project, as appropriate.
 - f. The Project Inspector.
 - g. The Contractor.

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

1.6 SELECTION AND PAYMENT

- A. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing as specified by Owner's testing laboratory.
- B. Owner's employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

1.7 OWNER'S TESTING LABORATORY RESPONSIBILITIES

- A. Test samples of mixes submitted by Inspector.
- B. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
- C. Perform specified inspection, sampling, and testing of products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
- F. Perform additional inspections and tests required by Architect.
- G. Attend preconstruction conferences and progress meetings when requested by Architect.

1.8 LABORATORY REPORTS

- A. After each inspection and test, Owner shall then submit one copy of laboratory report to Contractor. Laboratory shall submit copies of the report per the requirements of Section 01300 Submittals. Reports of test results of materials and inspections found not to be in compliance with the requirements of the Contract Documents shall be forwarded immediately.
- B. Verification of Test Reports: Each testing agency shall submit in accordance with Section 01300 Submittals, a verified report covering all of the tests which were required to be made by that agency during the progress of the project. Such report shall be furnished each time that Work on the Project is suspended, covering the tests up to that time and at the completion of the Project, covering all tests.

1.9 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Submit proposed items for testing as required herein and/or as defined in Section 011400 to Architect for review in accordance with applicable Specifications.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities.
- C. Notify Architect, Owner's Representative, and testing laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
 - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to the Contractor's negligence.
 - 2. The Contractor shall notify the Owner's representative a sufficient time in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for the testing of same at the source of supply.
 - 3. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.
- D. Employ and pay for services of Owner's testing laboratory to perform additional inspections, sampling and testing required when initial tests indicate Contractor's Work and/or materials does not comply with Contract Documents.

1.11 SCHEDULE OF INSPECTIONS AND TESTS BY OWNER'S TESTING LABORATORY

- A. The testing agency shall perform tests and inspections per the local jurisdiction approved "Tests and Inspections" list as well as for the following in conformance with the (CBC) California Building Code, Title 24, Part 2, of the California Code of Regulations.
 - 1. General Requirements (Chapter 17A):

- a. Special Inspections - 1701A.
- b. Nondestructive Testing - 1704A.
- c. Prefabricated Construction - 1704A.
- 2. Foundations (Chapter 18A and 33):
 - a. Earth fill compaction - 3304.1.
- 3. Concrete (Chapter 19A):
 - a. Materials:
 - (1) Portland Cement Tests - 1903A.2.
 - (2) Concrete Aggregates - 1903A.5.
 - (3) Reinforcing Bars - 1903A.8, 1929A.2.
 - (4) Prestressing Steel & Anchorage - 19010A.5, 1910A.3.
 - (5) Waiver of Batch Plant Inspection and Tests - 1929A.5.
 - b. Concrete Quality:
 - (1) Proportions of Concrete - 1904A.1, 1904A.2, 1904A.3, 1904A.4, 1905A.1, 1905A.2, 1905A.3, 1905A.4, 1905A.5.
 - (2) Strength Tests of Concrete - 1905A.6.
 - (3) Splitting Tensile Tests - 1905A.1.4.
 - (4) Composition Construction Cores - 1929A.8.
 - c. Concrete Inspection:
 - (1) Job Site Inspection - 1905A.6, 1905A.7.
 - (2) Batch Plant or Weighmaster Inspection - 1929A.4.
 - (3) Reinforcing Bar Welding Inspection - 1929A.12.
 - d. Anchors in Concrete:
 - (1) Drilled-In-Expansion Bolts or Epoxy-Type Anchors in Concrete - 1923A.3.5.

4. Masonry (Chapter 21A):

a. Materials:

- (1) Masonry Units - 2102A.2, 4., 5., 6.
- (2) Portland Cement - 2102A.2,2.
- (3) Mortar & Grout Aggregates - 2102A.2, 1, 2103A.3, 2103A.4.
- (4) Reinforcing Bars - 2102A.2, 10. 1903A.5, 1929A.2.

b. Masonry Quality:

- (1) Portland Cement Tests - 1903A.2, 1929A.1.
- (2) Mortar & Grout Tests - 2105A.3.4, 2.
- (3) Masonry Prism Tests - 2105A.3.2, 2105A.3.3, 2105A.3.4, 2105A.3.5.
- (4) Masonry Core Tests -2105A.3.1.
- (5) Masonry Unit Tests - 2105A.3.4,1.
- (6) Reinforcing Bar Tests - 1929A.2.

c. Masonry Inspection:

- (1) Reinforced Masonry - 2115A, 2105A.7.
- (2) Reinforcing Bar Welding Inspection - 1929A.12.

5. Structural Steel (Chapter 22A):

a. Materials:

- (1) Structural Steel - 2203A.2, 2231A.1.
- (2) Material Identification - 2203A.

b. Inspection and Tests of Structural Steel:

- (1) Tests of Structural & Cold Formed Steel - 2231A.1.
- (2) Tests of H.S. Bolts, Nuts, Washers - 2231A.2.

- (3) Tests of End Welded Studs - 2231A.3.
 - (4) Shop Fabrication Inspection - 2231A.4.
 - (5) High Strength Bolt Inspection - 2231A.6.
 - (6) Welding Inspection - 2231A.5.
 - (7) Nelson Stud Welding - 2231A.3.
 - (8) Non-destructive Weld Testing - 1703A.
6. Wood (Chapter 23):
- a. Materials:
 - (1) Lumber and Plywood Grading - 2304.
 - (2) Glued-Laminated Members - 2304.
 - b. Wood Inspection:
 - (1) Timber Connectors - 2337.2.
 - (2) Truss Joists - 2337.3.
 - (3) Plate Connected Wood Trusses - 2337.3.
 - (4) Glu-Laminated Fabrication - 2337.1.
7. Veneer (Chapter 14):
- a. Materials:
 - (1) Masonry Units - 1403.3, 2102A.
 - (2) Precast Concrete Units - 1403.3, 1916A.
 - (3) Mortar and Grout - 2103A.3, 2103A.4.
 - (4) Bond and Shear Tests - 1403.5.6.
8. Roof Covering (Chapter 15):
- a. Materials:
 - (1) Roof Tile Tests - 1507.7.1.

- 9. Aluminum (Chapter 20A):
 - a. Materials:
 - (1) Alloys - 2001A.2.
 - (2) Identification - 2001A.4.
 - b. Inspection.
 - (1) Welding - 2004A.8.
- B. Plumbing: Testing as specified in Division 15 including, but not limited to: sterilization, soil waste and vent, water piping, source of water, pressure, gas piping, downspouts and storm drains.
- C. Automatic Fire Sprinklers (where applicable): Testing as specified in Division 15 shall include, but not be limited to, hydrostatic pressure.
- D. Heating, Ventilating and Air Conditioning: Testing as specified in Division 15 shall include, but not be limited to: Ductwork tests, cooling tower tests, boiler tests, controls testing, piping tests, water and air systems, and test and balance of heating and air conditioning systems.
- E. Electrical: Testing as specified in Division 16, including, but not limited to, equipment testing, all electrical system operations, grounding system and checking insulation after cable is pulled.

1.12 PROJECT INSPECTOR'S ACCESS TO SITE

- A. A Project Inspector in accordance with the requirement of the local jurisdiction and the State of California Code of Regulations Title 24, Part 1 will be assigned to the Work. His duties are specifically defined in Section 7-145(a), and as indicated in the General Conditions.
- B. The Owner and the Construction Manager shall at all times have access for the purpose of inspection to all parts of the Work and to the shops wherein the Work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.
- C. The Work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Project Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the Work and the character of the materials. Inspection of the Work shall not relieve the Contractor from any

obligation to fulfill this Contract. The presence of a Project Inspector shall in no way change, mitigate or alleviate the responsibility of the Contractor.

- D. The Project Inspector is not authorized to change, revoke, alter, enlarge or decrease in any way any requirement of the Contract Documents, Drawings, Specifications or subsequent Change Orders.
- E. Whenever there is insufficient evidence of compliance with any of the provisions of Title 24, Part 2 of the California Code of Regulations or evidence that any material or construction does not conform to the requirements of Title 24, Part 2 of the California Code of Regulations, the local jurisdiction may require tests as proof of compliance. Test methods shall be as specified herein or by other recognized and accepted test methods determined by the local authorities. All tests shall be performed by a testing laboratory accepted by local jurisdiction.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1. SECTION INCLUDES
 - a. Temporary facilities under Construction Management Agreement.
 - b. Construction Facilities:
 - 1) Field offices and sheds.
 - 2) Vehicular access.
 - 3) Parking.
 - 4) Progress cleaning and waste removal.
 - 5) Project identification.
 - 6) Traffic regulation.
 - 7) Fire-prevention facilities.
 - c. Temporary Controls:
 - 1) Barriers.
 - 2) Enclosures and fencing.
 - 3) Security.
 - 4) Water control.
 - 5) Dust control.
 - 6) Erosion and sediment control.
 - 7) Noise control.
 - 8) Pest and rodent control.
 - 9) Pollution control.
 - d. Removal of utilities, facilities, and controls.
2. TEMPORARY FACILITIES UNDER CONSTRUCTION MANAGEMENT AGREEMENT
 - a. Temporary Provisions Provided by Construction Manager:
 - 1) Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
 - 2) Cleaning during construction.
 - 3) Access roads and approaches.
 - 4) Temporary sanitary facilities.

- b. Each Contractor: Coordinate provisions with Construction Manager and provide the following items as necessary for execution of the Work including associated costs:
 - 1) Construction aids.
 - 2) Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
 - 3) Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
 - 4) Temporary tree and plant protection.
 - 5) Temporary provisions for protection of installed Work.

3. TEMPORARY SANITARY FACILITIES

- a. Provide and maintain required facilities. Provide facilities at time of Project mobilization.

4. VEHICULAR ACCESS

- a. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- b. Provide and maintain access to fire hydrants free of obstructions.

5. PARKING

- a. Use of streets and driveways used for construction traffic is not permitted.
- b. Maintenance:
 - 1) Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud and the like.
 - 2) Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- c. Removal, Repair:
 - 1) Repair facilities damaged by use, to original condition.

6. PROGRESS CLEANING AND WASTE REMOVAL

- a. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- b. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

- c. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.
- d. Collect and remove waste materials, debris, and rubbish from Site as need, or directed by the Inspector.

7. PROJECT IDENTIFICATION

- a. Project Identification Sign:
 - 1) One painted sign at each end of Fourth Street work.
 - 2) Content:
 - Project title, City of Hollister logo.
 - Names and title of authorities.
 - Names and title of Engineer.
 - Name of Prime Contractor and major Subcontractors.
- b. Design sign and structure to withstand 80 mph wind velocity.
- c. Installation:
 - 1) Install Project identification sign within 10 days after date established by City-Contractor Agreement.
 - 2) Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
 - 3) Install sign surface plumb and level, with butt joints. Anchor securely.
 - 4) Paint exposed surfaces of sign, supports, and framing.
- d. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

8. TRAFFIC REGULATION

- a. Signs, Signals, and Devices:
 - 1) Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
 - 2) Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
 - 3) Flag Person Equipment: As required by authorities having jurisdiction.
- b. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- c. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

- d. Haul Routes:
 - 1) Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
- e. Traffic Signs and Signals:
 - 1) Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
 - 2) Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
 - 3) Relocate signs and signals as Work progresses, to maintain effective traffic control.
- f. Removal:
 - 1) Remove equipment and devices when no longer required.
 - 2) Repair damage caused by installation.

9. BARRIERS

- a. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- b. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way
- c. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
 - 1) Replace trees and plants damaged by construction operations.
- d. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

10. EROSION AND SEDIMENT CONTROL

- a. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- b. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- c. Comply with sediment and erosion control plan indicated on Drawings.

11. REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- a. Remove temporary utilities, equipment, facilities, and materials before final inspection.
- b. Clean and repair damage caused by installation or use of temporary Work.
- c. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

****END OF SECTION 01 50 00****

SECTION 01 60 00 MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Damage and restoration.

1.2 PRODUCTS

- A. Products: New material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components if designated for reuse.
- B. Provide interchangeable components of the same manufacturer, for similar components.
- C. Provide products that comply with the Contract Documents, that are undamaged and are unused at the time of installation.
- D. Provide products complete with all accessories, trim, finish, safety guards and other devices and detail needed for a complete installation and for the intended use and effect.
- E. Where products are specified by name or by manufacturer provide the product or manufacturer specified. No substitutions will be permitted unless made under the provisions of **Section 01630**.
- F. Where Specifications only describe a product or assembly by listing exact characteristics required, provide a product or assembly that provides the characteristics.
- G. Where Specifications only require compliance with performance requirements, provide products that comply with those requirements.
- H. Where the Specifications only require compliance with an imposed code, standard or regulation, provide a product that complies with the standards, codes or regulations specified.
- I. Where Specifications require review and acceptance of a Sample, the Architect's decision will be final on whether a proposed product Sample is acceptable or not.

- J. Do not use materials and equipment removed from existing premises, unless as specifically directed.

1.3 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Schedule delivery to minimize long-term storage at site to prevent overcrowding of construction spaces.
- C. Coordinate production and delivery of Owner-furnished items (OFI), where applicable.
- D. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged. Notify Architect of Record of any items received under County (Owner) purchase, if applicable.
- F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage when site does not permit on-site storage.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- H. Prevent the discharge of pollutants to storm water from storage of materials on-site using best management practice techniques defined in Chapter 4 of the Construction Activity Handbook published by the Storm Water Quality Task Force.

1.5 PROTECTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

1.6 DAMAGE AND RESTORATIONS

- A. Damage to existing or new Work, whether accidental or not, shall be restored or replaced as specified or directed by Architect of Record.
- B. Restoration shall be equal to structural performance of original Work.
- C. Finish shall match appearance of existing adjacent Work.
- D. Work not properly restored or where not capable of being restored shall be removed and replaced.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 71 13

MOBILIZATION

PART 1 GENERAL

SUMMARY

- A. Section Includes:
 - 1. Organization and mobilization of the Contractor's forces.
 - 2. Transporting various tools, materials and equipment to the jobsite
 - 3. Erection of temporary buildings and facilities as required for field offices, staging, storage and construction operations.

UNIT PRICES - MEASUREMENT AND PAYMENT

- B. Basis of Measurement: By lump sum.
- C. Payment: The contract lump sum price paid for this item shall include full compensation for providing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in Mobilization. Compensation for mobilization shall not exceed 5.0% of the contract total of the base bid not including the cost of mobilization. There will be no additional cost for mobilization if any add-alternate work is included.

DESCRIPTION

- D. The Contractor will provide labor, materials and equipment to prepare the site for the timely start and efficient completion of all work. The contractor is responsible for obtaining suitable storage yards for material stockpiled for pending work. All costs associated with this storage yard including setup, maintenance, dust control and restoration is the responsibility of the contractor. Work is anticipated to commence within fifteen calendar days after the Notice To Proceed is issued. Mobilization shall include all times Contractor needs to relocate and bring back equipment if extended delays are encountered. No additional payment will be allowed for mobilization beyond the initial bid item. This includes obtaining any necessary licenses and permits, providing required submittals, public notices, project schedule, material certificates, and attending pre-construction and progress meetings.

DEMOBILIZATION

- E. Upon completion of the work, remove construction tools, apparatus, equipment mobile units and buildings, unused materials and supplies, plant and personnel from the jobsite.
- F. Restore all areas used for mobilization to their original, natural state or, when called for in the contract documents, complete such areas as indicated.

****END OF SECTION 01 71 13****

SECTION 01 71 23
CONSTRUCTION SURVEYING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Qualified services.
 - 2. Survey of layout and performance.

1.1 UNIT PRICES - MEASUREMENT AND PAYMENT

- A. Separate measurement and payment will not be made for work under this Section. All costs in connection with the work specified herein will be considered to be included with the related item of work in the Bid Schedule of the Bid Form, or incidental to the Work.

QUALIFIED SERVICES

- B. Surveying services and field engineering services shall be performed under the direct supervision of a professional land surveyor or civil engineer currently licensed or registered in the State of California. A civil engineer providing field surveying shall have been registered prior to 1982 or have a current professional land surveyors license in the State of California.

Survey of layout and performance

- C. Surveying Requirements: Perform all surveys for layout and performance of the Work, make all calculations and drawings necessary to carry out such work. The contractor shall check the relative positions of all monuments and benchmarks to be used and shall report any damaged or out of position monuments to the City Engineer at once. The Contractor shall check such relative positions each time the contractor uses such monument or benchmark.
- D. Datum: The contractor shall be responsible for correctly locating all lines and grades and for performing all measuring as required for the construction and completion of the Work from established reference points and information as shown on the Contract Drawings.
- E. Equipment and Personnel: The Contractor's instruments and other survey equipment shall be accurate, suitable for the surveys required in accordance with recognized professional standards, and in proper condition and adjustment at all times. Perform all surveys under the direct supervision of a professional land surveyor or civil engineer currently licensed or registered in the State of California.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

****END OF SECTION 01 71 23****

SECTION 01 74 00 CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.

B. Interior dust control.

1.

regulations, and antipollution laws.

PART 2 - PRODUCTS

2.

property nor damage surfaces.

of the surface material to be cleaned.

manufacturer.

PART 3 - EXECUTION

3.

on an as-needed basis until painting is finished.

cleaning process will fall on wet or newly coated surfaces.

3.

other foreign materials from sight-exposed interior and exterior surfaces, including fixtures, equipment, etc.

removed. Paint work and equipment shall be cleaned and touched up as required.

window washer.

units have been operated during construction.

cleaned, if required, to remove soil and visible stains.

inspection of sight-exposed interior and exterior surfaces, equipment, fixtures, etc., and all work areas to verify that the entire Work is clean.

- J. Clean, strip, and seal all flooring products per manufacturer's specifications and requirements prior to installation of furniture and equipment.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Demonstration and Instructions.
- E. Project Record Documents.
- F. Operation and maintenance data.
- G. Warranties.
- H. Spare parts and maintenance materials.

1.2 CLOSEOUT PROCEDURES

- A. Request Architect's observation of rough-ins when walls and ceilings are still open for observation. Give Architect at least 48 hours notice. Architect will prepare punch list of unsatisfactory Work.
- B. When Work is substantially complete, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is substantially complete in accordance with Contract Documents and ready for Architect's inspection. Certificate shall include evidence that equipment and systems have been tested in the presence of the Architect and manufacturer's representatives, where applicable. Substantial Completion shall be defined as 95 percent completion of all Work, including 100 percent completion of the following: air balance report and submittal, final testing of fire alarm by Local Fire Inspector/Consultant/Owner's Representative, mechanical utility commissioning with Owner's Representative, final electrical testing by IOR/testing laboratory, all finishes, painting (except touch-up), cleaning of Project area (including window washing).
- C. Provide submittals to Architect that are required by governing or other authorities.
- D. Punch List:
 - 1. Contractor shall correct all punch list items within twenty days of delivery of the punch list, but no later than the final completion date.
 - 2. Prior to submission of its request for final payment, Contractor shall certify that a completed set of Project Record Documents has been submitted to the Architect for final review.

E. Final Inspection:

1. Within seven days after notice by the Contractor of completion of punch list work, the Architect will conduct the final inspection with the Owner and the Contractor.
2. Items found not resolved may be cause for back charge of additional time for Architect to re-visit the site for final verification.

F. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

G. Submit affidavit of payment of debts and claims, AIA Document G706.

H. Submit affidavit of release of liens, AIA Document G706A.

I. Submit consent of Contractor's surety to final payment, AIA Document G707.

1.3 REINSPECTION FEES

- A. Architect (and his consultants, if required) will perform 1 observation of rough-ins, and 1 observation of Work that is substantially complete. When punch list items have been completed, Architect will observe to verify.
- B. Should the Architect and his Consultants have to perform re-inspections and punch list due to failure of the Work to comply with the status of completion claimed by the Contractor; Owner will deduct the amount of compensation for such re-inspections and punch lists from the final payment to the Contractor.

1.4 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Architect.
- B. Statement shall reflect all adjustments to the Contract Sum:
 1. The original Contract Sum.
 2. Additions and Deductions Resulting From:
 - a. Previous Change Orders.
 - b. Deductions for uncorrected Work.
 - c. Penalties and bonuses.
 - d. Deductions for liquidated damages.
 - e. Deductions for re-inspection payment.
 - f. Other adjustments.
 3. Total Contract Sum, as adjusted.

4. Previous payments.
5. Sum Remaining Due: Architect will prepare a final Change Order, reflecting approved adjustments to the Contract Sum, which were not previously made by Change Order.

1.5 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

1.6 RELATED REQUIREMENTS

- A. As a condition precedent to final acceptance of the Project, the Contractor shall provide spare/loose parts, maintenance materials and operation manuals as required by various Sections of the Specifications.
 1. Parts and materials shall be packaged so as to preclude damage in normal handling and storage.
 2. Packages shall be labeled with full description of contents and Project name.
 3. Place packaged parts and materials at location directed by Owner's representative.
 4. Maintenance and Operation Manuals: Provide permanent quality manual of maintenance and operation for all materials requiring operation or for which manufacturer, supplier, or installer recommend maintenance (i.e., floor coverings, roofing, operating mechanisms, electrical devices, paint, etc.). Manuals shall contain manufacturer's instructions and recommendations for proper operation and maintenance. Where applicable, include parts list, sources of parts, service and program for frequency of maintenance. Five sets required, bound in 3-ring binders, shall be provided by Contractor.
 5. Prior to turning over any operations manuals or spare/loose parts, accompanied by a CD-ROM or flash drive, Contractor shall submit for approval and, upon approval, shall maintain a master log of required manuals and parts, including description, Specification reference, responsibility designation, anticipated and actual delivery dates, delivery acknowledgement, etc.
- B. The General Conditions cover the Contractor's responsibility to remedy defects due to faulty workmanship and materials which appear within one year from the date of recording of the Notice of Acceptance.
- C. Special warranties are required by various Sections of the Specifications. Assemble written warranties, label and submit to the Architect for review and transmittal to the Owner.
 1. Equipment warranties shall be written in the manufacturer's standard form and shall be countersigned by the subcontractor or supplier and the Contractor.
 2. All other warranties shall be written on the subcontractor's or supplier's letterhead and shall be countersigned by the Contractor.
 3. Bind warranties and bonds in heavy-duty five sets of commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 inch by 11 inch paper. Identify each binder on the front and the

spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name and the name of the Contractor. The CD-ROM or flash drive shall be included in the binder side pocket.

4. When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

1.7 FINAL CLEANING

- A. Execute final cleaning prior to final inspection. Work includes sweeping, brushing, and other general cleaning of completed Work and removal of debris, surplus material, and tools not in active use, scaffolding and other equipment no longer needed.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- H. Refer to Section 01 74 00 for additional requirements.

1.8 FIRE PROTECTION

- A. Store volatile/hazardous waste in covered metal containers and remove from premises daily in a manner which complies with all ordinances, regulations, and laws regarding hazardous materials.

1.9 POLLUTION CONTROL

- A. Conduct clean-up and disposal operations to comply with codes, ordinances regulations, and anti-pollution laws.

1.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.11 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.12 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following Record Documents; record actual revisions to the Work in contrasting color.
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
- B. Store Record Documents separate from documents used for construction, in a clean, dry environment and maintain sets in good order.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Section in contrasting color ink, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Changes made by Addenda and Modifications.
- E. Contract Drawings and Shop Drawings: Legibly mark each item in contrasting color ink to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Field changes of dimension and detail, identified by RFI or Change Order.
 - 4. Details not on original Contract Drawings.
- F. After final inspection is requested, Contractor shall submit Record Documents with digital scan copy in PDF to the Architect for review. Contractor shall make such revisions or corrections as may be necessary for the Drawings and Specifications to be a true, complete, and accurate record of the Work.

1. Accompany submittal with transmittal in duplicate, containing:
 - a. Date.
 - b. Project title and number.
 - c. Contractor's name and address.
 - d. Title and number of each Record Document.
 - e. Signature of Contractor or his authorized representative.
- G. Submit documents to Architect for final Application for Payment. Inadequate or incomplete Record Documents may be used as cause for withholding payment.

1.13 RECORD DRAWINGS

- A. Architect will provide Contractor with one set of reproducible sepia plans of the original Contract Drawings.
- B. Contractor shall maintain one set of marked-up prints kept at each job-site and updated each month, or as otherwise agreed, shall transfer changes and information indicated on the marked-up blue line prints to the reproducible drawings. Contractor shall submit to the Architect one set of blue line prints showing all changes incorporated into the Work since the preceding monthly submittal. The Record Drawings shall be available at the Project Site.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. Deviations in construction, especially pipe and conduit locations and deviations caused by Change Orders, Field Clarifications, Requests for Clarification and Addenda shall be accurately and legibly recorded.
- E. Locations and changes shall be done in a neat, legible manner and, where applicable, indicated by drawing a "cloud" around the changed or addition information.

1.14 RECORD DRAWING INFORMATION

- A. Record the following information:
 1. Locations of Work buried under or outside each building, such as plumbing and electrical lines and conduits.
 2. Actual numbering of each electrical circuit.
 3. Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract.
 4. Locations of all items, not necessarily concealed, which vary from the Contract Documents.
 5. Installed location of all cathodic protection anodes.
 6. Deviations from the sizes, locations, and other features of installations shown in the

Contract Documents.

7. Locations of underground Work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub-outs, invert elevations, etc.
8. Sufficient information to locate Work concealed in each building with reasonable ease and accuracy. In some instances, this may be by dimension, in others; it may be in relation to the spaces in the building near which it was installed.

1.15 OPERATION AND MAINTENANCE DATA

- A. Provide Data For:
 1. Fire alarm system.
 2. Mechanical equipment and controls.
 3. Energy management system.
 4. Electrical system.
 5. Security and communication systems.
- B. Submit prior to final inspection, bound in 8-1/2 inch x 11 inch text pages, three-ring, D-size binders with durable vinyl covers plus one CD-ROM for all equipment in the above categories.
- C. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide the binder contents using permanent page dividers with laminated plastic tabs, logically organized in Parts as described below.
- E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, engineers, Contractor, subcontractors, and major equipment suppliers.
- F. Part 2: Operation and maintenance instructions, arranged by Specification Section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:
 1. Significant design criteria.
 2. List of equipment.
 3. Parts list for each component.
 4. Operating instructions.
 5. Maintenance instructions for equipment and systems.
 6. Maintenance instructions for finishes, including recommended cleaning methods and materials.
- G. Part 3: Project documents and certificates, including the following:

1. Shop Drawings and Product Data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties.

1.16 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble documents from subcontractors, suppliers, and manufacturers, including items furnished by Owner.
- C. Provide Table of Contents and assemble in binder with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
- F. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on the Work that incorporates the products.
- G. Manufacturer's letter of intent to furnish products and services beyond the warranty period where indicated.
- H. Manufacturer's disclaimer and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.
- I. When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- J. When Work covered by warranty has failed and has been corrected, reinstate warranty by written endorsement. Reinstated warranty shall be equal to original warranty with equitable adjustment for depreciation.
- K. Upon determination that Work covered by warranty has failed, replace or repair Work to an acceptable condition complying with requirements of the Contract Documents.

1.17 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.
- B. Deliver to Project Site and place in location as directed.
- C. Obtain signed receipt for delivery of materials and submit prior to application for final payment.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- A. Use only those cleaning materials which will not create disruptive fumes or hazards to health or property and which will not damage surfaces.
- B. Use only cleaning materials and methods recommended by manufacturer of surface to be cleaned and by cleaning agent material manufacturer. Repair or replace surfaces damaged due to use of improper cleaners and techniques.

PART 3 - EXECUTION

3.1 CLEAN-UP DURING CONSTRUCTION

- A. Execute daily cleaning to keep Work, site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris, and rubbish.
- C. Remove waste materials, debris and rubbish from the site daily or dispose of in approved container on-site.

3.2 DUST CONTROL

- A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces
- C. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance and occupancy.
- D. Lower waste materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- E. Conform to City, County, and State dust control regulations.

3.3 GENERAL CLEANING REQUIREMENTS

- A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
- B. Wash and shine glazing mirrors.
- C. Polish glossy surfaces to a clear shine.
- D. Clean glass; remove labels, fingerprints, grease, dirt stains, spots, marks, and other foreign materials from exposed exterior and interior surfaces.
- E. Clean hardware, plumbing fixtures, and chrome and storefront systems; remove paint spots,

asphalt and smears from surfaces; clean fixtures and wash concrete and tile floors.

- F. Comply with all special cleaning, waxing and finishing instructions contained in Contract Documents.
- G. Restore existing improvements, inside or outside property, which were disturbed, damaged or destroyed as a result of Work under this Contract.
- H. Restore and replace damaged material conforming to original colors, textures, lines, grades, shapes and kind, except as otherwise required. Labor, material and methods used in restoring improvements shall conform to directions obtained from Architect before commencing Work.

3.4 FINAL CLEANING

- A. Use experienced workmen and professional cleaners for final cleaning.
- B. Legally dispose of waste materials, debris and rubbish off the site.
- C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from exposed and semi-exposed surfaces.
- D. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- E. Vacuum clean all interior spaces including inside cabinets. Broom clean paved surfaces. Rake clean other surfaces of grounds.
- F. Broom and water clean paved surfaces and walks. Rake clean other surfaces and grounds.
- G. Maintain cleaning until building or portion thereof, is accepted and occupied by Owner.
- H. At completion of construction and just prior to final acceptance or occupancy, conduct final inspection exposed interior and exterior surfaces.

3.5 VENTILATING SYSTEM CLEANING

- A. Clean permanent filters and replace disposable filters if units were operated during construction.
- B. Clean ducts, blowers and coils if units were operated during construction.

END OF SECTION

SECTION 01 78 36

WARRANTIES

PART 1 – GENERAL

1.

1.

manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.

suppliers shall not affect warranties between Contractor and Owner.

damage, improper maintenance, or accident caused by others nor shall he be responsible for defective parts whose replacement is necessitated by failure of Owner's maintenance forces properly to clean and service them, provided that Contractor has furnished complete operating and maintenance instructions to Owner.

warranty period shall run from the date of acceptance of such items.

the separate Sections of the Specifications or other Contract Documents shall be subject to the terms of this Section during the first year of the life of such warranty.

warranty period, the Contractor shall, promptly upon receipt of notice from the Owner or Architect and without expense to the Owner, comply with the following:

and correct all defects therein.

said repairs and changes.

site, disturbed in fulfilling any such warranty.

written notice, repair or cause to be repaired special equipment which has been furnished and installed and which may be damaged and the repair of which is included in the provision of any warranty.

nature, may suffer further damage or cause loss to the Owner owing to the 7-day delay, the Owner may, after notice, cause such equipment to be repaired.

of the cost to the Owner for the completion of such repairs and the reconditioning of the equipment to its exact state prior to damage.

period and notice thereof is given within such period, the warranty shall continue as to Work requiring repair or change until the things herein required to be done are completed, and the termination of the warranty period shall not apply thereto.

warranties addressed to and in favor of the Owner shall be secured from said subcontractors.

held to limit, as to time or scope of liability, the Contractor's liability for defects or the liability of his sureties to less than the legal limit of liability under laws having jurisdiction.

assumed under any other provision of the Contract Documents.

Contract.

1.

one year, typed on subcontractor's letterhead, when required by a Specification Section:

(The Remainder of this Page is Blank)

WRITTEN WARRANTY FOR

We hereby warrant that _____
which we have provided in _____ has been completed in accordance with
Specification Section _____ and Contract Documents requirements.

We agree to repair or replace any or all of our Work, together with any other adjacent Work which
may be displaced or damaged by so doing, which may prove to be either patently defective in its
workmanship or materials within the period of time prescribed by law or latently defective in its
workmanship or materials within a period of _____ year(s) from date established in the
Certificate of Substantial Completion of above-named structure, ordinary wear and tear and
unusual abuse or neglect excepted.

We also agree to repair any and all damages resulting from such defects.

In the event of our failure to comply with above-mentioned conditions within a reasonable time but
in no case longer than 7 calendar days after being notified in writing by the Owner we collectively
and separately do hereby authorize the Owner to have said defective Work and damages repaired
or replaced and made good at our expense and will honor and pay the costs and charges
therefore upon demand.

SIGNED _____
signing) (Subcontractor's name, address, license number, and date of

COUNTERSIGNED _____
signing) (Contractor's name, address, license number, and date of

1.

the respective manufacturers, suppliers, and subcontractors.

contract.

number.

1.

sheets to fit into binders.

the title of Project and name of Contractor.

covers.

1.

Completion, provide updated submittal within 30 days after acceptance listing the date of acceptance as the start of the warranty period.

1.

individual Sections.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

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SECTION 01 78 39 PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.

and other modifications marked currently to record changes made during construction.

condition, and shall not be used for construction purposes.

construction.

individual Specification Sections.

1.

of blue-line or black-line prints as the work proceeds.

clear, permanent markings. Use contrasting colors for different disciplines of Work and where required for clarity.

or other approved datum.

appurtenances referenced to permanent surface improvements.

construction, referenced to visible and accessible features of structure.

steps, retaining walls, and similar features.

accurately transferred by the Contractor to a complete set of reproducible vellum transparencies of the Drawings as originally issued for construction obtained from the Architect at Owner's cost.

Contractor shall furnish his own drawings for incorporation of details and dimensions.

certified by the Contractor as to their correctness and turned over to the Architect.

Work).

Specification Section to record:

ble), and supplier of each product and item of equipment actually installed.

Directive.

manufacturer's product was installed.

markup.

times for review by the Architect and Owner.

1.

payment to Contractor.

1.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

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SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 GENERAL

1. SUMMARY

a. Section Includes:

- 1) Demolition and removal of selected portions of building or structure.
- 2) Demolition and removal of selected site elements.
- 3) Salvage of existing items to be reused or recycled.

2. MATERIALS OWNERSHIP

- a. Unless otherwise indicated, demolition waste becomes property of Contractor.
- b. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1) Carefully salvage in a manner to prevent damage and promptly return to Owner.

3. CLOSEOUT SUBMITTALS

- a. Inventory of items that have been removed and salvaged.

4. FIELD CONDITIONS

- a. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- b. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- c. Notify City Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- d. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

- 1) If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- e. Storage or sale of removed items or materials on-site is not permitted.
- f. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1) Maintain fire-protection facilities in service during selective demolition operations.
- g. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 EXECUTION

1. EXAMINATION

- a. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- b. Inventory and record the condition of items to be removed and salvaged.

2. UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- a. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- b. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1) Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2) Arrange to shut off utilities with utility companies.
 - 3) If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4) Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

3. PROTECTION

- a. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

- b. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- c. Remove temporary barricades and protections where hazards no longer exist.

4. SELECTIVE DEMOLITION

- a. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1) Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 2) Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3) Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 4) Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 5) Dispose of demolished items and materials promptly
- b. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- c. Removed and Salvaged Items:
 - 1) Clean salvaged items.
 - 2) Pack or crate items after cleaning. Identify contents of containers.
 - 3) Store items in a secure area until delivery to Owner.
 - 4) Transport items to Owner's storage area. Protect items from damage during transport and storage.
- d. Removed and Reinstalled Items:
 - 1) Clean and repair items to functional condition adequate for intended reuse.
 - 2) Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3) Protect items from damage during transport and storage.
 - 4) Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- e. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

5. CLEANING

- a. Remove demolition waste materials from Project
 - 1) Do not allow demolished materials to accumulate on-site.
 - 2) Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3) Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4) Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- b. Burning: Do not burn demolished materials.
- c. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

****END OF SECTION 02 41 19****

SECTION 03 10 00 CONCRETE FORMWORK AND ACCESSORIES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all work of this section.

1.2 SCOPE

- A. Design, furnish and install forms for concrete as indicated on drawings and specified here. Remove forms and shores at specified time. Clean up.

1.3 RELATED WORK (See also Table of Contents)

- A. Reinforcing Steel: Section 03 21 00.
- B. Cast-In-Place Concrete: Section 03 30 00.
- C. Structural Steel: Section 05 12 00.
- D. Metal Fabrications: Section 05 50 00.
- E. Rough Carpentry: Section 06 10 00.
- F. Items relating solely to mechanical or electrical work are included under those Divisions, except as specifically indicated otherwise on Drawings.

1.4 QUALITY ASSURANCE

- A. General:
 - 1. Conform to all requirements of ACI 347 and ACI 318 Section 26.11.
 - 2. Concrete formwork shall be designed and constructed to safely support fluid concrete and superimposed construction loads without excessive deflection or concrete leakage. Provide bracing to maintain accurate alignment and to resist all anticipated lateral loads. Forms shall conform with drawings as to shape, line, and dimension. Design, engineering and construction of forms shall be Contractor's responsibility. Formwork for exposed concrete shall be constructed to tolerances indicated in ACI 303R.
 - 3. Cooperate and coordinate with other trades who furnish and/or install piping, conduit, reglets, anchors, inserts, sleeves, hangers, etc., as their work requires; including provisions for recesses and chases.
- B. Submittals: (Submit under provisions of Section 01 33 00)
 - 1. Product Data. Provide manufacturers data and installation instructions for the following:

- a. Tie rods and spreaders.
 - b. Formwork for exposed concrete.
 - c. Form coatings and release agents.
- C. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2016 California Building Code (CBC).
 - 2. American Concrete Institute (ACI).
 - a. ACI 303R - "Guide to Cast-In-Place Architectural Concrete Practice"
 - b. ACI 318 – "Building Code Requirements for Structural Concrete"
 - c. ACI 347 - "Recommended Practice for Concrete Formwork"
 - 3. Standard Grading and Dressing Rules #17, West Coast Lumber Inspection Bureau (For Douglas Fir Form Lumber).
 - 4. U.S. Product Standard PS 1-83 (For Plywood Form Lumber).

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Form Material:
 - 1. Smooth Concrete exposed to view: 5/8 inch minimum APA Plyform or steel.
 - 2. Concrete concealed from view: 5/8 inch minimum APA Plyform, steel or clean and sound 1 x 8 Standard Grade Douglas Fir.
- B. Fiber Forms: Tubular column forms spirally constructed of laminated plies of fiber. Plies shall be laminated using a non-water sensitive adhesive and surface wax impregnated for moisture protection. Forms shall give a smooth and seamless appearance to the cast concrete. Provide reveals, as shown on the drawings, as supplied by the form manufacturer. Forms shall be as manufactured by Sonoco Products, plastic lined; Burke Smoothtube by Burke Co.; or approved equal.
- C. Form Clamps: Assembly to have cone washers, (1 inch break back) 3/8" inch center rod.
- D. Form Ties:
 - 1. Concrete exposed to view: Snap ties allowing full 1 inch break back.
 - 2. Concrete concealed from view: Snap ties or wire.
 - 3. Verify special spacing requirements with architectural drawings at exposed concrete.
- E. Spreaders: Metal (no wood).
- F. Form Coating: Non-grain and non-staining types of form coating that will not leave a residual matter on the face of the concrete or adversely affect proper bonding of any subsequent paint or other surface applications.
 - 1. Form coating containing mineral oils or other non-drying materials will not be permitted for any concrete work.

- G. Joint Tape: No. 471 plastic film tape 3 inches wide, as manufactured by the Industrial Tape Division of 3M Company.
- H. Expansion Joint Filler (Preformed): ½ inch thick; Flexcell by Celotex Corporation, Elastic Fiber Expansion Joint by Phillip Carey Mfg. Co., or Sealtight Fiber Expansion Joint by W.R. Meadows, Inc.
- I. Extruded Polystyrene Foam: ASTM C578 type IV. Dow Chemical Corp. "Styrofoam", UC Industries "Foamular", or approved equal.

PART 3 - EXECUTION

3.1 FORM CONSTRUCTION

- A. Construct substantial forms to the shapes, lines, grades and elevations shown, sufficiently tight to prevent leakage of mortar, and tied, clamped and braced to prevent spreading, shifting or settling. Plywood joints shall be square and tight; plywood shall be arranged in such manner as to minimize number of joints and to provide a smooth, attractive finished concrete surface.
- B. Apply form coating to forms before reinforcing steel is in place.
- C. Sleeves, anchors and bolts, including those for angle frames, supports, ties and other materials in connection with concrete construction, shall be secured in position before the concrete is placed.
- D. Proper provisions shall be made for openings, blockouts, sleeves, offsets, sinkages, recesses and depressions required by other trades and suppliers prior to placing concrete.
 - 1. The Contractor shall also see that sleeves have been installed and other provisions have been made for the installation of mechanical, electrical and other equipment.
 - 2. Coordinate with all trades to insure proper placement of all items in forms and to provide proper blockouts wherever required.
- E. Concrete work out of alignment, level or plumb will be cause for rejection of the whole work affected and, if so rejected, such work shall be removed and replaced, as directed by Architect, with no additional cost to the Owner.
- F. Form Not Required: Concrete footings may be poured directly against cut earth where feasible and when the Architect's approval has been obtained.
 - 1. See structural drawings for requirements for placing concrete footings directly against earth without forms.
- G. Use ¾ inch minimum wood chamfer strips typical at all exposed corners unless noted otherwise on drawings.

3.2 CLEANING OF FORMS

- A. All dirt, chips, sawdust, rubbish, water, etc. shall be completely removed from form by water hosing and air pressure before any concrete is deposited therein. No wooden ties or blocking shall be left in concrete except where indicated for attachment of other work.
- B. Thoroughly clean and patch all holes in formwork and re-coat as required before reusing. Forms not suited to obtain concrete surfaces and tolerances in conformity with Contract requirements will be rejected by Architect.
 - 1. Reuse of forming materials shall be limited only as required to produce the finishes as specified, free from blemishes and other defects unless covered by other building materials in which case blemish free concrete is not required.

3.3 INSPECTION OF FORMS

- A. Notify the Architect at least 48 hours in advance of the beginning of pouring operations and at the completion of formwork and location of all construction joints. An inspection of forms and joints will be made for approval of finished work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety of formwork, bulkheads and shorings.

3.4 REMOVAL OF FORMS AND SHORING

- A. Do not remove forms until concrete has attained sufficient strength to support its weight and any construction loading. Concrete must be allowed to cure long enough to avoid damage during form removal. Contractor or his representative in charge of concrete construction shall be present during removal of forms and shores, and shall be personally responsible for safety of this operation at all times and under all conditions.
- B. As a minimum, formwork and shoring shall remain in place for the following periods:
 - 1. Concrete on grade: 24 hours
 - 2. Walls and Columns: 3 days
 - 3. Formwork may be removed and reshores installed before the times indicated above, provided the concrete has cured sufficiently to avoid damage when formwork is removed. Shores must be immediately replaced with reshores in a sequence designed to avoid inducing stress in the concrete member.

3.5 ADJUSTING AND CLEANING

- A. Upon completion of this Work, clean up and remove from Site all equipment and debris resulting from this work.
- B. Surfaces to be painted shall be smooth and free of substances such as dirt, wax, excessive latence, grease or materials that would prevent proper bonding of finishes.
 - 1. Removal of foregoing contaminants, and complete removal of parting and curing compounds affecting proper paint bond, shall be responsibility of this Section of

Work. Sandblast cleaning shall not be employed without specific approval of Structural Engineer.

END OF SECTION 03 10 00

SECTION 03 21 00 REINFORCING STEEL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all work of this Section.

1.2 SCOPE

- A. Unless noted otherwise, furnish and install reinforcing for all concrete, including dowels, chairs, spacers, bolsters, etc., necessary for supporting and fastening reinforcement in place as shown on the Drawings and specified herein.

1.3 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Section 03 10 00.
- B. Cast-In-Place Concrete: Section 03 30 00.
- C. Concrete Unit Masonry: Section 04 22 00.

1.4 QUALITY ASSURANCE

- A. General:
 - 1. Acceptable Manufacturers: Regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.
 - 2. Installer Qualifications: Installation shall be done only by an installation firm normally engaged in this business. All work shall be performed by qualified mechanics working under an experienced supervisor.
 - 3. Welding Qualifications: Welding procedures, welding operators and welders shall be qualified in accordance with AWS D1.4 - "Structural Welding Code Reinforcing Steel".
 - a. Welders whose work fails to pass inspection shall be re-qualified before performing further welding.
 - 4. Reinforcement Work shall conform to ACI 301 and ACI 318 Chapter 25, as minimum standards.
 - 5. Allowable Tolerances:
 - a. Fabrication:
 - 1) Sheared length: 1 inch.
 - 2) Depth of truss bars: Plus or minus ½-inch.
 - 3) Ties: Plus or minus ½-inch.
 - 4) All other bends: Plus or minus 1 inch.
 - b. Placement:
 - 1) Concrete cover to form surfaces: Plus or minus ¼-inch.
 - 2) Minimum spacing between bars: Plus or minus ¼-inch.

- 3) Crosswise of members: Spaced evenly within 2 inches of stated separation.
 - 4) Lengthwise of members: Plus or minus 2 inches.
 - c. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.
- B. Standards and References: (Latest Edition unless otherwise noted):
- 1. 2016 California Building Code (CBC).
 - 2. American Concrete Institute (ACI).
 - a. ACI 301 - "Specifications for Structural Concrete for Buildings".
 - b. ACI 315 - "Details and Detailing of Concrete Reinforcing".
 - c. ACI 318 – "Building Code Requirements for Structural Concrete"
 - 3. American Society for Testing and Materials (ASTM).
 - a. ASTM A82 - "Cold Drawn Wire for Concrete Reinforcement".
 - b. ASTM A185 - "Welded Steel Wire Fabric for Concrete Reinforcement".
 - c. ASTM A615 - "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".
 - d. ASTM A706 – "Low Alloy Steel Deformed Bars for Concrete Reinforcement".
 - 4. Concrete Reinforcing Steel Institute (CRSI) - "Manual of Standard Practice".
 - 5. American Welding Standard (AWS).
 - a. AWS D1.4 - "Structural Welding Code – Reinforcing Steel".
- C. Submittals: (Submit under provisions of Section 01 33 00)
- 1. Shop Drawings: Prepare in accordance ACI 315. Indicate bending diagrams, assembly diagrams, splicing and laps of bars and shapes, dimensions and details of bar reinforcing and assemblies. Correctness of all reinforcing requirements and work is the responsibility of Contractor. Identify such shop drawings with reference thereon to sheet and detail numbers from Contract Drawings.
 - a. Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
 - b. No reinforcing steel shall be fabricated without approved shop drawings.
 - c. Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
 - d. Areas of high congestion, including member joints and embed locations shall be fully detailed to verify clearances and assembly parameters and coordination with other trades.
 - 2. Certified mill test reports of supplied reinforcing indicating chemical and physical analysis. Tensile and bend tests shall be performed by the mill in accordance with ASTM A615.
 - 3. Product Data:
 - a. Manufacturer's specifications and installation instructions for splice devices.
 - b. Bar Supports.
 - 4. Certificates of Compliance with specified standards:
 - a. Reinforcing bars.
 - b. Welded wire fabric.
 - c. Welding electrodes.

5. Samples: Only as requested by Architect.

D. Tests and Inspections:

1. A testing program is required prior to start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
2. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report to be borne by the Contractor.
3. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Section 1704.
4. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.
5. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure and welder qualification as well as the welds. Inspector will use non-destructive testing or any other aid to visual inspection that he deems necessary to assure himself of the adequacy of the weld.
6. Tests and inspection shall be performed by Owners testing agency except when needed to justify rejected work, in which case the cost of retests and reinspection shall be borne by the Contractor.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.
1. Store reinforcement in a manner that will prevent excessive rusting or coating with grease, oil, dirt, and other objectionable materials. Storage shall be in separate piles or racks so as to avoid confusion or loss of identification after bundles are broken.
- C. Deliver and store welding electrodes in accordance with AWS D1.4.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcement Bars: ASTM A615, Grade 60 for all bars.
1. Bar reinforcement to be welded shall meet chemical requirements of ASTM A706.
 2. Longitudinal reinforcement in column and beams of special moment-resisting

frames shall meet the chemical requirements of ASTM A706.

- B. Stirrups and Ties: ASTM A615, Grade 60 for all bars.
- C. Steel Dowels: Same grade as bars to which dowels are connected.
- D. Welded wire Fabric: ASTM A185.
- E. Tie Wires: FS-QQ-W-461, annealed steel, black, 16 gauge minimum.
- F. Welding Electrodes: AWS D1.4, low hydrogen, E70XX series.
- G. Bar Supports:
 - 1. Typical, unless noted otherwise; CRSI Class 2 wire supports.
 - a. Do not use wood, brick or other objectionable materials.
 - b. Do not use galvanized supports.
 - 2. Supports placed against ground: Pre-cast concrete blocks not less than 4 inches square with embedded wire.
- H. Mechanical Couplers: Comply with ACI 318 section 25.5.7.1

PART 3 - EXECUTION

3.1 FABRICATION

- A. Shop fabricate reinforcement to meet requirements of Drawings.
- B. Fabricate reinforcement in accordance with the requirements of ACI 315 where specific details are not shown or where Drawings and Specifications are not more demanding.
- C. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of bars for bending will not be permitted.
- D. Reinforcing shall not be field bent or straightened without structural engineer's review.
- E. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

3.2 CONDITION OF SURFACES

- A. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.

3.3 GENERAL

- A. Concrete shown without reinforcing shall be reinforced as similar parts shown with

reinforcing except where concrete is specifically noted to be unreinforced.

3.4 PLACEMENT

- A. All reinforcement shall be accurately set in place, lapped, spliced, spaced rigidly and securely held in place and tied with specified wire at all splices and crossing points. All wire tie ends shall point away from the form. Carefully locate all dowel steel to align with wall and column steel.
 - 1. Bars shall be in long lengths with laps and splices as shown. Offset laps in adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the Drawings. Tie all laps and intersections with the specified wire.
 - 2. Maintain clear space between parallel bars not less than 1-1/2 times nominal diameter, but in no case shall clear space be less than 1-1/2 times maximum size concrete aggregate.
 - 3. Reinforcing dowels for slabs shall be placed as detailed. Sleeves may be used if reviewed by the Structural Engineer before installation. Install dowel through all construction and expansion joints for all slabs on grade.
- B. Bar Supports: Support and securely fasten bars with chairs, spacers and ties to prevent displacement by construction loads or placement of concrete beyond the tolerances specified. Conform to CRSI as a minimum standard.
- C. Steel Adjustment:
 - 1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
 - 2. Do not move bars beyond allowable without concurrence of Structural Engineer.
 - 3. Do not heat, bend, or cut bars without concurrence of Structural Engineer.
 - 4. Reinforcement shall not be bent after being embedded in hardened concrete.
- D. Splices:
 - 1. Splice reinforcing as shown.
 - 2. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
 - 3. Splice Devices: Install in accordance with manufacturer's written instructions. Obtain Structural Engineer's review before using.
 - 4. Do not splice bars except at locations shown without concurrence of Structural Engineer.
 - a. Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for Engineer's approval".
- E. Welding:
 - 1. Welding is not permitted unless specifically detailed on Drawings or approved by Engineer.
 - 2. Employ shielding metal-arc method and meet requirements of AWS D1.4.
 - 3. Welding is not permitted on bars where the carbon equivalent is unknown or is determined to exceed 0.55.
 - 4. Welding shall not be done within two bar diameters of any bent portion of a bar

- which has been bent cold.
5. Welding of crossing bars is not permitted.
- F. Welded Wire Fabric: Install in long lengths, lapping 24 inches at end splices and one mesh at side splices. Offset laps in adjacent widths. Place fabric in approximately the middle of the slab thickness unless shown otherwise on the Drawings by dimension. Wire tie lap joints at 12-inch centers. Use concrete blocks to support mesh in proper position.
- G. Reinforcement shall be free of mud, oil or other materials that may reduce bond at the time concrete is placed. Reinforcement with tightly adhered rust or mill scale will be accepted without cleaning provided that rusting has not reduced dimensions and weights below applicable standards. Remove loose rust.
- H. Protection against rust:
1. Where there is danger of rust staining adjacent surfaces, wrap reinforcement with impervious tape or otherwise prevent rust staining.
 2. Remove protective materials and clean reinforcement as required before proceeding with concrete placement.
- I. Drawing Notes: Refer to notes on Drawings for additional reinforcement requirements.
- J. Mechanical and Electrical Drawings: Refer to Mechanical and Electrical Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

END OF SECTION 03 21 00

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Furnish, place and finish cast in place concrete and related work as indicated on the Drawings and specified here.
 - 1. Install miscellaneous metal and other items furnished by other trades to be installed in concrete work.
 - 2. Provide facilities for job curing of test cylinders and transporting to Testing Laboratory.
- B. Provide grouting of steel base plates as indicated on the Drawings and specified here.

1.3 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Section 03 10 00.
- B. Reinforcing Steel: Section 03 21 00.
- C. Mortar and Grout: 04 05 00.

1.4 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2016 California Building Code (CBC).
 - 2. American Concrete Institute (ACI)
 - a. ACI 117 – “Standard Tolerances for Concrete Construction and Materials”
 - b. ACI 211.1 – “Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete”
 - c. ACI 211.2 – “Standard Practice for Selecting Proportions for Structural Lightweight Concrete”
 - d. ACI 301 – “Structural Concrete for Buildings”
 - e. ACI 302 – “Guide for Concrete Floor and Slab Construction”
 - f. ACI 305R – “Hot Weather Concreting”
 - g. ACI 306R – “Cold Weather Concreting”
 - h. ACI 318 – “Building Code Requirements for Structural Concrete”
 - i. ACI 360 – “Design of Slabs-On-Ground”
 - 3. American Society for Testing and Materials (ASTM)
 - a. ASTM C31 – “Making and Curing Concrete Test Specimens in the Field”

- b. ASTM C33 – “Concrete Aggregates”
 - c. ASTM C39 – “Compressive Strength of Cylindrical Concrete Specimens”
 - d. ASTM C42 – “Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”
 - e. ASTM C94 – “Ready-Mixed Concrete”
 - f. ASTM C109 – “Test of Hydraulic Cement Concrete”
 - g. ASTM C143 – “Slump of Hydraulic Cement Concrete”
 - h. ASTM C150 – “Portland Cement”
 - i. ASTM C172 – “Sampling Freshly Mixed Concrete by the Volumetric Method”
 - j. ASTM C192 – “Making and Curing Concrete Test Specimens in the Laboratory”
 - k. ASTM C260 – “Air-Entraining Admixtures for Concrete”
 - l. ASTM C330 – “Lightweight Aggregates for Structural Concrete”
 - m. ASTM C494 – “Chemical Admixtures for Concrete”
 - n. ASTM C567 – “Standard Test Method for Determining Density of Structural Lightweight Concrete”
 - o. ASTM C618 – “Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete”
 - p. ASTM C685 – “Volumetric Batching and Continuous Mixing”
 - q. ASTM C1157 – “Hydraulic-Cement”
- B. Submittals: (Submit under provisions of Section 01 33 00)
- 1. Concrete mix designs. See “Mix Design” below. Include results of test data used to establish proportions.
 - 2. Certificates of Compliance from Manufacturer
 - a. Cement certificates
 - b. Aggregates
 - c. Admixtures.
 - 3. Data regarding hardeners and sealers.
 - 4. Grout samples for sacked surface textures and colors upon Architects request only.
 - 5. Layout drawings for construction, control and expansion joints.
 - 6. Transit-mix delivery slips:
 - a. Keep record at the job site showing time and place of each pour of concrete, together with transit-mix delivery slips certifying contents of the pour.
 - b. Make the record available to the Architect for his inspection upon request.
 - c. Upon completion of this portion of the work, deliver the record and the delivery slips to the Architect.
 - 7. See Section 03 21 00 for reinforcing steel submittals.
- C. Tests and Inspections:
- 1. Provide special inspections and testing as described in the “Statement of Structural Special Inspections and Testing” within the structural drawings and as required by this section.
 - 2. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are

- minimum requirements; additional requirements may be required in final testing program.
3. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1903.1.
 - a. Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12.
 - 1) A record shall be made of time and of locations of concrete from which samples were taken.
 - 2) Four identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and two at age 28 days unless otherwise specified. Preserve remaining cylinder for future use.
 - 3) Test specimens in accordance with ASTM C157.
 - b. Concrete consistency (slump) shall be tested in accordance with ASTM C143.
 4. Provide full time inspection per CBC Section 1704.3 during the taking of test specimens and during the placing of all concrete and embedded steel.
 5. See Section 03 21 00 for reinforcing steel tests and inspections.
 6. Provide concrete batch plant inspections per ASTM C685.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Portland Cement: ASTM C 150, Type II or Type V. One brand of cement shall be used throughout to maintain uniform color for all exposed concrete.
- B. Concrete Aggregate: Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as combination of sizes when two or more are used, shall conform to grading requirements of appropriate ASTM Standards and ACI 318.
 1. Concrete Aggregates for Standard Weight Concrete: ASTM C 33. Aggregate shall be crushed granite or Perkins type.
 2. Concrete Aggregates for Lightweight Concrete: ASTM C330 to produce concrete weighing no more than 116 pcf at 28 days. Aggregate shall be vacuum saturated expanded shale as produced through the rotary kiln method.
- C. Water: Clean and free from injurious amounts of oil, acids, alkali, organic matter and other deleterious substances; suitable for domestic consumption.
- D. Admixtures shall be subject to prior approval by the Architect, in accordance with ACI 318 Section 26.4.1.4. Calcium Chloride is not permitted.
 1. Water Reducing
 - a. ASTM C494 Type A - for use in cool weather.

- b. ASTM C494 Type D - for use in hot weather.
 - 2. Air Entraining
 - a. Conform to ASTM C 260
 - 3. Fly Ash
 - a. Conform to ASTM C 618
 - 4. Mid-Range Water-Reducers
 - a. Master Builders "Polyheed" or approved equal.
 - 5. Fly Ash Pozzolan
 - a. Conforming to ASTM A-618 Class F
- F. Sand: Clean, dry, well graded.
- G. Abrasive aggregate for non-slip finish: Fused aluminum oxide grits, graded 12/30. Use factory-graded rustproof and non-glazing material that is unaffected by freezing, moisture and cleaning materials.
- 1. Products offered by manufacturers to comply with the above requirements include: A-H Alox; Anti-Hydro Waterproofing Co., Toxgrip; Toch Div. - Carboline, or approved equal.
- H. Expansion Joint Filler:
- 1. Joint fill shall be a preformed non-extruded resilient filler, saturated with bituminous materials and conforming to ASTM D 1751. Products shall be equivalent to Burke "Fiber Expansion Joint", W.R. Meadows "Fibrated Expansion Joint Filler", or approved equal.
- J. Concrete Sealer: Cure and Seal, as manufactured by the Euclid Chemical Company "Aqua-Cure VOX", Sonneborn "Kure-N-Seal WB", Burke "Spartan-Cote", W.R. Meadows "Intex" or approved equal conforming to ASTM C-309, Type I, Class B requirements, and conforming to State of California Air Resources Board VOC Regulations.
- K. Concrete Hardener/Sealer: Clear, water soluble, sprayable in-organic silicate based hardener/sealer or acrylic co-polymer resin. Products shall be equal to Euclid Chemical Company "Eucosil", Burke "Spartan-Cote", Sonneborn "Sonosil", W.R. Meadows "Pena-Lith", or approved equal and must conform to State of California Air Resources Board VOC Regulations.
- L. Concrete Cure: Water based curing compound conforming to ASTM C-309, Type 1, Class A and B, and AASHTO Specification M-148; Type 1, Class A and B requirements, and State of California Air Resources Board VOC Regulations. Product shall be equivalent to Euclid Chemical Company "Kurez VOX", Burke "No. 1127" or "Aqua-Resin Cure", W.R. Meadows "1100 Clear", or approved equal.
- M. Non-Shrink Grout: See Section 2.2.A.6.

2.2 CONCRETE

A. Concrete Mixes:

1. Type A Concrete:
Strength: 3000 lbs. per square inch at 28 days.
Maximum Aggregate Size: 1-1/2 inch.
Cement Content: As required by mix design (ACI 318 Section 26.4.3).
5.0 sacks per yard minimum.
Maximum Water to Cement Ratio: 0.58
Admixture: Water Reducing.
Weight: 145 lbs. per cubic foot
Use for unexposed foundation concrete except as otherwise specified. At Contractor's option, Type B concrete may be substituted for this.
 2. Type B Concrete:
Strength: 3500 lbs. per square inch at 28 days.
Maximum Aggregate Size: 1 inch.
Minimum Cement Content: As required by mix design. (ACI 318 Section 26.4.3).
5.5 sacks per yard minimum.
Maximum Water to Cement Ratio: 0.45
Admixture: Water reducing.
Weight: 145 lbs. per cubic foot
Use for building slab on grade
 3. Grout shall be non-shrink, non-metallic, flowable Type "713" or "928" by BASF.
 - a. Metallic grout equivalent to Master Builders "Embeco" may be used only where covered by earth, concrete, or masonry.
 - b. Acceptance by Architect required before using.
- B. Consistency of Concrete: Concrete slump, measured in accordance with ASTM C 143, shall fall within following limits.
1. For General concrete placement: 4 inch \pm 1 inch.
 2. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch \pm 1 inch after dosing, 2 inch \pm 1 inch before dosing.
 3. Concrete slump shall be taken at point of placement. Use water reducing admixtures as required to provide a workable consistency for pump mixers. Water shall not be added at the jobsite without written review by the structural engineer.
- C. Mix Design:
1. Initial mix design shall be prepared for all concrete in accordance with ACI 318 Section 26.4.3. Mix proportions shall be determined in accordance with ACI 318 Section 26.4.3 or 26.4.4. In the event that additional mix designs are required due to depletion of aggregate sources, aggregate not conforming to Specifications or at request of Contractor, these mixes shall be prepared as above.
 2. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete so that mix designs can be modified accordingly.
 3. Fly ash shall not exceed 25% of the total cementitious material.

4. Provide 6% air entrainment typical for exterior concrete exposed to freeze-thaw cycles.
 5. Owner's testing laboratory shall review all mix design before submittal.
- D. Mixing:
1. Equipment: All concrete shall be machine mixed. Provide adequate equipment and facilities for accurate measurement and control of materials.
 2. Method of Mixing:
 - a. Transit Mixing: Comply with ASTM C 94. Ready mixed concrete shall be used throughout, except as specified below.
 - b. On-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect. Approval of site mixing does not relieve Contractor of any other requirements of Specifications.
 - c. Mixing shall be in accordance with ASTM C94 or ASTM C685.
 3. Mixing Time: After mix water has been added, concrete shall be mixed not less than 1-1/2 minutes nor more than 1-1/2 hours. Concrete shall be rejected if not deposited within the time specified.
 4. Admixtures:
 - a. Air entraining and chemical admixtures shall be charged into mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by manufacturer. Accuracy of measurement of any admixture shall be within plus or minus 3%.
 - b. Two or more admixtures may be used in same concrete, provided such admixtures are added separately during batching sequence, and provided further that admixtures used in that combination retain full efficiency and have no deleterious effect on concrete or on properties of each other.
 - c. All admixtures are to be approved by Structural Engineer prior to commencing this work.
 5. Retempering:
 - a. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall be discarded, not retempered.
 - b. Indiscriminate addition of water to increase slump is prohibited.
 - c. When concrete arrives at project with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded. Water shall be incorporated by additional mixing equal to at least half of total mixing time required. Any addition of water above that permitted by limitation of water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain proper water-cement ratio. Such additions shall only be used if approved by Architect. In any event, with or without addition of cement, not more than 2 gallons of water per cubic yard of concrete, over that specified in design mix, shall be added.
 6. Cold Weather Batching: When average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. When placed in forms, concrete placed in these

temperatures shall have a minimum temperature based on dimensions of concrete sections placed per ACI 301.

7. Hot Weather Batching: Concrete deposited in hot weather shall have a placing temperature below 90 degrees F per ACI 301. If necessary, ingredients shall be cooled to accomplish this.

2.3 FLOOR LEVELING AND FILL MATERIALS

- A. Epoxy Concrete Mortar: Floor leveling, non-shrink trowel applied epoxy concrete mortar; TPM 115 General Polymers Corp., A-H Emery Epoxy Topping #170 Anti-Hydro Corp., or approved equal, where areas to fill are less than 1/4 inch thick.
- B. Concrete Mortar: Floor leveling, patching and repair, non-shrink trowel applied concrete mortar; Master Builders EMBECO 885, Euclid EUCO, or approved equal, where areas of fill are greater than 1/4 inch thick.
- C. Cementitious Floor Leveling Material: Shall be self-leveling or trowelable with a minimum 28 day compressive strength of 3000 psi in accordance with ASTM C-109. Material shall be equal to Quickrete No. 1249, Ardex V-800/K-55, Mapei "Ultra/Flex" or approved equal.

PART 3 - EXECUTION

3.1 PLACEMENT

- A. Before any concrete is placed, the following items of work shall have been completed in the area of placing.
 1. Forms shall have been erected, adequately braced, cleaned, sealed, lubricated if required, and bulkheaded where placing is to stop.
 2. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete. The wetting of forms shall be started at least 12 hours before concreting.
 3. Reinforcing steel shall have been placed, tied and supported.
 4. Embedded work of all trades shall be in place in the forms and adequately tied and braced.
 5. The entire place of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter. No wooden ties or blocking shall be left in the concrete except where indicated for attachment of other work.
 6. Reinforcing steel, at the time the concrete is placed around it, shall be cleaned of scale, mill scale or other contaminants that will destroy or reduce bond.
 7. Concrete surfaces to which fresh concrete is to be bonded shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.
 8. Prior to placing concrete for any slabs on grade, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.
 9. No concrete shall be placed until formwork and reinforcement has been approved by Architect. Clean forms of all debris and remove standing water. Thoroughly clean reinforcement and all handling equipment for mixing and

transporting concrete. Concrete shall not be placed against reinforcing steel that is hot to the touch. Notify Structural Engineer 48 hours in advance of concrete pour.

- B. Conveying: Handle concrete from mixer to place of final deposit by methods which will prevent separation or loss of ingredients. Deposit concrete in forms as nearly as practicable at its final position in a manner which will insure that required quality is obtained. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.
- C. Depositing: Deposit concrete into forms in horizontal layers not exceeding 24 inches in thickness around building, proceeding along forms at a uniform rate and consolidating into previous pour. In no case shall concrete be poured into an accumulation of water ahead of pour, nor shall concrete be flowed along forms to its final place of deposit. Fresh concrete shall not be permitted to fall from a height greater than 6 feet without use of adjustable length pipes or, in narrow walls, of adjustable flexible hose sleeves. Concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. If any concreting operation, once planned, cannot be carried on in a continuous operation, concreting shall stop at temporary bulkheads, located where resulting construction joints will least impair the strength of the structure. Location of construction joints shall be as shown on the drawings or as approved by Structural Engineer. The rate of rise in walls shall not be less than 2 feet per hour.
 - 1. Consolidation: Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing. Power vibrators of approved type shall be used immediately following pour. Spading by hand, hammering of forms or other combination of methods will be allowed only where permitted by Structural Engineer. In no case shall vibrators be placed against reinforcing steel or used for extensive shifting of deposited fresh concrete. Provide and maintain standby vibrators, ready for immediate use.
 - 2. Hot Weather Concreting: Unless otherwise directed by the Architect, perform all work in accordance with ACI 305 when air temperature rises above 75 degrees F and the following:
 - a. Mixing Water: Keep water temperature as low as necessary to provide for the required concrete temperature at time of placing. Ice may be required to provide for the design temperature.
Aggregate: Keep aggregate piles continuously moist by sprinkling with water.
Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 90 degrees F per ACI 301. The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
Dampen subgrade and formwork before placing concrete. Remove all excess water before placing concrete. Keep concrete continuously wet when air temperature exceeds 85 degrees F for a minimum of 48 hours after placing concrete. For slab on grade construction, see Section 3.1.E.
Protection: Minimize evaporation from concrete in place by providing shade and windbreaks. Maintain such protection in place for 14 days minimum.

3. Cold Weather Concreting: Follow recommended ACI 306 procedures when average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, as approved by Architect. Concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed as shown in ACI 301. No chemicals or salts shall be used to prevent freezing and no accelerating agents shall be used without prior approval from Architect.
- D. Construction Joints: Install only as indicated and noted on Drawings. Joints not indicated on Drawings shall be so located, when approved, as to least impair strength of structure, and shall conform to typical details. Construction joints shall have level tops, vertical sides. Horizontal construction joints shall be thoroughly cleaned and roughened by removing entire surface film and exposing clean aggregate solidly embedded in mortar matrix. Joints between concrete and masonry shall be considered construction joints. Vertical construction joints need not be roughened. See Drawings for doweling and required keys.
1. Roughen construction joints by any of following methods:
 - a. By sandblasting joint.
 - b. By thoroughly washing joint, using a high pressure hose, after concrete has taken initial set. Washing shall be done not less than 2 hours nor more than 4 hours after concrete has been poured, depending upon setting time.
 - c. By chipping and wire brushing.
 2. All decisions pertaining to adequacy of construction joint surfaces and to compliance with requirements pertaining to construction joints shall be reviewed with the Structural Engineer.
 3. Just before starting new pour, horizontal and vertical joint surfaces shall be dampened (but not saturated).
 4. Before placing regular concrete mix, horizontal construction joint surfaces shall be covered with a layer of mortar composed of cement and fine aggregate of same proportions as that used in prescribed mix, but omitting coarse aggregate.
 5. For slabs, construction joints shall be in locations shown on plan. If not shown, locate at intervals not exceeding 150 feet in each direction. Refer to drawings for proper details for reinforcing at construction joints.
- E. Concrete Slabs on Grade:
1. Exterior and interior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and compacted prior to placing of concrete.
 2. Typically, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of compacted crushed rock, unless otherwise indicated, over a vapor retarder.
 3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.
 4. Vapor Retarder installation shall be in accordance with manufacturer's instructions and ASTM E 1643.

- a. Unroll Vapor Retarder with the longest dimension parallel with the direction of the pour.
 - b. Lap Vapor Retarder over footings and seal to foundation walls.
 - c. Overlap joints 6 inches and seal with specified tape.
 - d. Seal all penetrations (including pipes) per manufacturer's instructions.
 - e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
 - f. Repair damaged areas by cutting patches of Vapor Retarder, overlapping damaged area 6 inches and taping all four sides with tape.
- F. Control Jointing - Slabs on Grade:
- 1. Joints shall be in locations indicated on Drawings, or as directed by Architect.
 - 2. Joints in interior slabs shall be made by one of following methods:
 - a. By use of construction joints laid out in checkerboard pattern; pour and allow alternate slabs to set; fill out balance of checkerboard pattern with second pour.
 - b. By use of dummy groove joints at least 1/4 depth of slab, and at least 1/8 inch wide. These joints may be sawcut as soon as wet concrete can support the weight of the equipment and operator. Delaying sawcutting past this point will make jointing ineffective.
 - 3. Control jointing in exterior paving slabs shall be laid out in a checkerboard pattern; pour as described above, but with joint edges tooled to provide a uniform joint at least 3/8 inch in depth.
 - 4. Slab reinforcing need not be terminated at control joints.
 - 5. Construction and expansion joints shall be counted as control joints.
- G. Expansion Joints:
- 1. Unless otherwise indicated, use 3/8 inch thick expansion joint filler. See Section 2.1.H
 - 2. Joints in interior slabs on grade shall be only in locations indicated.
 - 3. Joints in exterior slabs on grade shall be installed at each side of structures, at curb transitions opposite apron joints, at ends of curb returns, at back of curb when adjacent to sidewalk, and at uniformly spaced intervals not exceeding 20 feet.
 - 4. Edges of concrete at joints shall be edger finished to approximately 3/8 inch radius.
 - 5. Interrupt reinforcing at all expansion joints.
- H. Score markings on exterior slabs on grade shall be located as indicated. Where not indicated, mark slabs into rectangles of not less than 12 square feet nor more than 20 square feet using a scoring tool which will leave edges of score markings rounded.

3.2 CURING AND PROTECTION

- A. Curing: Exposed surfaces of all concrete used in structure shall be maintained in a moist condition for at least 7 days after placing. The following final curing processes shall normally be considered to accomplish this. Concrete shall be maintained at not less than 50 degrees F nor more than 100 degrees F for a period of 72 hours after being deposited.
1. Flatwork to be exposed, stained, or painted shall have curing process submitted and approved by the architect prior to construction.
 2. Initial Curing Process - Flat Work:
 - a. Mist Spraying: As soon as troweling of concrete surfaces is completed, exposed concrete shall be sprayed continuously with a special atomizer spray nozzle, capable of producing a fine mist. Spraying shall be done without any dripping of water from nozzle. Amount of spraying shall be such as to maintain surface of concrete moist without any water accumulating on surface. Maintain spraying for a minimum of 12 hours, or until such time as hereinafter described curing process is applied. Mist spraying will not normally be required when the ambient air temperature is below 90 degrees F.
 3. Final Curing Process - Flatwork: Except as noted, use any of following:
 - a. Water Curing: Concrete shall be kept wet by mechanical sprinklers or by any other approved method which will keep surfaces continuously wet.
 - b. Saturated Burlap Curing: Finished surfaces shall be covered with a minimum of two layers of heavy burlap which shall be kept saturated during the curing period.
 - c. Curing Compounds: Membrane curing compounds of chlorinated rubber or resin type conforming to ASTM C309 may be used only if specifically approved by Architect. Use of membrane curing compound will not be permitted on surfaces to be painted, or to receive ceramic tile, membrane water-proofing or hardeners and sealers. Membrane curing compound may be used in areas to receive resilient floor tile, provided it is wax-free, compatible with adhesive used and approved by adhesive manufacturer. Agitate curing compounds thoroughly by mechanical means continuously during use and spray or brush uniformly in accordance with manufacturer's recommendations. Apply immediately following final finishing operation. All curing compounds shall conform to State of California Air Resources Board VOC Regulations.
 - d. Waterproof paper conforming to ASTM C 171, or opaque polyethylene film, may be used. Concrete shall be covered immediately following final finishing operation. Anchor paper or film securely and seal all edges in such a manner as to prevent moisture escaping from concrete.
 4. Curing Process - Formed Surfaces: Forms heated by sun shall be kept moist during curing period. If forms are to be removed during curing period, curing as described for flatwork shall be commenced immediately.
- B. Refer to Drawings for areas of concrete slab not to receive curing compounds or hardening compounds. Where concrete floors are to receive heavy duty coatings,

waterproof coatings and the like, verify with coating installer the type of finish required for specified coating.

- C. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.
- D. Provide additional curing agents or compounds, not necessarily listed herein, but as recommended and or required for use with shake type hardeners or other special coatings and coverings by their manufacturers for a complete and proper installation.

3.3 FINISHES

A. Formed Surfaces:

- 1. Rough Form Finish: Surfaces shall be reasonably true to line and plane with no specified requirements for selected facing materials. Tie holes and defects shall be patched and fins exceeding 1/4 inch in height shall be rubbed down with wooden blocks. Fins and other rough spots at surfaces to receive membrane waterproofing shall be completely removed and the surfaces rubbed smooth. Otherwise, surfaces shall be left with the texture imparted by forms.
 - a. Rough finish shall be used for the following areas:
 - 1) Below grade and unexposed surfaces.
- 2.. Smooth Plywood Form Finish: Finish shall be true to line and plane. Tie holes and defects shall have been patched and ground with surface fins removed. Arrangement of plywood sheets shall be orderly, symmetrical, as large as practical and free of torn grain or worn edges. Surface concrete shall be treated with 1 part muriatic acid, in three parts water solution, followed immediately by a thorough rinsing with clear water. Surfaces which are glazed, have efflorescence, or traces of form oil, curing compounds or parting compounds shall be cleaned or treated to match other formed surfaces, except as otherwise indicated or specified.
 - a. Smooth Plywood Form Finish shall be used for the following areas:
 - 1) All surfaces above grade unless otherwise specified.
 - 2) At Contractor's option, may also be used in lieu of rough form finish.
- 3. Smooth Plastic Liner Finish: Surface shall be smooth, concrete free of honeycombing, air pockets larger than 1/8 inch in diameter, and fins.
 - a. This finish shall be used only where indicated on the Drawings.

B. Flatwork:

- 1. Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish.
- 2. Integral Monolithic Finish: Apply as soon as freshly poured concrete slabs will bear weight of workers. Pour slabs full thickness to finish floor elevations indicated. At proper time, tamp surface repeatedly with a wire mesh or grid tamper in a manner to force aggregate down below surface and to bring sufficient mortar to surface to provide for a smooth coating of cement mortar over entire surface. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.

- a. Broom Finish: Steel trowel surface to a smooth dense surface free of lines, tool marks, cat faces and other imperfections. After troweling, and before final set, give surface a broom finish, brushing in direction noted on Drawings, or as directed. Broom finish shall be used typically on exterior flatwork except as otherwise indicated or specified and shall be "medium" texture as approved by Architect.
 - b. Smooth Steel Trowel Finish: Apply 2 steel trowelings to obtain hard, smooth surface. All lips, irregularities, uneven levels, etc. shall be worked out before last troweling. All interior flatwork shall have a smooth steel trowel finish unless specified otherwise.
- 3. Tolerances:
 - a. For tolerances not indicated, refer to ACI 117.
 - b. Slabs on grade – Comply with F_F & F_L as specified by Architect, or at a minimum shall be sufficiently even to contact a 10' long straightedge with a tolerance of 1/8 inch.
 - c. Finished surfaces of exterior integral finished flatwork shall not vary more than 1/4 inch from a 10' long straightedge, except at grade changes.
- C. Sacked Surfaces: Exposed surfaces that are unacceptable in appearance to the Architect shall be sacked.
 - 1. Prepare concrete surfaces in accordance with the referenced standards. Remove any form release materials by stoning by hand, power grinding or other method approved by the Architect.
 - 2. Prepare concrete surfaces to receive sack finishing with a light sand blasting.
 - 3. For best results, grout application and rubbing should be performed when areas to be treated are shaded and during cool, damp weather. When work is to be performed in hot and dry weather, a fog spray should be available for continuous use.
 - 4. Prepare grout samples for matching of concrete surfaces for approval by the Architect. These shall be made in the following proportions of gray cement to white cement to sand: 1:1:2, 1:2:3, and 2:1:3, etc. until the correct matching color is obtained on the test areas. Sand should be fine enough to pass the Number 30 sieve. Mixes should be made to a good workable consistency in a clean container and the mix with the best color chosen, or modified if needed.
 - 5. Provide sufficient quantities of sand and cement from the same source for the complete work at the job site.
 - 6. Mixing and Application:
 - a. Mixing of grout on the job should be timed for it to be used up within 1 to 1-1/2 hours.
 - b. Let the grout stand 20 to 30 minutes after mixing, and then remixed before applying.
 - c. Soak the concrete surface thoroughly with water at least 15 minutes before applying grout and again just before application so that the surface is adequately wet during the operation.
 - d. Apply grout with plasterer's trowel or sponge rubber float in sweeping strokes from the bottom up. Brush or spray gun applications may be used when approved by the Architect.

- e. Work in freshly applied grout vigorously with a sponge rubber float, then let sit until some of its plasticity is gone but not until it loses its damp appearance. At this point it shall be rubbed with clean, dry burlap to remove the excess grout, leaving no visible film on the surface but filling all air holes.
 - f. Keep the surface wet for a day after grouting and sack rubbing are completed.
7. Alternate methods of application and materials shall be subject to the approval of the Architect.

3.4 PATCHING

- A. Formed Surfaces:
- 1. Promptly upon removal of contact forms and after concrete surfaces have been inspected, form ties shall be removed and all necessary patching and pointing shall be expertly done.
 - 2. Honeycombed areas shall be removed down to sound concrete, coated with a bonding grout or approved compound and patched using a low shrinkage high bond mortar. Patched areas shall be cured by being kept damp for at least 5 days.
 - 3. Tie holes shall be cleaned, dampened and filled solid with patching mortar or cement plugs of an approved variety.
- B. Slabs on Grade: After entire slab is finished, shrinkage cracks that may appear shall be patched as follows:
- 1. Where slab is not exposed or where appearance is not important, cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.
 - 2. Where slab is exposed and appearance is important, unsightly cracks shall be repaired in a manner satisfactory in appearance to Architect. If this cannot be accomplished, concrete shall be considered defective.

3.5 DEFECTIVE CONCRETE

- A. Defective concrete shall mean any of the following:
- 1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
 - 2. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
 - 3. Concrete significantly out of place, line, or level.
 - 4. Concrete not containing the required embedded items.
- B. Upon determination that concrete strength is defective:
- 1. Should cylinder tests fall below minimum strength specified, concrete mix for remainder of work shall be adjusted to produce required strength. Core samples shall be taken and tested from cast-in-place concrete where cylinders and samples indicate inferior concrete with less than minimum specified strength.

- a. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 42 and C 39. Number and location of such cores shall be subject to the approval of Architect.
 - b. Cost of core sampling and testing will be paid for by the Contractor.
 - c. "85 percent" reduction in ACI 318 Section 26.12.4 will not justify low cylinder tests.
- C. Upon determining that concrete surface is defective, Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure. Permission to patch defective areas will not be considered a waiver of the right to require removal if patching does not, in the opinion of the Architect, satisfactorily restore quality and appearance.
- D. If core tests indicate that concrete is below the strength specified, or if patching does not restore concrete to specified quality and appearance, the concrete shall be deemed defective, and shall be removed and replaced without additional cost to the Owner.
- E. No repair work shall begin until procedure has been reviewed by the Architect and Structural Engineer.

3.6 SURFACE HARDENER AND SEALER

- A. Seal all interior exposed flatwork with clear sealer, except surfaces receiving ceramic tile, quarry tile, poured flooring or other special finishes specified, or as scheduled on the Drawings.
 - 1. Apply sealer in 2 or 3 coats, in accordance with manufacturer's directions, using the maximum quantity recommended.
 - a. Concrete floors must be thoroughly cured for a minimum of 30 days and completely dry before treatment.
 - b. Surfaces to be treated must be clean, free of membrane curing compounds, dust, oil, grease and other foreign matter.
 - c. Upon completion, concrete surfaces shall be clean and without discoloration or traces of excess hardener left on the surface.
- B. Apply sprayable hardener/sealer at locations as scheduled or as indicated on the Drawings. Apply in accordance with the manufacturer's favorably reviewed application instructions and recommendations.

3.7 GROUTING

- A. Prepare and place grout materials at locations as indicated on the Drawings in accordance with the manufacturer's recommendations and installation instructions.
- B. Pack grout materials solidly between bearing surfaces and bases or plates as indicated and to ensure no voids.

3.8 ADJUSTING AND CLEANING

- A. Remove all debris, excess materials, tools and equipment resulting from or used in this operation at completion of this work.

END OF SECTION 03 30 00

SECTION 04 05 00 MORTAR AND GROUT

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Provide all materials, labor and accessories as required and specified for complete mortar and grout installation in masonry walls.

1.3 RELATED WORK (See also Table of Contents):

- A. Reinforcing Steel: Section 03 21 00.
- B. Cast-In-Place Concrete: Section 03 30 00.
- C. Concrete Unit Masonry: Section 04 22 00.

1.4 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2016 California Building Code (CBC)
 - 2. TMS 402-13/ACI 530-13/ASCE 5-13 – Building Code Requirements for Masonry Construction
 - 3. ASTM C144, Aggregate for Masonry Mortar.
 - 4. ASTM C150, Portland Cement.
 - 5. ASTM C207, Hydrated Lime for Masonry Purposes
 - 6. ASTM C270, Standard Specification for Mortar for Unit Masonry
 - 7. ASTM C404, Aggregates for Grout
 - 8. ASTM C476, Standard Specification for Grout for Masonry
 - 9. ASTM C1019, Method of Sampling and Testing Grout
- B. Tests and Inspections:
 - 1. A testing program is required prior to start of construction. Testing program to be done in Compliance with CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
 - 2. All tests and inspections herein are to be performed by an independent testing laboratory approved by the building official.
 - 3. Mortar and Grout Tests: If mortar and grout tests are indicated as required on the Structural drawings, at the beginning of Masonry Work, at least 1 test sample each of mortar and grout shall be taken on 3 successive working days, then

once per week with at least one sample taken for each 5000 square feet of wall area, or fraction thereof.

- a. Test specimens shall be made in accordance with ASTM C1019 for grout and ASTM C780 for mortar.
 - b. Test specimens shall be continuously stored in moist air until tested.
 4. If masonry placement and grouting inspection is indicated as required on the Structural Drawings, a special inspector shall be employed per CBC Section 1704 during the placement of all units, placement of all reinforcing steel, during all grouting operations and during taking of all test specimens.
- C. Submittals:
1. Mix design for mortar and grout shall be submitted for review.
 2. Supplier's certificates indicating materials comply with the specifications below. They shall include but are not necessarily limited to:
 - a. Aggregates
 - b. Cement
 - c. Admixtures

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cement: ASTM C150, Type I or II, low alkali; natural gray.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Quicklime: ASTM C5.
- D. Lime Putty: Made from hydrated lime or quicklime.
1. If made from quicklime, other than processed pulverized quicklime, slake lime and then screen through a No. 16 mesh sieve. Before using, store and protect slaked and screened lime putty for not less than 10 days.
 2. Processed pulverized quicklime shall be slaked for not less than 48 hours, and shall be cool when used.
 3. Lime putty prepared from hydrated lime may be used immediately after mixing.
 4. Lime putty prepared from quicklime or pulverized quicklime shall have a plasticity figure, after slaking and screening, of not less than 200, and shall weigh not less than 83 lbs. per cubic foot. Lime putty prepared from hydrated lime shall conform to ASTM C 207, Type S.
- E. Aggregate:
1. For Mortar: ASTM C144.
 2. For Grout: ASTM C404.
- F. Admixture: "Sika Grout Aid" , "Rhoepel Plus"
- G. Water: Suitable for domestic consumption.

2.2 MORTAR

- A. Mortar shall be Cement-lime, Type S and shall conform to CBC Section 2103.2.
- B. Mortar shall be made with admixtures that are proportioned, added and mixed in strict accordance with manufacturer's directions.

2.3 GROUT

- A. Grout shall have a 28-day compressive strength of 2000 psi or f'm, whichever is greater. Grout shall conform to CBC Section 2103.3
- B. Fine Grout or Coarse Grout: The contractor is to determine the proper application of Fine Grout or Coarse Grout based on the grout pour height used and the clear grout space width (for multi-wythe construction) or clear grout space dimensions in accordance with TMS 402 Table 3.2.1.
- C. Add grout admixture in accordance with the manufacturer's recommendations.

PART 3 - EXECUTION

3.1 MIXING MORTAR AND GROUT

- A. Mix mortar and grout in accordance with TMS 602-13 Articles 2.6A and 2.6B.
- B. Accurately measure materials in suitably calibrated devices; shovel measurements are not acceptable.
- C. Place sand, cement and water in mixer in that order and mix for at least 2 minutes; then add lime putty and continue mixing as long as necessary to secure a uniform mass, but in no case less than 10 minutes.
- D. Use mixers of at least 1 sack capacity; batches requiring fractional sacks will not be permitted unless cement is weighed for each batch.

3.2 GROUTING PROCEDURES

- A. Specified under Sections 04 22 00.

3.3 RETEMPERING

- A. When necessary to retemper mortar, add water and remix; retempering by dashing water over mortar will not be permitted.
- B. Any mortar which is unused within 30 minutes after initial mixing and any mortar that has begun to set shall not be used.

3.4 DEFECTIVE MORTAR OR GROUT

- A. Should the strength of mortar or grout fall below that specified, remainder of Work shall be adjusted to reach required strength. Work in place representing inferior grout and mortar and indicating a strength less than the minimum specified shall be tested by taking and testing core samples. Number and location of cores shall be determined by Structural Engineer.
- B. Should compression tests of cores fail to meet required strength, masonry shall be deemed to be defective and shall be removed and replaced at no cost to Owner.
- C. Costs relative to taking and testing of core samples shall be paid by Owner and will be deducted from Contract Amount. Cost of patching core holes shall be borne by Contractor.

END OF SECTION 04 05 00

SECTION 04 22 00 CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Furnish and install all concrete unit masonry, reinforcement, and all required accessories and materials as shown on the Drawings and specified here.
 - 1. Cooperate with other trades for embedded items, furnished under those sections and installed here.
 - 2. Supervise setting of dowels for masonry furnished and installed under Section 03 21 00, Reinforcing Steel.

1.3 RELATED WORK (See also Table of Contents):

- A. Reinforcing Steel: Section 03 21 00.
- B. Cast-in-Place Concrete: Section 03 30 00.
- C. Mortar and Grout: Section 04 05 00.

1.4 QUALITY ASSURANCE

- A. Allowable Tolerances: Maximum deviation from indicated line or plane of installed concrete masonry units shall not exceed 1/4 inch in 10 feet in any direction.
- B. Standards and References: (Latest Edition unless otherwise noted):
 - 1. 2016 California Building Code (CBC)
 - 2. TMS 402-13/ACI 530-13/ASCE 5-13 – Building Code Requirements for Masonry Construction
 - 3. TMS 602-13/ACI 530.1-13/ASCE 6-13 – Specification for Masonry Structures
 - 4. ASTM C90 – Specification for Loadbearing Concrete Masonry Units
 - 5. ASTM C140 – Test Method Sampling and Testing of Concrete Masonry Units and Related Units
 - 6. ASTM C426 – Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units
- C. Submittals: Refer to Section 01 33 00 for submitting the following items:
 - 1. Suppliers certificate indicating units comply with material standards indicated below:
 - 2. See Section 03 21 00 for reinforcing steel submittals.

D. Tests and Inspections:

1. A testing program is required prior to start of construction. Testing program to be done in Compliance with CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
2. All tests and inspections herein are to be performed by an independent testing laboratory approved by the Building Official.
3. If masonry tests are indicated as required on the structural drawings, three sample units will be tested during construction for each 5,000 square feet of wall area. Test also three sample units prior to construction.
 - a. Units will be tested for compressive strength on both the net and gross area per ASTM C140.
 - b. Units will be tested for linear drying shrinkage per ASTM C426.
4. If masonry placement and grouting inspection is indicated as required on the structural drawings, a special inspector shall be employed per CBC Section 1704 to inspect the placement of all units, placement of all reinforcing steel, during all grouting operations and during taking of all test specimens.
5. See Section 03 21 00 for reinforcing steel tests and inspections.

1.5 PRODUCT HANDLING

- A. Scaffolding, runways and ladders required for work under this Section shall be provided by masonry contractor, and shall be heavy trades type substantially built and in compliance with State labor laws, safety codes and other regulatory agencies as applicable to this project.
- B. Store masonry units off the ground in a dry location, covered and protected from absorbing moisture.

PART 2 - PRODUCTS

2.1 MASONRY UNITS

- A. Masonry units shall be hollow load bearing masonry units conforming to ASTM C90 and CBC Section 2103.1.
 1. Weight: Light weight
 2. Maximum lineal shrinkage from saturated to oven dry condition of not more than 0.065 percent.
 3. Twenty-eight day compressive strength of 2000 psi.
 4. Moisture controlled units.
- B. Unit Type
 1. 8" wide by 8" high x 16" long unless specified otherwise.
 2. All masonry unit surface finishes are allowed structurally. Reference the construction drawings for which surface finish shall be used at each location.

- C. Provide bond beam units, open end units and other special units as indicated. Use open end units at cells containing vertical reinforcement wherever possible.

2.2 MORTAR AND GROUT

- A. Specified under Section 04 05 00.

2.3 ACCESSORY MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 40 or 60, as indicated in Section 03 21 00, deformed bars. Where bars are to be welded, ASTM A706 Grade 60 bars shall be used.
 - 1. Tie Wire: Black annealed steel wire not lighter than 16 gauge.
- B. Provide spacers to firmly hold reinforcement in place.
- C. Anchor Bolts: All anchor bolts cast in masonry shall be headed studs or headed bolts with cut threads conforming to ASTM F1554 Grade 36 or ASTM A307 or ASTM A36 - as indicated on drawings.
- D. Expansion Anchors: All expansion bolts installed in masonry shall be Hilti Kwik Bolt 3 per ICC ESR-1385, Simpson Wedge-All per ICC ESR-1396 or Dewalt/Powers Power-Stud+ per ICC ESR-2966. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.
- E. Adhesive Anchors: All drill and epoxy threaded rods shall be ASTM F1554 Grade 36 or Grade 50, as indicated on drawings, and installed in masonry with Hilti HIT-HY 270 per ICC ESR-4143, Simpson SET-XP per ICC ESR-1772 or Dewalt/Powers AC100+ Gold per ICC ESR-3200. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.
- F. Screw Anchors: All screw anchors installed in masonry shall be Hilti Kwik HUS-EZ per ICC ESR-3056, Simpson Titen HD per ICC ESR-1056 or Dewalt/Powers Wedgebolt+ per ICC ESR-1678. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.

2.4 JOINTS

- A. All joints shall be 3/8" thick joints for concrete block, Tool exposed interior and exterior joints and concealed exterior joints to produce a dense slightly concave surface that is well bonded to unit at edges. Tool joints behind room base, switches, and outlet plates to produce a smooth dense joint flush with the face of adjacent

masonry units, where occurring on the job. Cut joints flush on concealed interior surfaces and surfaces to be plastered.

2.5 SEALER

- A. Contractor shall provide and install minimum two coats, Thoroseal masonry sealer at all CMU walls. Thoroseal product shall meet all state vapor requirements. Sealer shall be clear and non-gloss product.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive masonry and verify following:
 - 1. That foundation surface is level to permit bed joint with range of 1/4 to 3/4 inch.
 - 2. That edge is true to line to permit projection of masonry to less than 1/4-inch.
 - 3. That projecting dowels are free from loose scale, dirt, concrete, or other bond-inhibiting substances and properly located.
- B. Do not begin work before unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean concrete surfaces to receive masonry. Remove laitance or other foreign material lodged in surfaces by sandblasting or other means as required. Joints between concrete and masonry shall be considered construction joints. See Concrete specifications.
- B. Ensure masonry units are clean and free from dust, dirt, or other foreign materials before laying. Do not use damaged masonry units, damaged components of structure, or damaged packaged materials.
- C. Establish lines, levels, and coursing. Protect from disturbances.
- D. Provide temporary bracing during erection of masonry work. Maintain in place until masonry has set to provide permanent bracing.

3.3 COURSING

- A. Erect masonry in accordance with CBC Section 2104.
- B. Place masonry to lines and levels indicated to the following tolerances:
 - 1. Variation from Unit to Adjacent Unit: 1/32-inch max.
 - 2. Variation from Plane of Wall: 1/4-inch in 10 feet.
 - 3. Variation from Plumb: 1/4-inch in 10 feet; 1/2-inch maximum.
 - 4. Variation from Level Coursing: 1/8-inch in 3 feet; 1/4-inch in 10 feet; 1/2-inch maximum.

- 5. Variation of Joint Thickness: 1/8-inch between masonry courses.
- C. Bond: Unless noted otherwise in Drawings, lay concrete masonry units in running bond with vertical joints located over score of unit in course below (and vice versa).
- D. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- E. Preserve the vertical continuity of cells in concrete unit masonry. The minimum clear horizontal dimensions of vertical cores shall be 3 x 3 inches for 8-inch wide block.

3.4 PLACING AND BONDING

- A. Do not install cracked, broken or chipped masonry units.
- B. Lay only dry concrete masonry units.
- C. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
 - 1. Block Cap: Lay with full mortar coverage on horizontal and vertical joints.
 - 2. Install grout cap where and as indicated.
- D. Fully bond intersections and external and internal corners.
- E. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- F. Remove excess mortar.
- G. Perform job-site cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.
- H. Step back unfinished work for joining with new work. Do not use toothing.
- I. Provide cleanouts as indicated in "grouting" below.

3.5 JOINTS

- A. Horizontal and vertical joints at masonry units shall be 3/8-inch wide and as follows:
 - 1. Point joint tight in unpurged masonry below ground.
 - 2. All end joints shall be fully filled with mortar and joints squeezed in bed joints shall be held back approximately 1/2-inch from cell to provide positive bond with grout.
 - 3. Joints shall be struck flush at all areas to receive plaster finish.

3.6 MASONRY REINFORCEMENT

- A. Place reinforcement in accordance with Article 3.4B of TMS 602-13.

- B. Reinforcing steel shall not be bent or straightened in a manner that will damage the material. Bars with kinks or bends not shown on the plans shall not be used. Heating of bars for bending will not be permitted.
 - 1. Bars shall conform accurately to the sizes, shapes, lines and dimensions shown on drawings and with hooks and beds made as detailed. Bars shall be placed as indicated on the drawings and centered on grout space.
 - 2. At the time grout is place around it, reinforcing steel shall be clean of mill scale or other coatings that will destroy or reduce bond.
 - 3. All vertical reinforcing steel shall be installed in one piece, full height of wall, and braced throughout its height in a manner that will retain the steel in proper position and provide the proper clearance.
- C. Reinforcing steel shall be secured to all foundation dowels and held in place at spacing not to exceed 192 bar diameters.

3.7 GROUTING

- A. General Requirements:
 - 1. All cells shall be grouted solid.
 - 2. Use of grout lifts above or below 5 feet 4 inches at Contractor's option.
 - 3. Use grout pump, hopper or bucket to place grout.
 - 4. Place grout in final position within 1-1/2 hours after introduction of mixing water.
 - 5. Stop grout approximately 1½ inches below top of last course; except at top course bring grout to top of wall. Do not form grout keys within beams.
- B. Grout pours 5 feet 4 inches or less:
 - 1. Do not lay units higher than 64 inches before grouting.
 - 2. If mortar has been allowed to set prior to grouting, remove all fins protruding more than ½-inch into grout space.
 - 3. Consolidate each lift with mechanical vibration twice per Article 3.5 E of TMS 602-13. Once while placing grout and once more after initial absorption of water but before set.
- C. Grout pours greater than 5 feet 4 inches:
 - 1. Lay up walls, subject to maximum height limitations of Table 7 under Article 3.5 of TMS 602-13.
 - 2. Provide clean out holes at the bottom of every pour in cells containing vertical reinforcement. Construct clean out courses with open-bottom bond beam units inverted to permit cleaning of all cells by flushing. Cleanouts shall be not less than 3x4inch openings cut from one face shell. Do not plug clean out holes until masonry work, reinforcement, and final cleaning of the grout spaces have been completed and inspected.
 - 3. Clean mortar droppings from the bottom of the grout space and from reinforcing steel. Remove mortar fins protruding more than ½-inch into the grout space by dislodging the projections with a rod or stick as the work progresses or by washing the grout space at least twice a day during erection using a high pressure stream of water.

4. Do not place grout in hollow unit masonry until mortar joints have set for at least 24 hours and clean out plugs have cured 24 hours.
5. Place grout in lifts not to exceed 12 feet 8 inches in height, with a waiting period between lifts, dependent on weather and absorption rate of the masonry, in order to place the succeeding lift after the preceding lift becomes plastic but prior to initial set. The first lift shall be consolidated using mechanical vibrators. After the required waiting period, place the second lift and consolidate with the vibrator, reconsolidating the lift below to a depth of 12 to 18 inches. Repeat the waiting, placing and consolidating process until the top of the grout pour is reached. Reconsolidate the top lift after the required waiting period. The high-lift grouting of any section of wall between lateral flow barriers shall be completed to the top of a pour in one working day unless a new series of clean out holes is established and the resulting horizontal construction joint cleaned.

3.8 WEATHER PROVISIONS FOR CONSTRUCTION

- A. Cold Weather Construction to be in accordance with Article 1.8C of TMS 602.
- B. Hot Weather Construction to be in accordance with Article 1.8D of TMS 602.

3.9 EXPANSION AND CONTROL JOINTS

- A. See drawings for type and location of expansion and/or control joints.

3.10 BOND BEAMS

- A. Bond beams shall be located where shown and detailed on the drawings, and shall be reinforced as indicated and as herein after specified.

3.11 BUILT-IN WORK

- A. Miscellaneous Embedded Items: All items indicated to be embedded in masonry shall be carefully located and anchored to prevent movement during grouting operations. Avoid cutting and patching.

3.12 CUTTING AND FITTING

- A. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

3.13 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units.
- B. Pointing: During the tooling of joints, enlarge any voids or holes and completely fill with mortar.

- C. Dry brush masonry surface after mortar has set, at each day's work and after final pointing.
- D. Leave work and surrounding surface clean and free of mortar spots and droppings.
- E. Cleaning: Upon completion of masonry installation, repair all holes. Defective joints shall be cut out and rejointed. Exposed masonry surfaces shall be cleaned free of mortar, green stain and efflorescence.

3.14 SEALER

- A. Contractor shall install sealer as directed by the manufacturer. Coverage and installation rates shall be as per manufacturer's recommendations. Install sealer in minimum two coats at the rates required.

3.15 DEFECTIVE MASONRY

- A. Materials or workmanship not conforming to appearance or strength specified, will be deemed defective and shall be removed and replaced at no cost to Owner.
- B. Defective mortar and grout, as defined under Section 04 05 00; "Mortar and Grout" shall constitute defective masonry.

END OF SECTION 04 22 00

SECTION 05 12 00 STRUCTURAL STEEL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Furnish and install all structural steel as shown and specified including, but not necessarily limited to the following:
 - 1. Prime coat painting and touch up.
 - 2. All cast-in-place anchor bolts, nuts, plates, etc.
 - 3. 10 gauge steel or 3/4 inch plywood templates for column anchor bolts.

1.3 RELATED WORK (See also Table of Contents)

- A. Metal Decking: Section 05 30 00.
- B. Metal Fabrications: Section 05 50 00.
- C. Cast-In-Place Concrete: Section 03 30 00.
- D. Welding of Moment Resisting Frames: Section 05 12 24.
- E. Metal Stairs: Section 05 50 10.

1.4 QUALITY ASSURANCE

- A. General:
 - 1. Comply with the referenced ASTM standards for materials.
 - 2. Perform all welding only with AWS certified welders.
 - 3. Verification of accuracy:
 - a. Engage and pay for a registered civil engineer or licensed land surveyor to check the alignment, plumbness, elevation, and overall accuracy of the erected framing at appropriate stages during construction and at completion of erection. Prior to erection, a survey shall be made of the as-built locations of all anchor rods and other embedded items associated with the attachment of structural steel. The party providing the survey shall submit written verification that the entire installation is in accordance with the contract documents and meets the allowable erection tolerances as set forth in the AISC "Code of Standard Practice for Steel Buildings and Bridges".
 - b. Columns shall be verified at each lift. Column shim details and procedures shall be submitted for review.
 - 4. Paint:

- a. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use thinners approved by paint manufacturer, and use within recommend limits.
 - b. Coordination of Work: Review other Sections in which prime paints are to be provided to ensure compatibility of coatings system for various substrates. Upon request, furnish information or characteristics of finish materials to be used.
 - c. Requirements of Regulatory Agencies: Comply with applicable rules and regulations of governing agencies for air quality control.
- B. Except where other requirements are specified, comply with the following standards (latest edition unless noted otherwise)
 - 1. AISC 360-10 "Specification for Structural Steel Buildings".
 - 2. AISC 303-10 "Code of Standard Practice for Steel Buildings and Bridges".
 - 3. AISC 341-10 "Seismic Provisions for Structural Steel Buildings"
 - 4. AISC 358-10 "Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications"
 - 5. RCSC "Specifications for Structural Joints Using High Strength Bolts".
 - 6. AISC 303-10 Section 10, Architecturally Exposed Structural Steel, Code of Standard Practice for Steel Buildings and Bridges
 - 7. AWS D1.1 "Structural Welding Code - Steel" – latest edition
 - 8. AWS D1.8 "Structural Welding Code – Seismic Supplement" – latest edition
 - 9. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
 - 10. SSPC-Vis 1 Pictorial Surface Preparation Standards for Painting Steel Structures
 - 11. SSPC-SP2 Hand Tool Cleaning
 - 12. SSPC-SP3 Power Tool Cleaning
 - 13. SSPC-SP6 Commercial Blast Cleaning
 - 14. SSPC-PA2 Measurement of Dry Paint Thickness with Magnetic Gauges
 - 15. California Building Code (CBC).
- C. Submittals: (Submit under provisions of Section 01 33 00)
 - 1. Product Data: Include laboratory test reports and other data to show compliance with specifications (include specified standards). Include certified copies of mill reports covering chemical and physical properties of each type of structural steel.
 - 2. Shop Drawings:
 - a. Shop drawings shall include complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.
 - b. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld.
 - c. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.
 - d. Dimensions required to locate structural steel for manufactured items such as mechanical equipment, electrical equipment, dock levelers, etc., shall be coordinated and provided by the General Contractor. General Contractor

shall also coordinate and provide dimensions to locate structural steel for window washing supports such as davits, tie-backs, etc.

3. Procedures:

- a. Provide weld procedures for both prequalified welds and special welds to be submitted to the Owner's Testing Laboratory and the Architect.
- b. Provide installation procedure and inspection for direct tension indicator washers detailed in supplemental specifications provided by the manufacturer for approval.
- c. Procedures shall be submitted for both shop and field welds.

D. Tests and Inspections:

1. A testing program is required prior to start of construction. Testing program to be done in Compliance with CBC Section 1705 requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
2. Testing Laboratory:
 - a. An inspection and testing laboratory will be selected by the Owner for testing and inspection as required by the Contract Documents. The selected laboratory shall conform to the requirements of ASTM E329 (Recommended Practice for Inspection and Testing Agencies used in Construction). Documentary evidence of such conformance shall be submitted to the Owner and the governing agency.
 - b. All materials, work, methods and equipment shall be subject to inspection at the mill, fabricating plant and at the building site. Material or workmanship not complying fully with the Contract Documents will not be accepted. The Contractor shall give the Testing Laboratory reasonable notice when ready for inspection and shall supply samples and test pieces and all facilities for inspection without extra charge. The Owner will assume the expense of making the tests and inspection except as otherwise specified in Division 1.
3. Cost of Testing and Inspection: Costs of testing and inspection of structural steel, except as specified hereunder and in Division 1, will be paid for by the Owner.
 - a. All transportation costs and per diem living costs for inspection at fabricators' plant further than 75 miles from the job site will be back-charged to the Contractor.
 - b. It is assumed that all fabrication will take place in one shop location only. All additional inspection costs will be back-charged to the Contractor.
 - c. All mill tests and costs of re-test of plain materials shall be at the expense of the Contractor.
 - d. Costs of tests required due to Contractor's failure to provide steel identifiable in accordance with the indicated ASTM designation shall be at the expense of the Contractor.
4. Structural Steel Testing and Inspection:
 - a. Structural Steel: If structural steel tests are indicated as required on the structural drawings, one tension and one bend test shall be made for each

- size of structural shape, plate and for each tube and pipe size. Tests to be made in accordance with requirements of appropriate ASTM designations.
- b. If structural steel tests are not indicated as required on the structural drawings, then for shapes, plates, bars, pipe and tubing, manufacturer's certified mill test reports and analysis for each heat will be acceptable for steel identifiable in accordance with indicated ASTM designation. Mill test reports shall indicate the physical and chemical properties of all structural steel used. Correlate individual heat numbers with each specified structural section.
 - c. Unidentifiable Steel:
 - 1) For F_y less than or equal to 36.0 ksi : Provide one tension and elongation test and one bend for each 5 tons or fraction thereof for each size.
 - 2) For F_y greater than 36.0 ksi : Provide one tension and elongation test and one bend or flattening for each piece.
 - d. Costs of retests and additional testing required by the use of unidentifiable steels shall be the Contractor's responsibility. Additional costs of testing incurred by the Owner shall be deducted from the Contract Final Payment.
5. Expansion Anchors: Load test as indicated on drawings.
6. Welding Inspection:
- a. For Moment Resisting Frame Welding inspection and testing requirements, see specification Section 05 12 24 - Welding of Moment Resisting Frames.
 - b. If shop or field welding inspection is indicated on the structural drawings or required by the applicable referenced standards, shop and field welded operations shall be inspected in accordance with AISC 360 Section N by a qualified welding inspector employed by the Testing Laboratory. Such inspector will be a person trained and thoroughly experienced in inspection of welds. The inspector's ability to distinguish between sound and unsound welding will be reliably established
 - c. The welding inspector will make a systematic record of all welds. This record shall include:
 - 1) Identification marks of welders.
 - 2) List of defective welds.
 - 3) Manner of correction of defects.
 - d. The welding inspector will check the material, equipment and procedure, as well as the welds. He will also check the ability of the welder. He will furnish the Architect with a report, duly verified by him that the welding which is required to be inspected is proper, and has been done in conformity with the Contract Documents, and that he has used all means to determine the quality of the welds.
 - e. All full penetration groove welds will be subject to ultrasonic testing, as per AWS D1.1, Clause 6 "Inspection, Part "F", Ultrasonic Testing (UT) of Groove Welds. All defective welds shall be repaired and retested with ultrasonic equipment at the Contractor's expense.
 - f. Column Flanges: An area extending 6 inches above and below point where girder flanges are attached will be inspected. Column flange edges will be inspected visually and entire area ultrasonically for lamination, plate discontinuities, and non-metallic inclusions.

- g. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the Engineer will be notified. The Engineer may require the removal of backing strip. The backing strip will be removed at the expense of the Contractor, and if no root defect is visible the weld will be retested. If no defect is indicated on this retest, and no significant amount of base and weld metal have been removed, no further repair of welding is necessary. If a defect is indicated, it will be repaired and retested at Contractor's expense.
 - h. The ultrasonic instrumentation will be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.
 - i. Other methods of inspection, for example, X-Ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the inspection laboratory, and with the approval of the Engineer.
 - j. Base metal thicker than 1-1/2 inches, when subjected to through thickness weld shrinkage strains, shall be ultrasonically inspected for discontinuities directly behind such weld before and after joint completion.
 - k. End-welded studs shall be sampled, tested, and inspected per the requirements of AWS D1.1, Clause 7 Stud Welding.
 - l. At the discretion of the owner's testing agency, the ultrasonic testing frequency may be reduced but may not be less than the following:
 - m. Initially, all welds requiring ultrasonic testing will be tested at the rate of 100 percent in order to establish the qualifications of each individual welder. If the reject rate is demonstrated to be less than 5 percent of the welds tested for each welder, then the frequency of testing for that welder may be reduced to 25 percent. If the reject rate increases to 5 percent or more, 100 percent testing will be re-established until the rate is reduced to less than 5 percent. The percentage of rejects will be calculated for each welder independently.
 - n. A sampling of a least 40 completed welds will be made for such reduction evaluation. Reject rate is defined as the number of welds containing rejectable defects divided by the number of welds completed. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is 1" or less, each 12 inch increment or fraction thereof shall be considered as one weld. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is greater than 1", each 6 inch of length or fraction thereof shall be considered one weld.
7. High Strength Bolting Tests and Inspection:
- a. Furnish certified test reports for each lot of bolts in accordance with Section 9 of ASTM A325 and A490. Install bolts under the supervision of a qualified inspector in accordance with Section 9, Research Council "Specifications for Structural Joints using ASTM A325 or A490 Bolts".
 - b. If high strength bolting inspection is indicated on the structural drawings or required by the applicable referenced standards, the testing laboratory shall provide inspection in accordance with AISC 360 Section N.
 - c. While the work is in progress, the Inspector shall determine that the requirements of this Specification are met in the work. The Inspector shall observe the calibration procedures and shall monitor the installation of bolts to determine that all plies of connected material have been drawn together and that the selected procedure is properly used to tighten all bolts.

- 1) In addition to the requirement of the foregoing paragraph, for all connections specified to be slip critical (SC), the Inspector shall assure that the specified procedure was followed to achieve the pretension specified in the AISC. The pretension shall be verified by the inspector for these bolts.
- 2) Bolts in connections identified as not being slip-critical nor subject to direct tension need not be inspected for bolt tension other than to ensure that the piles of the connected elements have been brought into snug contact.

1.5 PRODUCT HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.
- B. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.6 SEQUENCING/SCHEDULING

- A. Cooperate and coordinate this work with other trades for anchor bolts, and other required inserts, templates, etc. Align this work prior to installation of other materials.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural Steel: Except where indicated on drawings.
 1. W shapes: ASTM A572-50 or ASTM A992-50 unless indicated otherwise on drawings.
 2. Channels and other rolled shapes: ASTM A36 unless indicated otherwise on drawings.
 3. Angles, plates and bars: ASTM A36 unless indicated otherwise on drawings.
- B. AISC group 4 and 5 shapes and plates greater than 2 inches thick: ASTM A36 and/or ASTM A572 Grade 50 with supplementary requirements S91 Fine Austenitic Grain Size and S5 Charpy V-Notch Impact Test. For location of Charpy V-Notch test, see ASTM A6 Supplementary Requirement S30. Charpy V-Notch test shall be per ASTM A673, frequency P and shall meet a minimum average value of 20 ft-lbs absorbed energy at 70° F.
- C. Cold-Formed Steel Tubing: ASTM A500, Grade B.
- D. Steel Pipe: ASTM A53, Type E or S, Grade B.

- E. Anchor Bolts: All anchor bolts cast in concrete or masonry shall be headed bolts with cut threads conforming to ASTM F1554 grade 36, 55 (weldable per S1 Supplementary Requirements), or 105 as indicated on drawings.
- F. Machine Bolts: ASTM A307.
- G. High Strength Bolts, Nuts and Washers: Install in accordance with requirements for A325 and A490 slip critical and snug tight conditions as indicated on drawings. Install high strength bolts with snug tight type connections with threads included in shear plane except as otherwise noted. Install hardened washers in conformance with AISC Specifications.
 - 1. Bolt Specifications: Bolts shall conform to the requirements of the current edition of the Specifications of the American Society for Testing and Materials for High-Strength Bolts for Structural Steel Joints, ASTM A325, Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength, ASTM A490 as indicated on drawings.
 - 2. Bolt Geometry: Bolt dimensions shall conform to the current requirements of the American National Standards Institute for Heavy Hex Structural Bolts, ANSI Standard B18.2.1. The length of bolts shall be such that the end of the bolt will be flush with or outside the face of the nut when properly installed.
 - 3. Nut Specifications: Nuts shall conform to the current chemical and mechanical requirements of the American Society for Testing and Materials Standard Specification for Carbon and Alloy Steel Nuts, ASTM A563, Appendix Table X1.1. Provide Grade A Heavy Hex nuts for Grade 36 and 55 threaded rods. Provide Grade DH or ASTM A194-2H Heavy Hex nuts for Grade 105 threaded rod.
 - 4. Washers: Flat circular washers and square or rectangular beveled washers shall conform to the current requirements of the American Society for Testing and Materials Standard Specification for Hardened Steel Washers, ASTM F436. Washers for base plates shall conform to ASTM F844 and shall be placed top and bottom of plate.
 - 5. Tension Control Fastener System: Bolts shall conform to the requirements of the current edition of the Specifications of the American Society for Testing and Materials for Twist Off Type Tension Control Structural Bolt/Nut/Washer Assemblies, ASTM F1852, providing equivalent properties to ASTM A325 or A490 as indicated on drawings.
- H. Headed Stud-Type Shear Connectors: ASTM A108 Grade 1015 or 1020 Cold-finished carbon steel with dimensions complying with AISC Specifications.
 - 1. Tensile strength, 60,000 psi.
 - 2. Elongation in 2 inches, 20 percent
 - 3. Reduction of area, 50 percent.
- I. Provide hexagonal heads and nuts for all connections per ASTM A563, Appendix Table X1.1.
- J. Electrodes for Welding: Comply with AWS Code, E70 Series minimum. Fabricator to select proper electrodes according to weld procedures as submitted.

- K. Shop Primer – See Section 3.4, Painting and Cleaning
- L. Powder Driven Fasteners (Shot Pins): Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems.
- M. Expansion Bolts: Hilti Fastening Systems “Kwik-Bolt Concrete Expansion Anchors” to concrete; Ramset “Dynabolt Sleeve Anchors” to masonry or approved equal.

PART 3 - EXECUTION

3.1 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assembly structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated to provide the flattest floor possible. The contractor shall coordinate member tolerances with finishes.

Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

- B. Connections: Weld or bolt shop connections, as indicted. Bolt field connections, except where welded connections or other connections are indicated.
- C. Unless noted otherwise, make holes 1/16 inches larger than the nominal bolt diameter.
- D. Welding, Shop and Field: Weld by shielded arc method, submerged arc method, flux cored arc method, or other method approved by AWS. Perform welding in accordance with AWS Code. All welders, both manual and automatic, shall be certified in accordance with AWS "Standard Qualification Procedure" for the Work to be performed. See paragraph "welding" herein, for detailed requirements. If sizes of fillet welds are not shown on drawings, use AWS minimum weld size but not less than 3/16 inch fillet welds.
- E. Bolt Holes for Other Work: Provide holes required for securing other work to structural steel framing.

Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.

Cut, drill, or punch holes perpendicular to metal surfaces and remove all burrs. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

F. AISC Group 4 and 5 shapes and built up members shall meet the requirements for joints in AISC Sections J1.5, J1.6, J2.7 and M2.2.

G. High Strength Bolts:

1. Installation and Tightening:

- a. Handling and Storage of Fasteners: Fasteners shall be protected from dirt and moisture at the job site. Only as many fasteners as are anticipated to be installed and tightened during a work shift shall be taken from protected storage. Fasteners not used shall be returned to protected storage at the end of the shift. Fasteners shall not be cleaned of lubricant that is present in as-delivered condition.
- b. Tension Calibrator: A tension measuring device shall be required at all job sites where bolts in slip-critical joints are being installed and tightened. The tension measuring device shall be used to confirm: (1) the suitability to satisfy the requirements of AISC for the complete fastener assembly, including lubrication if required to be used in the work, (2) calibration of wrenches, if applicable, and (3) the understanding and proper use by the bolting crew of the method to be used. The frequency of confirmation testing, the number of tests to be performed and the test procedure shall be as specified in 1.d. below, as applicable. The accuracy of the tension measuring device shall be confirmed through calibration by an approved testing agency at least annually.
- c. Joint Assembly and Tightening of Shear/Bearing Connections: Bolts in connections not within the slip-critical category shall be installed in properly aligned holes, but need only be tightened to the snug tight condition. The snug tight condition is defined as the tightness that exists when all plies in a joint are in firm contact. This may be attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. If a slotted hole occurs in an outer ply, a flat hardened washer or common plate washer shall be installed over the slot.
- d. Joint Assembly and Tightening of Connections Requiring Full Pre-tensioning. Slip-critical connections shall be installed in properly aligned holes and tightened by one of the following methods.
 - 1) Turn-of-nut Tightening: When turn-of-nut tightening is used, hardened washers are not required except as specified in the AISC. A representative sample of not less than three bolts and nuts of each diameter, length and grade to be used in the work shall be checked at the start of work in a device capable of indicating bolt tension. The test shall demonstrate that the method of estimating the snug-tight condition and controlling turns from snug tight to be used by the bolting crews develops a tension not less than five percent greater than the tension required for slip-critical connections.
 - 2) Installation of Alternate Design Bolts: A representative sample of not less than three bolts of each diameter, length and grade shall be checked at the job site in a device capable of indicating bolt tension.

The test assembly shall include flat hardened washers, if required in the actual connection, arranged as in the actual connections to be tensioned. The calibration test shall demonstrate that each bolt develops a tension not less than five percent greater than the tension required by AISC. Manufacturer's installation procedure shall be followed for installation of bolts in the calibration device and in all connections. When alternate design features of the fasteners involve an irreversible mechanism such as yield or twist-off of an element, bolts shall be installed in all holes of the connection and initially brought to a snug tight condition. All fasteners shall then be tightened, progressing systematically from the most rigid part of the connection to the free edges in a manner that will minimize relaxation of previously tightened fasteners prior to final twist-off or yielding of the control or indicator element of the individual fasteners. In some cases, proper tensioning of the bolts may require more than a single cycle of systematic tightening.

- e. Mark bolts that have been completely tightened with an identifying symbol.

3.2 WELDING

- A. General: Quality of materials and design and fabrication of all welded connections shall conform to AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Building," "AWS Code for Welding in Building Construction," and requirements of this section.

Location and type of all welds shall be as shown. Make no other welded splices, except those shown on drawings, without prior approval of the architect.

- B. Automatic Welding: Use electrode wire and flux for automatic and semi-automatic welding acceptable to Structural Engineer. All methods, sequences, qualification and procedures, including preheating, and post heating if necessary, shall be detailed in writing and submitted to the Structural Engineer for review.
- C. Qualification of Welders:
 - 1. Structural steel welding: Manual and automatic welds for structural steel construction shall be made only by operators who have been previously qualified by tests, as prescribed in AWS D1.1 to perform type of work required.
 - 2. Welders shall be checked by welding inspector. Those not doing satisfactory work may be removed, and may be required to pass qualification tests again. All qualification testing shall be at the Contractor's expense.
 - 3. Only welders whose weld procedures and pre-qualification by testing that have passed shall be considered qualified for such welds.
- D. Control cooling process after weld is completed by either step down post heat or thermal blankets as determined by procedures and prequalification.
- E. Box columns and built-up members shall have ultrasonic testing before and after welding.

- F. Flame cut surfaces shall be ground to remove contaminated steel layer to provide welds proper fusion without impurities.
- G. Preparation of surface: Surfaces to be welded shall be free of loose scale, slag, rust, grease, paint, and any other foreign material.
- H. Welding equipment: Welding equipment to be used in each case shall be acceptable to welding inspector. Use equipment with suitable devices to regulate speed, and manually adjust operating amperage and voltage. The amperage capacity shall be sufficient to overcome line drop, and to give adequate welding heat.
- I. Remove runoff tabs and grind surfaces smooth where the tabs would interfere with fireproofing and architectural finishes.
- J. End-welded studs:
 - 1. Automatic end-welded studs: Automatically end-weld in accordance with the manufacturer's recommendations in such a manner as to provide complete fusion between the end of the stud and the plates. There shall be no porosity or evidence of lack of fusion between the welded end of the stud and the plate. The stud shall decrease in length during welding approximately 1/8 inch for 5/8 inch, and 3/16 inch for 3/4 inch diameter. Stud sizes indicated on drawings represent the finish stud height.
 - 2. Fillet-end welded studs: Studs may be welded using prequalified FCAW, GMAW, or SMAW processes provided the requirements of the AWS D1.1 Chapter 7 Section 7.5.5 are met as well as any other pertinent requirements of D1.1.
- K. Provide mill camber as shown on the construction documents within AISC tolerance. Place mill tolerance upward for all beams specified no camber.

3.3 ERECTION

- A. Structural steel erection: Comply with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Building", latest edition.
- B. Erection Sequence: Erect steel in accordance with special erection sequences where special erection sequences are indicated on the contract documents.
- C. Before and during erection, keep all structural steel clean. Ship, handle and store steel in manner to avoid injury to members. Steel members showing evidence to rough handling or injury will be rejected.
- D. Mark each member with erection identification corresponding to mark shown on erection drawings. Carefully plan erection of structural steel so that no cutting and removal of material will be necessary. Do not torch burn in the field, unless specifically permitted by Engineer.

- E. Provide sufficient bracing, shoring and guys to effect safe and satisfactory erection. Provide bracing and shoring capable of holding steel work plumb and properly aligned while field connections are being made, and until lateral force resisting elements are deemed by Architect capable of bracing structure. Temporary bracing shall be adequate to resist lateral forces from wind or seismic prior to the completion of the lateral resisting system.
- F. Set bearing and base plates with extreme care. Bring level, to line and grade with leveling plates or by leveling nuts and bolts. Grout solid under plates with a flowable non-shrink grout per Section 03 30 00 prior to applying vertical load.
- G. Field Assembly: Set structural framing accurately to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces which will be in permanent contact. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

Shimming or other adjustments not indicated on drawings shall be approved by the Engineer prior to installation. Level and plumb individual members of the structure within specified AISC tolerances except as noted herein. Column shimming shall be 1/4 inch.

- H. All welds shall be full and clean, and conform to AISC and AWS specifications.
- I. Erection Tolerances: Individual pieces shall be erected so that the deviation from plumb, level and alignment shall not exceed 1 to 500 plus:
 - 1. The maximum displacement of the center line of columns adjacent to elevator shafts, from the established column line, shall not be more than 1 inch at any point.
 - 2. In order to provide a true, flat plane for the exterior elevations, install all steel framing at the exterior walls of the building, so that the center lines of such framing does not vary by more than 1 inch for the length of the building. Also install each vertical member on such grids so that its vertical center line does not vary by more than 1/2 inch from a vertical line for each story and 1 inch for its full height.
 - 3. All columns and beams shall adhere to Section M2.7 of the referenced "Specification for Structural Steel for Buildings" which states that completed members shall be free of twists, bends, and open joints. Take special care that column base plates are parallel and perpendicular to faces of columns and that bolt holes are accurately placed.
- J. Temporary Flooring:
 - 1. Provide planking and scaffolding necessary in connection with erection of structural steel, support of erection machinery, and construction materials. Temporary floors and use of steel shall be as required by applicable regulatory requirements.
 - 2. If steel decking is used as a working platform, it shall be temporarily tack-welded to supports to extent necessary for such use in accordance with applicable

regulatory requirements. The concentrated loading from welding machines and other heavy machinery required for steel erection shall be distributed by planking or other approved means. Metal decking that becomes damaged as the result of being used as a working platform shall be replaced at no additional cost to the Owner.

- K. Tower Crane: The design for the support and bracing for a tower crane shall be the responsibility of the General Contractor. The design shall be prepared by a structural engineer licensed in the state of California. Drawings and calculations shall be stamped and signed by the structural engineer. Concentric, torsional, and/or eccentric loading to the main structure shall be resolved by the addition of structural steel for shear tabs, stiffeners, drag ties, bracing struts, etc., Such items shall be designed, detailed, furnished and installed by the contractor.

3.4 PAINTING AND CLEANING

- A. Prior to prime coat application, clean all loose rust, mill scale, oil, dirt, and all other materials from all steel to be left exposed. Use hand tool, power tool, sandblasting, chemical cleaning, and any other method necessary to provide a smooth, sound surface for painting.
- B. Shop prime all steel except the following:
1. Steel encased in concrete.
 2. Contact surfaces for slip-critical (sc) high strength bolts.
 3. Areas within 4 inches of field welds.
 4. Tops of members to receive metal decking.
 5. Steel to be fireproofed.
 6. Surfaces to be galvanized.
- C. Use the following Type A shop painting systems on all normal environment interior steelwork:
1. Surface Preparation: SSPC-SP2 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning. Where jobsite exposure is expected to exceed 6 months, SSPC-SP6 Commercial Blast Cleaning is required.
 2. Application: Follow coating manufacturer's printed directions.
 3. Material: Type A Tnemec Company, Inc., Series V10; Sherwin Williams Steel Spec Universal; Metal Case 94-231 Series or approved equal
 4. Number of Coats: One
 5. Dry Film Thickness: 2.0 mils minimum.
 6. Volume Solids: 56.0 +/- 2.0% minimum
 7. Generic Description: Modified Alkyd.
- D. Unless noted otherwise in subsection H, use the following Type B shop painting systems on all exterior steelwork and interior steelwork subjected to wet conditions or fumes (see subsection H for additional requirements)
1. Surface Preparation: SSPC-SP6 Commercial Blast Cleaning
 2. Application: Follow coating manufacturer's printed directions.
 3. Material: Type B Tnemec 90-97 Tnemec-Zinc primer or approved equal

4. Number of Coats: One
 5. Dry Film Thickness: 2.5 to 3.5 mils
 6. Volume Solids: 63% +/- 2%
 7. Generic Description: Zinc-Rich Urethane
- E. Unless noted otherwise in subsection H, use the following finish painting systems on all exterior steelwork and interior steel work subjected to wet conditions or fumes (see subsection H for additional requirements):
1. Application: Follow coating manufacturer's printed directions. Apply over Type B primer system above.
 2. Material: Tnemec Series 750 UVX paint or approved equal
 3. Number of Coats: One
 4. Dry Film Thickness: 2.5 to 5 mils
 5. Volume Solids: 72% +/- 2%
 6. Generic Description: Polyfunctional Hybrid Polyurethane
- F. Primers and paints shall meet all federal and state environmental and air quality requirements.
- G. Apply two shop prime coats to areas which will be inaccessible after erection.
- H. All exterior steelwork and all interior steelwork subjected to wet conditions or fumes, including all welds, bolts, washers and other connection components, shall be primed and painted or hot-dip galvanized, as specified by the Architectural finish specifications. In the absence of Architectural finish specifications, all exterior steelwork and all interior steelwork subjected to wet conditions and fumes, including all welds, bolts, washers and other connection components, shall be hot-dip galvanized, conforming to the requirements set forth in ASTM A123/A123M and ASTM A153/A153M.
- I. Clean contact surfaces of high strength bolts of all burrs and material which might prevent solid seating of the parts. Steel to receive bolts shall be primer painted except beneath the contact area of slip-critical bolts.
- J. After erection, field touch up all welded areas, high strength bolts and damaged areas. For all steel to remain exposed, remove all blemishes, paint drips, and touch up prime coat.

3.5 HOISTING AND BRACING

- A. Provide all hoisting and erecting equipment and power.
- B. Provide and maintain any and all safety railings, toe boards, etc., required for the erection of steel framing and metal decking.
- C. Brace the erected frame in a manner which will assure safety and proper alignment to receive the metal decking and until the concrete slabs have been poured and have set.

- D. Erect building frame true and level. Erect columns in a manner to allow for movement due to welding shrinkage and thermal expansion and contraction of framing. Check plumbness after erection of each level. Maintain structural stability of frame during erection. Provide temporary bracing where necessary to maintain frame stability and to support required loads, including equipment and its operation.

END OF SECTION

SECTION 05 50 00 METAL FABRICATIONS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Shop fabricated metal items and miscellaneous metal work.
- B. Refer to Schedule at end of this Section.

1.3 RELATED WORK (See also Table of Contents)

- A. Structural Steel: Section 05 12 00.

1.4 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. California Building Code (CBC)
 - 2. American Society for Testing and Materials (ASTM) Specifications as listed in the Section.
- B. Submittals: (Submit under provisions of Section 01 33 00)
 - 1. Shop Drawings: Submit shop drawings indicating profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevation, and details where applicable. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
 - 2. Manufacturer's descriptive data: Submit for manufacturer's items.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver all parts ready for erection; store in close proximity to final locations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Sections: ASTM A36.
- B. Steel Tubing: ASTM A500, Grade B.
- C. Steel Pipe: ASTM A53, Type E or S, Grade. B.

- D. Steel Bolts, Nuts, and Washers: ASTM A307.
- E. Welding Materials: AWS D1.1; type required for materials being welded.
- F. Galvanizing: Hot-dip process ASTM A123 typical and ASTM A153 for threaded fasteners performed after fabrication into largest practical section. Weight of coating not less than 2 oz. per sq. ft. of surface. Where damaged, repair surface with one coat of hot process galvanizing repair compound, "Galvalloy", Galvweldalloy", or approved equal.
- G. Primer: Tnemec Company "Series V10 Red Primer", Sherwin-Williams "Steel Spec Universal Primer"; or approved equal.
- H. Dissimilar Materials: Separate dissimilar surfaces in contact with or in close proximity to non-compatible metals, concrete masonry, or plaster with neoprene gasket; or other approved means.
- I. Expansion Bolts: Hilti "Kwik Bolt TZ" Expansion Anchor Bolts, galvanized unless otherwise indicated.
- J. Non-shrink Grout: Master builders 928 or equal.

2.2 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fabricate items with joints tightly fitted and secured.
- C. Fit and shop assemble in largest practical sections, for delivery to jobsite.
- D. Grind exposed welds flush and smooth adjacent finished surfaces. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- F. Make exposed joints butt tight, flush and hairline.
- G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.3 FINISH

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact bond with concrete or where field welding is

required.

- C. Prime paint interior items with one coat unless scheduled to be galvanized.
- D. Galvanize exterior items and scheduled interior items to minimum 2.00 oz/sq ft zinc coating.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Obtain Architect's approval prior to site cutting or making adjustments not scheduled.
- B. Clean and strip primed steel items to bare metal where site welding is scheduled.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Supply items required to be cast into concrete with setting templates, for installation under appropriate Sections.

3.2 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Perform field welding in accordance with AWS D1.1.
- C. After installation, touch-up field welds, scratched or damaged surfaces with primer, except repair exposed galvanized work (not to be painted) with hot process field galvanizing, in accord with manufacturer's published directions.

3.3 SCHEDULE

- A. Provide and install items listed in Schedule and shown on Drawings with anchorage and attachment necessary for installation. The following Schedule lists principal items only. Refer to drawing details for items not specifically scheduled.
 - 1. Miscellaneous plates or angles not attached to structural steel; complete with anchorage for embedment.
 - 5. Gates for trash enclosure.

END OF SECTION

SECTION 07 42 00

METAL WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The work includes, but is not necessarily limited to, furnishing and installation of all preformed metal roofing and walls, and accessories as indicated on drawings.

1.2 RELATED SECTIONS

- A. Structural Steel Supports: Section 05 12 00
- B. Structural Metal Roof and Floor Decking: Section 05 30 00
- C. Miscellaneous Fabricated Steel: Section 05 50 00
- D. Sheetmetal Gutters and Downspouts: Section 07 60 00
- E. Joint Sealants not specified herein: Section 07 90 00
- F. Finish Painting not specified herein: Section 09 90 00

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. National Fire Protection Association (NFPA).
- C. California Building Codes (CBC).
- D. Underwriters Laboratories, Inc. (UL).
- E. American National Standards Institute (ANSI).

1.4 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide metal wall panel with performance criteria stated by the manufacturer.
- B. Provide furnishing and installation of all preformed metal roofing and walls, and accessories as indicated on the drawings and specified herein.

1.5 SUBMITTALS

- A. Submit under provisions of section 01 33 00.
 - 1. Shop Drawings: Submit Shop Drawings showing layout, profiles and product components.
 - 2. Samples: Submit Samples for finishes, colors and textures.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section 01 60 00.
- B. Delivery: Deliver materials to specified destinations in manufacturer's or distributor's packaging undamaged, and complete with installation instructions.
- C. Protect against damage and discoloration.

- D. Do not bend panels.
- E. Store panels against standing water and condensation between adjacent surfaces.
- F. If panels become wet, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Remove any strippable film coating prior to installation and do not allow it to remain on the panels in extreme cold, heat or in direct sunlight.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication. Show recorded measurements on Shop Drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.7 SAMPLES

- A. Prior to ordering products, submit Manufacturer's standard color Samples for Architect's/Engineer's selection.
- B. Prior to starting work, submit (quantity) 12" long Panel Samples showing shape and a representative color chip for Architect's/Engineer's acceptance.

1.8 SHOP DRAWINGS

- A. Show panel layout, trim installation, and panel attachment.

1.9 INSTALLER'S QUALIFICATIONS

- A. Installation of panels and accessories by installers with a minimum of 5 years.

1.10 MANUFACTURER'S QUALIFICATIONS

- A. Manufacturer shall have a minimum of 10 years experience supplying metal roofing/siding to the region where the work is to be done.
- B. Manufacturer shall provide proof of \$2,000,000 liability insurance for their metal roof system and comply with current independent testing and Certification as specified. See specific product literature for testing information.
- C. Panel manufacturers without full supporting literature, Flashings & Details Guides, Guide Specifications and Technical Support shall not be considered equal to the specified product.

1.11 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for Project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty shall be in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
 - 1. Warranty Period: 5 years commencing on date of Substantial Completion.

- A. Berridge Manufacturing Company,

PART 2 - PRODUCTS

2.1 ACCEPTALBE MANUFACTURER

A. Manufacturer: AEP3 Span, A Division of ASC Profiles Inc, 2110 Enterprise Boulevard, West Sacramento, Calif 95691 800-733-4955
Fontana: 10905 Beech Avenue, Fontana, California 92337
Tacoma: 2141 Milwaukee Way, Tacoma, Washington 98421

2.2 MATERIALS

A. PANELS: Base Metal material:

1. Steel conforming to ASTM A792 Zincalume®/Galvalume®, minimum yield 50,000 psi, thickness 24 gauge (standard).
2. For primers thicker than 0.5 mil or if gauge is 20 or 18 Steel conforming to ASTM A653 (formerly ASTM A446), G-90 Galvanized, minimum yield 40,000 psi, thickness 24 gauge (standard).
3. Protective Coating:
 - a. ProtConform to ASTM A792, AZ50 (Zincalume/Galvalume).
 - b. For primers thicker than 0.5 mil] Conform to ASTM A924 (formerly ASTM A525) G-90 Galvanized.
4. Exterior Finish:
 - a. DuraTech® 5000 (Polyvinylidene Fluoride), full 70% Kynar® 500/Hylar 5000® consisting of a baked-on 0.15-0.20 mil corrosion resistant primer and a bakedon 0.70-0.80 mil finish coat with a specular gloss of 10-30% when tested in accordance with ASTM D-523- 89 at 60°.
 - b. Color as selected by Architect.
5. Interior Finish:
 - a. Primer Coat Material: Corrosion-resistant primer; primer coat dry film thickness: 0.15 mils; finish coat material: polyester paint, finish coat dry film thickness: 0.35 mils. Each piece of material shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory.
 - b. Color: Off-White to Light Gray.

B. Substitutions: Under provisions of Section 01 25 00.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXISTING CONDITIONS

1. Inspect installed work of other trades and verify that such work is complete to a point where this work may continue.
2. Verify that installation may be made in accordance with approved shop drawings and manufacturer's instructions.

3.02 PREPARATION

A. FIELD MEASUREMENTS

1. Verify prior to fabrication.
2. If field measurements differ from drawing dimensions, notify Architect/Engineer prior to fabrication.

B. PROTECTION

1. Treat, or isolate with protective material, and contacting surfaces of dissimilar materials to prevent electrolytic corrosion.
2. Require workmen who will be walking on Roofing Panels to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material, which could cause damage or discoloration.
3. Protect work of other trades against damage and discoloration.

C. SURFACE PREPARATION

1. Clean and dry surfaces prior to applying sealant.

3.03 INSTALLATION

A. PANELS

1. Follow roof panel manufacturer's directions.
2. Install panel seams (choose one) vertically or horizontally.
3. Lap panels away from prevailing wind direction.
4. Do not stretch or compress panel side-laps.
5. Secure panels without warp or deflection.

B. ALLOWABLE ERECTION TOLERANCE

1. Maximum Alignment Variation: 1/4 inch in 40 feet.

C. FLASHING

2. Follow manufacturer's directions and architect approved Shop Drawings.
3. Overlap roof panels at least 6 inches.
4. Install flashings to allow for thermal movement.
5. Remove strippable protective film, if used, immediately preceding flashing installation.

D. CUTTING AND FITTING

1. Neat, square and true. Torch cutting is prohibited where cut is exposed to final view.
2. Openings 6 inches and larger in any direction: Shop fabricate and reinforce to maintain original load capacity.
3. Where necessary to saw-cut panels, debur cut edges.

3.04 CLEAN UP AND CLOSE OUT

A. PANEL DAMAGE AND FINISH SCRATCHES

1. replaced as directed by the Architect's or Owner's representative.

B. CLEANING AND REPAIRING

1. At completion of each day's work and at work completion, sweep panels, flashings and gutters clean. Do not allow fasteners, cuttings, filings or scraps to accumulate.
2. Remove debris from project site upon work completion or sooner, if directed.

END OF SECTION

SECTION 07 60 00 FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fascias, gutters, valleys, and scuppers.
- B. Flexible sheet flashing.

1.2 REFERENCES

- A. ASTM A653 - Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A755 - Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
- C. ASTM A924 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- D. ASTM B32 - Solder Metal.
- E. ASTM B101 - Standard Specifications for Lead-Coated Copper Sheet and Strip for Building Construction.
- F. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- G. ASTM D549 - Rosin in Paper and Paperboard.
- H. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- I. SMACNA - Architectural Sheet Metal Manual.

1.3 SYSTEM DESCRIPTION

- A. Work of this Section is to physically protect membrane roofing, pre-formed metal roofing and base flashings from damage that would permit water leakage to building interior.

1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing Work with five years minimum experience.

B. Perform Work in accordance with SMACNA standard details and requirements.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Submit Shop Drawings of sheet metal items indicating profiles, jointing, terminations and installation details. Indicate type and spacing of fasteners.

C. Submittal of specific plates from the SMACNA Architectural Sheet Metal Manual constitutes acceptable documentation of installation details.

D. Submit Product Data for pre-coated galvanized steel and flashing accessories.

E. Submit two 4-inch square Samples illustrating metal finish color for pre-coated steel.

1.6 STORAGE AND HANDLING

A. Store products under provisions of Section 01 60 00.

B. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation.

C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 WARRANTY

A. Provide manufacturer's 20-year warranty against defective materials and finish.

B. Provide installer's 2-year warranty coverage for water tightness and integrity of seals.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

A. Parapets, Cap, Coping, Fascias, and Gutters

- 1 Pre-Coated Galvanized Steel: ASTM A755 on zinc-coated galvanized substrate, ASTM A653, Grade 33, G90 zinc coating in accordance with ASTM A924; 0.0299 inch thick core steel, factory pre-coated with 'Kynar 500' or "Hylar 5000" coating of color to match sheet metal roofing specified in Section 07 61 00. Color to be selected by Architect.

B. Counterflashing

- 1 Galvanized Steel: ASTM A653, Grade 33, G90 zinc coating in accordance with ASTM A924, 0.0299 inch thick core steel.

2.2 ACCESSORIES

- A. Lead-Coated Copper: ASTM B101, Temper H00 and H01, cold-rolled copper sheet, coated both sides with lead weighing not less than 12 pounds per 100 square feet nor more than 15 pounds per 100 square feet total weight of copper sheet with lead applied to both sides.
- B. Fastener: Galvanized steel or stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners shall match pre-coated metal.
- C. Underlayment: ASTM D266; No. 30 asphalt-saturated roofing felt.
- D. Metal Primer: As specified in Section 09 91 00.
- E. Protective Backing Paint: Zinc chromate alkyd.
- F. Slip Sheet: ASTM D549, 0.05 psf, rosin-sized building paper.
- G. Sealant: As specified in Section 07 92 00.
- H. Bedding Compound: Rubber-asphalt type.
- I. Plastic Cement: ASTM D4586, Type I.
- J. Metal Flashing System: Two piece pre-coated galvanized steel similar to Springlok Flashing System, manufactured by Fry Reglet, type as indicated. Include fabricated end closures and mitered corners.
- K. Solder for Lead-Coated Copper: ASTM B32, Grade SN 60 percent tin, 40 percent lead.
- L. Solder for Zinc: ASTM B32; 50/50 tin/lead type, with rosin flux.
- M. Self-Adhesive Flexible Sheet Flashing: 40-mil-thick composite of polyethylene film and self-adhesive rubberized asphalt with embossed slip-resistant surface; "Ice and Water Shield" by W.R. Grace or approved equal.
- N. Manufactured Reglets: Two piece pre-coated galvanized steel, spring-action type similar to "Springlock Flashing System" or approved equal, manufactured by Fry Reglet, type as indicated. Include fabricated end closures and mitered corners.

Finish: Manufacturer's gray epoxy primer; exposed portions shall be field finish painted as specified in Section 09 91 00.

2.3 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate concealed cleats of galvanized steel, ASTM A653, Grade 33, G90 zinc coating, 0.0478 inch thickness, interlockable with sheet.
- C. Fabricate exposed cleats and coverplates of same material as sheet, interlockable with sheet.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside 1/2 inch. Miter and seam corners.
- F. Form material with flat lock seam.
- G. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- H. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- J. Fabricate flashings to allow toe to extend 2 inches over bituminous base flashings or roofing surface. Return and brake edges.
- K. Fabricate vent pipe and roof penetration flashings of lead-coated copper with clamping ring.

2.4 FINISH

- A. Shop prepare and prime exposed ferrous metal surfaces.
- B. Back-paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.
- C. Site paint exposed to view metal surfaces under provisions of Section 09 91 00.
- D. "Kynar 500" or "Hylar 5000" factory pre-coated finish with 0.2 mil baked on primer and 0.8 mil baked on topcoat for a 1.0 mil dry film thickness. Finish shall be warrantied for a minimum of 20 years against all defects.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating Work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface-mounted reglets true to line and level. Seal top with sealant.
- D. Install underlayment with protective slip sheet over parapets, caps, copings, gravel stops and curbs.

3.3 INSTALLATION

- A. Conform to indicated details on the Drawings and the recommendations included in the SMACNA Architectural Sheet Metal Manual.
- B. Provide for thermal expansion of exposed sheet metal Work. Space movement joints at 10 feet on center maximum with no joints within 2 feet of corners. Attach members with clips to permit movement without damage, or provide slotted or oversize holes with washers.
- C. Form expansion joints of intermeshing hooked flanges filled with sealant.
- D. Insert flashings into reglets to form tight fit. Secure in place with lead wedges at maximum 12 inches on center. Pack remaining spaces with lead wool. Seal flashings into reglets with sealant.
- E. Secure flashings in place using concealed fasteners. Use exposed fasteners only where indicated.
- F. Lap, lock, seam and seal all joints. Make lock seam Work flat and true to line, and sweat full of solder, except where installed to permit expansion and contraction. Lap flat lock seams, and lap seams where soldered according to pitch, but in no case less than 3 inches. Make seams in direction of flow.

- G. Apply plastic cement compound between metal flashings and felt flashings. Apply bituminous coating between dissimilar metals where occurs.
- H. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- I. Roof-Penetration, Vent Pipe Flashing: Turn lead flashing down inside vent piping. Clamp flashing to other pipes penetrating roof except for vent piping. Seal with elastomeric sealant.
- J. Seal metal joints watertight and weathertight throughout.

3.4 FIELD QUALITY CONTROL

- A. Conform to SMACNA Architectural Sheet Metal Manual.
- B. Field observation will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.5 CLEANING AND ADJUSTMENT

- A. Leave Work clean and free of stains, scrap and debris.
- B. Repair and replace damaged Work.

END OF SECTION

SECTION 09 91 00 PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Products and application.
- C. Surface finish schedule.
- D. Patch to match existing.

1.2 REFERENCES

- A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.

1.3 SYSTEM DESCRIPTION

- A. Preparation of all surfaces to receive final finish.
- B. Painting and finishing Work of this Section using coating systems of materials including primers, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.
- C. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.
- D. Painting and finishing all exterior and interior surfaces of materials including structural, mechanical, and electrical Work on site, in building spaces, and above or on the roof.
- E. Paint exposed surfaces except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces.

1.4 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.5 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.
- B. Applicator: Company specializing in commercial painting and finishing with five years documented experience.
- C. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions. Comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).
- D. Coats: The number of coats specified is the minimum number acceptable. If full coverage is not obtained with the specified number of coats, apply such additional coats as are necessary to produce the required finish.
- E. Employ coats and undercoats for all types of finishes in strict accordance with the recommendations of the paint manufacturer.
- F. Provide primers and undercoat paint produced by the same manufacturer as the finish coat.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Provide manufacturer's technical information and instructions for application of each material proposed for use by catalog number.
- C. List each material by catalog number and cross-reference specific coating with specified finish system.
- D. Provide manufacturer's certification that products proposed meet or exceed specified materials.
- E. Submit two 8-1/2 inch x 11 inch Samples of each paint color and texture applied to cardboard. Resubmit Samples until acceptable color, sheen and texture is obtained.
- F. On same species and quality of wood to be installed, submit two 4 x 8 inch Samples showing system to be used.
- G. Provide product data, MSDS, and other official literature from manufacturer identifying that the INTERIOR APPLIED products meet the testing requirements and threshold limits of the State of California Department of Health Services (DHS) *Standard Practice for the Testing of Volatile Organic Compounds*. Such products shall be identified by a 3rd party certification program listing low-emitting material products. Contractor to clearly highlight, circle and call out on the product literature, identifying how the product complies.

1.7 FIELD SAMPLES

- A. Provide field samples under provisions of Section 01 33 00.
- B. On wall surfaces and other exterior and interior components, duplicate specified finishes on at least 100 square feet of surface area.
- C. Provide full-coat finishes until required coverage, sheen, color and texture are obtained.
- D. Simulate finished lighting conditions for review of field samples.
- E. After finishes are accepted, the accepted surface may remain as part of the Work and will be used to evaluate subsequent coating systems applications of a similar nature.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver the products to site and store and protect under provisions of Section 01 87 00.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing. Paint containers not displaying product identification will not be acceptable.
- D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in well ventilated area, unless required otherwise by manufacturer's instructions.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

- D. Minimum Application Temperature for Varnish and Urethane Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 feet candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

- A. Provide a ten gallon container of each finish paint color to Owner for touchup.
- B. Label each container with color, texture, and room locations in addition to the manufacturer's label.

1.11 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Unless specifically identified otherwise, product designations are those of the Dunn-Edwards Corporation, (800) 537-4098 and shall serve as the standard for kind, quality, and function.
- B. Subject to compliance with requirements, other manufacturers offering equivalent products are:
 - 1. Benjamin Moore Paints.
 - 2. Frazee Paint (McCloskey, Ameron).
 - 3. ICI Paint Stores.
 - 4. Kelly-Moore Paint Company.
 - 5. Pittsburgh Paints.
 - 6. Sherwin Williams.
 - 7. Spectra-Tone Paint Corp.
 - 8. Tnemec Company, Inc.
 - 9. Vista Paint Corporation.
- C. Substitutions: Under provisions of Section 01 62 00.

2.2 MATERIALS

- A. Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Linseed oil, shella, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
- D. INTERIOR APPLIED Paint shall be low-emitting and must meet the testing requirements and threshold limits of the State of California Department of Health Services (DHS) *Standard Practice for the Testing of Volatile Organic Compounds*. Such products shall be identified by a 3rd party certification program listing low-emitting material.

2.3 FINISHES

- A. Refer to schedule at end of Section for surface finish schedule.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.
- B. Examine surfaces to be finished prior to commencement of Work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - 3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.
 - 4. Exterior Located Wood: 15 percent, measured in accordance with ASTM D2016.
- D. Beginning of installation means acceptance of existing surfaces.

3.2 SURFACE PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Correct minor defects and clean surfaces which affect Work of this Section.
- C. Shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Aluminum Surfaces: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- F. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- G. Concrete Floors: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- H. Gypsum Board: Repair all voids, nicks, cracks and dents with patching materials and finish flush with adjacent surface. Latex fill minor defects. Spot prime defects after repair.
- I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Pretreat with phosphoric acid etch or vinyl wash. Apply coat of etching primer the same day as pretreatment is applied.
- J. Concrete and Unit Masonry: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- K. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- L. Uncoated Steel and Iron: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- M. Shop Primed Steel: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- N. Interior Wood: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- O. Exterior Wood: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

- P. Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.
- Q. Wood Doors: Seal top and bottom edges with 2 coats of spar varnish sealer.

3.3 PROTECTION OF ADJACENT WORK

- A. Protect elements surrounding the Work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by Work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

3.4 WORK NOT TO BE PAINTED

- A. Painting is not required on surfaces in concealed and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces and duct shafts.
- B. Do not paint metal surfaces such as stainless steel, chromium plate, brass, bronze, and similar finished metal surfaces.
- C. Do not paint anodized aluminum or other surfaces which are specified to be factory pre-finished.
- D. Do not paint sandblasted or architecturally finished concrete surfaces.
- E. Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or identifications.

3.5 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.

- G. The number of coats specified is the minimum that shall be applied. Apply additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.
- H. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- I. Prime back surfaces of interior and exterior woodwork with primer paint.
- J. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.
- K. Paint mill finished door seals to match door or frame.
- L. Paint primed steel glazing stops in doors to match door or frame.
- M. Cloudiness, spotting, lap marks, brush marks, runs, sags, spikes and other surface imperfections will not be acceptable.
- N. Where spray application is used, apply each coat of the required thickness. Do not double back to build up film thickness of two coats in one pass.
- O. Where roller application is used, roll and redistribute paint to an even and fine texture. Leave no evidence of roller laps, irregularity of texture, skid marks, or other surface imperfections.
- P. For painting of exterior patchwork, paint to the nearest surface break.

3.6 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment. Do not paint shop prefinished items.
- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- D. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- E. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- F. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.
- G. Paint grilles, registers, and diffusers which do not match color of adjacent surface.

- H. Paint all mechanical and electrical equipment, vents, fans, and the like occurring on roof.
- I. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts.
- J. Do not paint over labels or equipment identification markings.
- K. Do not paint mechanical room specialties such as compressors, boilers, pumps, control panels, etc.
- L. Do not paint switch plates, light fixtures, and fixture lenses.

3.7 CLEANING

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.8 PROTECTION OF COMPLETED WORK

- A. Protect finished installation under provisions of Section 01 87 00.
- B. Erect barriers and post warning signs. Maintain in place until coatings are fully dry.
- C. Confirm that no dust generating activities will occur following application of coatings.

3.9 PATCHING

- A. After completion of painting in any one room or area, repair surfaces damaged by other trades.
- B. Touch-up or re-finish as required to produce intended appearance.

3.10 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary.
- C. The Owner will engage the services of an independent testing agency to sample paint material being used.

- D. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
- E. The testing agency will perform appropriate quantitative materials analysis and other characteristic testing of materials as required by the Owner.
- F. If test results show materials being used and their installation do not comply with specified requirements or manufacturer's recommendations, the Contractor may be directed to stop painting, remove noncomplying paint, pay for testing and repaint surfaces to acceptable condition.

3.11 COLOR SCHEDULE

- A. Paint and finish colors shall be custom color, mixed and formulated to meet color as specified by Architect.
- B. Interior Colors: 10 interior paint colors to be selected and located by Architect.
- C. Exterior Colors: 4 exterior paint colors to be selected and located by Architect.
- D. Access doors, registers, exposed piping, electrical conduit and mechanical/electrical panels if not stainless steel; generally the same color as adjacent walls.
- E. Exterior and interior steel doors, frames and trim; match adjacent existing door frames.
- F. Doors: Match adjacent existing door paint or varnish.
- G. Interior and Exterior Steel Fabrications, if not Stainless Steel: Match existing or adjacent walls.

3.12 SCHEDULE - EXTERIOR SURFACES

- A. The following Dunn-Edwards paint systems or Architect approved equal shall be used:
 - 1. Wood-Painted (Flat Acrylic) - Exterior Trim and Exposed Wood Framing
 - 1st coat: W708 EZ Prime
 - 2nd coat: W701V Evershield
 - 3rd coat: W701V Evershield
 - 2. Wood-Painted (Semi-Gloss Acrylic)
 - 1st coat: W708 EZ Prime
 - 2nd coat: W901V Permasheen
 - 3rd coat: W901V Permasheen

3. Wood-Painted (Gloss Alkyd)
 - 1st coat: W708 EZ Prime
 - 2nd coat: W960V Permagloss
 - 3rd coat: W960V Permagloss
4. Wood - Semi-Transparent
 - 1st coat: WPT3 "OKON Weatherpro"
5. Concrete (Flat Acrylic) - Exposed concrete indicated on drawings to be painted
 - 1st coat: W709 Eff-Stop
 - 2nd coat: W701V Evershield
 - 3rd coat: W701V Evershield
6. Concrete Masonry Units (Flat Acrylic)
 - Fill coat: W305 Blocfil
 - 1st coat: W701V Evershield
 - 2nd coat: W701V Evershield
7. Cement Plaster (Flat Elastomeric)
 - 1st coat: Enduraseal W360
 - 2nd coat: Endurawall W370
 - 3rd coat: Endurawall W370
8. Steel-Primed or Unprimed (Flat Acrylic)
 - 1st coat: 43-5 Corrobar
 - 2nd coat: W-701V Evershield
 - 3rd coat: W-701V Evershield
9. Steel-Primed or Unprimed (Semi-Gloss Acrylic)
 - 1st coat: 43-5 Corrobar
 - 2nd coat: W901V Permasheen
 - 3rd coat: W901V Permasheen
10. Steel-Primed or Unprimed (Gloss-Alkyd)
 - 1st coat: 43-5 Corrobar
 - 2nd coat: 10 Syn-Lustro
 - 3rd coat: 10 Syn-Lustro
11. Steel-Galvanized (Flat Acrylic)

1st coat:	GE 123 Galva Etch, Etching Liquid
2nd coat:	43-7 Galv-Alum
3rd coat:	W701V Evershield
4th coat	W701V Evershield

12. Steel-Galvanized (Semi-Gloss - Acrylic)

1st coat:	GE 123 Galva Etch, Etching Liquid
2nd coat:	43-7 Galv-Alum
3rd coat:	W901V Permasheen
4th coat	W901V Permasheen

13. Steel-Galvanized (Gloss - Alkyd)

1st coat:	GE 123 Galva Etch, Etching Liquid
2nd coat:	43-7 Galv-Alum
3rd coat:	10 Syn-Lustro
4th coat	10 Syn-Lustro

14. Pavement Marking –Refer to Section 32 12 16 & Section 32 13 13

3.13 SCHEDULE - INTERIOR SURFACES

- A. The following Dunn-Edwards paint systems or Architect approved equal shall be used:

1. Wood-Painted (Semi-Gloss Alkyd) - Wood Trim

1st coat:	W707 Unikote
2nd coat:	W901V Permasheen
3rd coat:	W901V Permasheen

2. Wood-Painted (Gloss Alkyd)

1st coat:	W707 Unikote
2nd coat:	W960V Permagloss
3rd coat:	W960V Permagloss

3. Glue-Laminated Wood and Wood Timber Members (Satin-Flat Varnish)

1st coat:	V-QYB Series Stainseal
2nd coat:	MC80-2025 McCloskey
3rd coat:	MC80-0007 McCloskey

4. Wood - Transparent (Stain - Semi-Gloss Varnish)

1st coat:	V-QYB Series Stainseal
-----------	------------------------

- | | |
|-------------------------------------|-------------------------|
| Filler coat (Open grain wood only): | Jasco Paste Wood Filler |
| 2nd coat: | MC80-2025 McCloskey |
| 3rd coat: | MC80-6702 McCloskey |
| 4th coat: | MC80-6702 McCloskey |
5. Wood - Transparent (Stain-Semi-Gloss Lacquer)
- | | |
|-----------|---------------------------------|
| 1st coat: | V-QYB Series Wood Stain |
| 2nd coat: | V-NRS-1620 (Sanding Sealer) |
| 3rd coat: | V-NRF1626 LUSTER-LAC (Lacquer) |
| 4th coat: | V-NRF 1626 LUSTER-LAC (Lacquer) |
6. Concrete (Flat-Latex)
- | | |
|-----------|---------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W401V Decovel |
| 3rd coat: | W401V Decovel |
7. Concrete (Semi Gloss Latex)
- | | |
|-----------|---------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W450V Decoglo |
| 3rd coat: | W450V Decoglo |
8. Concrete Floors - Sealed (Low Sheen Epoxy Acrylic)
- | | |
|-----------|------------------|
| 1st coat: | Tuff Floor W-810 |
| 2nd coat: | Tuff Floor W-810 |
9. Concrete Block (Flat-Latex)
- | | |
|-----------|---------------|
| 1st coat: | W305 Blocfil |
| 2nd coat: | W401V Decovel |
| 3rd coat: | W401V Decovel |
10. Concrete Block (Semi Gloss-Latex)
- | | |
|-----------|---------------|
| 1st coat: | W305 Blocfil |
| 2nd coat: | W450V Decoglo |
| 3rd coat: | W450V Decoglo |
11. Concrete Block (Semi Gloss-Epoxy)
- | | |
|-----------|------------------------|
| 1st coat: | W305 Blockfiller |
| 2nd coat: | 9100 Series RUST-OLEUM |

3rd coat: 9100 Series RUST-OLEUM

12. Steel - Primed or Unprimed (Flat-Latex) - Exposed Duct Work

1st coat: 43-5 Corrobar (or Touch up)

2nd coat: W401V Decovel

3rd coat: W401V Decovel

13. Steel - Primed or Unprimed (Semi-Gloss-Alkyd) - Steel Doors/Frames

1st coat: 43-5 Corrobar (or touch up)

2nd coat: 9 Syn-Lustro Semi-Gloss

3rd coat: 9 Syn-Lustro Semi-Gloss

14. Steel - Primed or Unprimed (Gloss-Alkyd)

1st coat: 43-5 Corrobar (or touch up)

2nd coat: 10 Syn-Lustro Gloss

3rd coat: 10 Syn-Lustro Gloss

15. Steel - Galvanized (Flat-Latex) - Exposed Duct Work

1st coat: 43-7 Galv-Alum

2nd coat: W401V Decovel

3rd coat: W401 V Decovel

16. Steel - Galvanized (Semi-Gloss - Alkyd) - Steel Handrails

1st coat: 43-7 Galv-Alum

2nd coat: 9 Syn-Lustro Semi-Gloss

3rd coat: 9 Syn-Lustro Semi-Gloss

17. Steel - Galvanized (Gloss - Alkyd)

1st coat: 43-7 Galv-Alum

2nd coat: 10 Syn-Lustro Gloss

3rd coat: 10 Syn-Lustro Gloss

18. Gypsum Board (Flat - Latex)

1st coat: W101V PVA

2nd coat: W401V Decovel

3rd coat: W401V Decovel

19. Gypsum Board (Eggshell-Acrylic) - Gypsum Board Walls and Ceilings

1st coat: W101V PVA

- | | |
|-----------|-----------------|
| 2nd coat: | W440V Decosheen |
| 3rd coat: | W440V Decosheen |
20. Gypsum Board (Semi-Gloss -Acrylic) - Kitchenette areas; all Interior Wood Trim
- | | |
|-----------|------------------|
| 1st coat: | W101V PVA |
| 2nd coat: | W901V Permasheen |
| 3rd coat: | W901V Permasheen |
21. Gypsum Board (Gloss -Acrylic)
- | | |
|-----------|------------------|
| 1st coat: | W101V PVA |
| 2nd coat: | W960V Permagloss |
| 3rd coat: | W960V Permagloss |
22. Gypsum Board (Gloss -Epoxy)
- | | |
|-----------|-----------------------|
| 1st coat: | W102 Proseal |
| 2nd coat: | 9100 Series RUSTOLEUM |
| 3rd coat: | 9100 Series RUSTOLEUM |
23. Plaster (Flat-Latex)
- | | |
|-----------|---------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W401V Decovel |
24. Plaster (Eggshell-Acrylic)
- | | |
|-----------|-----------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W440V Decosheen |
| 3rd coat: | W440V Decosheen |
25. Plaster (Semi Gloss-Latex) - Wet Areas U.O.N.
- | | |
|-----------|---------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W450V Decoglo |
| 3rd coat: | W450V Decoglo |
26. Plaster (Semi Gloss-Acrylic)
- | | |
|-----------|------------------|
| 1st coat: | W709 Eff-Stop |
| 2nd coat: | W901V Permagloss |
| 3rd coat: | W901V Permagloss |
27. Plaster (Gloss-Alkyd)
- | | |
|-----------|---------------|
| 1st coat: | W709 Eff-Stop |
|-----------|---------------|

2nd coat: W960V Permagloss

3rd coat: W960V Permagloss

28. Plaster (Gloss-Epoxy)

1st coat: 9100 Series RUSTOLEUM

2nd coat: 9100 Series RUSTOLEM

3rd coat: 9100 Series RUSTOLEUM

29. Acoustic Panels (Flat Poly Vinyl Acetate)

1st coat: W615 AcoustiKote

2nd coat: W615 AcoustiKote

END OF SECTION

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SECTION 10 14 00 SIGNAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Door and wall signage.
- B. Exterior metal signs.
- C. Cast letters and numbers.
- D. Traffic Signs.
- E. Cast metal plaques.

1.2 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings: Submit dimensioned elevations of each sign configuration.
 - 1. Show sign sections indicating materials, thicknesses and attachment methods.
 - 2. Show anchors and reinforcement.
 - 3. Provide complete signage schedule indicating all signs and locations, key to room numbers and elevations. Provide space for Architect to indicate sign type and location.
- C. Product Data:
 - 1. Manufacturer's current published specifications.
 - 2. Manufacturer's installation instructions.
- D. Samples:
 - 1. Provide two Samples of each sign type required in the profiles and sizes indicated on the Drawings. Signs approved with correct color and type may be used in the final installation at the request of the Contractor.
 - 2. Provide Samples of all proposed fasteners and accessories.
 - 3. Three copies of manufacturer's color chart indicating all available standard colors for selection by the Architect.

- E. Closeout: Manufacturer's warranty.

1.3 PROJECT CONDITIONS

- A. Environmental Requirements: Install signs only when interior air and substrates have reached equilibrium moisture and temperature approximating that of normal occupied conditions.
- B. Do not install adhesive tape mounted signs when ambient temperature is below 70 degrees Fahrenheit. Maintain this temperature during and after installation of signs.

1.4 REGULATORY REQUIREMENTS

- A. Conform to C.C.R., Title 24, Part 2, Chapter 11, ADA Accessibility Guidelines (ADAAG), and American Disability Act (ADA) for accessibility requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver signs safely packed to prevent damage during shipment and prior to installation.
- B. Keep signs in protective wrapping until ready for installation.
- C. Handle carefully to prevent damage. Replace damaged parts at no cost to the Owner.
- D. Comply with the additional requirements specified in Section 01 60 00.

1.6 SCHEDULING

- A. Do not install signs until walls and/or doors have received final finish.

1.7 WARRANTY

- A. Procedures: In accordance with Section 01 78 36.
- B. Furnish manufacturer's written warranty agreeing to replace signs which fade or discolor under normal environmental exposure.
- C. Warranty Period: 5 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements specified herein.

B. Substitutions: Under provisions of Section 01 62 00.

2.2 DOOR AND WALL SIGNAGE

A. Cast Acrylic Sheet: ASI Modulux, Mohawk Sign Systems Inc., or approved equal.

1. Monolithic tactile plaque sign with fully integrated graphics composed of high-impact polyester acrylate resins, pressure molded into a single polymerized component, using manufacturer's co-molding process.
 - a. Depth: 0.25 inch thickness.
 - b. Panel Appearance: Specify from manufacturer's standard, high contrast semi-matte color chart.
 - c. Surface Texture: Matte non-glare.
 - d. Letter Styles and Sizes and Layout Position: Specify from manufacturer's standard letter styles and color chart.
 - e. Text Schedule: Verify correct capitalization.
 - f. Sign Size: As indicated on the Drawings.
 - g. Sign Shape: As indicated on the Drawings. Square or rectangular shapes shall have radiused corners.
 - h. Installation: Provide countersunk mounting holes for mechanical fasteners.
 - i. Sign Copy: Shall be integrally molded with sign body per manufacturer's standard bonding process.
 - j. Application: Rated for exterior and interior applications.
 - k. Background Appearance: Solid color from manufacturer's standard color charts.
 - l. Braille: Integral domed-shaped California Grade 2 Braille dots, each distinct and separate.
2. Flame Resistance: Application of a lighted match shall not produce melting, flashing, flaring or distortion. Signs shall not ignite at a temperature less than 800° F.
3. Vandal resistant surface which can be cleaned using industrial cleansers, including acetone.

- B. Fasteners: All screws, bolts and fasteners to be tamper resistant stainless steel. All fasteners to be provided with solid anchorage to studs, blocking or concrete; do not use toggle bolts.
- C. Colors: High contrast semi-matte integral colors for graphics. All integral resins are U.V stabilized resins utilizing automotive grade pigments.
- D. Location of signs as shown on Drawings.

2.3 EXTERIOR METAL SIGNAGE

- A. Galvanized steel plate, 0.0538 inch thick, mechanically mounted.
- B. Porcelain copy, 1 inch high, colors as selected by Architect. Text and size shall be all uppercase as indicated on Drawings.
- C. Location of signs as shown on Drawings.
- D. Shop Fabricated Signs: All joints, returns and the like shall be properly joined together and welded edges shall be ground smooth to proper aluminum finish.
- E. Shapes shall be saw-cut smooth and straight and shall be deburred prior to final finishing and assembly. Square or rectangular shapes shall have radiused corners.
- F. Vandal resistant surface which can be cleaned using industrial cleansers, including acetone.
- G. Fasteners: All screws, bolts and fasteners to be tamper resistant stainless steel. All fasteners shall be provided with solid anchorage to studs, blocking or concrete; do not use toggle bolts.
- H. Colors: High contrast non-glare or semi-matte integral colors for graphics. All integral resins are UV stabilized resins utilizing automotive grade pigments.

2.4 CAST LETTERS AND NUMBERS

- A. Manufacturer: ARK Ramos, Metal Arts Inc., ASI Modulux, or approved equal.
- B. Standard cast letters, No. 530 "Optima", F-1 satin aluminum face, color to be selected by Architect.
- C. Verify location as shown on Exterior Elevations. Verify all text with Owner prior to ordering signage.
- D. Size of Letters: 16 inches high x 1 inch stroke x 1/2 inch deep.

- E. Text: see drawings.

2.5 TRAFFIC SIGNS

- A. Manufacturer: Hawkins Sign Co, Inc. (510) 525-8500; Traffic Control Service Inc., (800) 884-8274; or approved equal.
- B. Types of Signs: Sheet metal with porcelain enamel finish.
1. Accessible Parking Stall Signs: Complying with Title 24, Part 2, Section 7102(e) at automobile stalls and Section 1129B.5 at van stalls. At van stalls, provide separate 12 inch wide x 4 inch high sign below main sign. Text on signs shall comply with ADAAG Article 4.6.4.
 2. Tow-Away Signs: Complying with Title 24, Part 2, Section 7102(e).
- C. Sign Posts: 2-inch outside diameter standard weight galvanized steel pipe, set in concrete footing.
- D. Mount signs on sign posts with bottom of sign 7 feet 2 inches above grade, unless indicated otherwise.

2.6 CAST METAL PLAQUES

- A. Manufacturer: ARK Ramos, Metal Arts Inc., ASI Modulux, or approved equal.
- B. Construction: [Cast aluminum, alloy C443.2,] [bronze] [painted pebble background] with raised graphics and single line bevel edge. Provide clear protective coating and satin highlighting finish at raised surfaces. Letter and border styles and painted background color to be selected by Architect from manufacturer's standard styles and colors.
- C. Size: 24 inches high x 12 inches wide.
- D. Text: prior to fabrication, verify content and spelling of text with Owner's representative.
- E. Mounting: Provide hardware and blocking for wall mounting in location indicated.

2.7 Wall Mounted Exterior Backlit Illuminated Sign Box

- A. Signarama Illuminated Sign Cabinet or accepted substitution
- Cabinet: Aluminum extrusions.
 - Illuminated sign face: Polycarbonate.
 - Illumination: LED preferred, or high-efficacy fluorescent.
 - Signage Artwork: TBD
 - Dimensions: 3' x 6' verify dimensions in field

- Signarama: San Jose ,CA 408-977-1450

Coordinate with electrical and city signage permit.

2.8 FABRICATION

A. General Requirements:

1. Shop-fabricate signs to requirements indicated for materials, thicknesses, designs, shapes, sizes and details of construction.
2. Sign panel surfaces shall be smooth, even and fabricated to remain flat under installed conditions. Ease all edges and corners of signs.
3. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant regulations and requirements indicated for size, style, spacing, content, position and colors.

B. Tactile Graphics and Text:

1. Conform to C.B.C. Title 24, Chapter 11, Section 11B-Division 7. 11B-703.2.5, Table 11B-703.3.1, 11b-703.3.1 11B-703.3.2.
2. California Grade 2 Braille must accompany raised text characters. Provide tactile copy and Grade 2 Braille raised 1/32 inch minimum from plaque using manufacturer's co-molding process:
 - a. Letters and numbers shall be raised 1/32 inch (0.794 mm) and shall be sans-serif uppercase characters accompanied by California Grade 2 Braille symbols.
 - b. Braille Symbols: Rounded or domed California Braille dots, each distinct and separate. Dots shall be 1/10 inch (2.54 mm) on centers in each cell with 2/10 inch (5.08 mm) space between cells. Dots shall be raised a minimum of 1/32 inch (0.794 mm) from a plaque surface.
 - c. Proportions: Characters shall be selected from fonts where the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
 - d. Character Height: Characters and numbers on signs shall be 5/8-inch minimum and 2 inches maximum high and as shown on the Drawings.

- e. Contrast of Characters and Symbols: Characters and symbols shall be light characters with dark background with a contrast of 70 percent minimum.
3. Raised Characters and Pictorial Symbol Signs:
- a. Letter Type: Letters and numbers on signs shall be raised 1/32 inch (0.794 mm) minimum and shall be sans-serif uppercase characters accompanied by California Grade 2 Braille.
 - b. The stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character. Reference to CBC 11B Division 7, 11B-703.2.6.
 - c. Symbol Size: Raised characters or symbols shall be a minimum of 5/8- inch (15.9 mm) and as shown on the Drawings.
 - d. Pictorial Symbol Signs (Pictograms): Pictorial symbol signs (pictograms) shall be accompanied by the equivalent verbal description placed directly below the pictogram as shown on the Drawings.
 - e. Contrast between letters and/or characters and background color must be 70 percent minimum.
- C. Silkscreening: All silkscreened graphics shall be produced with ABS paint compatible with the substrate, using mesh of 390 or finer to produce clean, sharp edges. All media are to be opaque, with full even coverage, and free from dust bubbles, blemishes and other foreign matter. Characters and symbols shall contrast 70 percent minimum with their background. Characters shall be light colors with dark background.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces to receive units are true and plumb. Correct inadequate surfaces before installation of signs.
- B. Verify that moisture and temperature levels of substrate and environment have been stabilized and are acceptable prior to proceeding with the Work.
- C. Take field measurements prior to shop fabrication where necessary in order to ensure proper fitting of Work.
- D. Do not begin Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install units in locations and at mounting heights indicated on Drawings.

1. Keep perimeter lines straight, plumb, and level.
2. Install within 1/4 inch tolerance vertically and horizontally of intended location and in accordance with manufacturer's recommendations.
3. Install product at heights to conform to C.C.R., Title 24, Part 2 and ADA Accessibility Guidelines (ADAAG).

B. Installation on Walls: Attach securely through finish wall to rigid backing.

C. Installation Method: Install with vandal - resistant fasteners.

3.3 CLEANING, PROTECTION AND REPAIR

- A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 5 feet.
- B. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.

END OF SECTION

SECTION 12 93 00 SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the provision and installation of Site Furnishings as shown on the Drawings and as specified in this Section. The work includes all miscellaneous hardware, foundations, footings and miscellaneous appurtenances associated with the installation. Items to be installed include:
 - 1. Bike Rack
- B. Related work includes but is not limited to:
 - 1. Site Concrete

1.3 STANDARDS

- A. Unless otherwise shown or specified, all materials and methods shall conform to the appropriate current sections of: the State of California Department of Transportation (CALTRANS) Standard Specifications, latest edition, except for measurement and payment requirements.
- B. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods.
- C. Applicable ISO Testing Standards (latest revisions) as they apply to this work.

1.4 SUBMITTALS

- A. Documentation: product data for all standard site furnishings and accessories.
- B. Samples: manufacturer's sample chips of all finishes and colors specified.
- C. Maintenance Data: At Substantial Completion submit maintenance information for site furnishings and accessories where applicable for inclusion in the Owner's maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Instructions: Materials, products, processes, equipment or the like shall be installed or applied in strict accordance with printed instructions furnished by

the manufacturer of the material for use under conditions similar to those at the job site.

- B. Perform all work in accordance with all applicable State and local laws, codes and regulations.

1.6 DELIVERY, STORAGE & HANDLING

- A. Delivery & Handling: Transport, store and handle precast units and manufactured items in a manner to avoid hairline cracks, staining or other damage.
- B. Storage & Protection Store units free of the ground and protected from mud or rain splashes. Cover units, secure covers firmly, and protect the units from dust, dirt or other staining material.

PART 2 - PRODUCTS

2.1 FURNISHINGS

- A. Bike Rack
Manufacturer: Sport Systems
Model #: *LR-P4-F-P*
Description: Surface Mount
Finish / color: Black
Distributor/Contact: Sport Systems, www.sportssystemscanada.com, 877-600-4667

PART 3 - EXECUTION

3.1 GENERAL

- A. Review and Adjustment: Locate all site furnishings as shown on the Drawings. Review all site furnishing locations prior to proceeding with any installation. Make adjustments as approved by the Owners Representative.
- B. Install all embedded site furnishings in concrete paving areas prior to the concrete pour. Schedule the receiving of equipment in conjunction with the concrete pour. Any block outs of concrete pour due to scheduling conflicts shall be approved by the Owners Representative and at no additional cost to the Owner. Finish of any block out areas shall match adjacent paving.
 - 1. Furnishings damaged due to the concrete pour shall be replaced at the discretion and to the satisfaction of the Owners Representative, and not repaired or cleaned.

3.2 INSTALLATION

- A. Site Furnishings: install per manufacturer's recommendations and as shown on the Drawings and as specified herein.

- B. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- C. Set all work true and square, plumb and level. Provide spacers under furniture to level as acceptable to Owner's Representative.

3.3 CLEAN-UP

- A. After completion of all operations, remove all excess soil, trash, and other debris. Clean all walks, walls, and pavement, leaving the entire area in a neat, orderly condition.

3.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: cleaning and maintenance information for site furnishings and accessories.

END OF SECTION 12 93 00

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes wire and cable; service entrance cable; and wiring connectors and connections.

1.2 REFERENCES

- A. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code with California Amendments.

1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 14 AWG for control circuits.
 - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.
 - 6. 10 AWG conductors for 20 ampere or larger as designated on plans for 120 volt branch circuit home runs longer than 75 feet.
 - 7. 10 AWG conductors for 20 ampere or larger as designated on plans for 277 volt branch circuit home runs longer than 200 feet.
- B. Wiring Methods: Provide the following wiring methods:
 - 1. Exterior Locations: Use only building wire, Type XHHW-2 insulation, in raceway.
 - 2. Underground Locations: Use only building wire, Type XHHW-2 insulation, in raceway.

1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper unless indicated as aluminum or "AL".
- B. When aluminum conductor is substituted for copper conductor, size to match circuit requirements, terminations, conductor ampacity and voltage drop. Contractor shall be responsible for verifying maximum number of aluminum conductors for substituted copper conductors in specified conduit.

1.5 SUBMITTALS

- A. Product Data: Submit for wire.
- B. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.
- C. Test Reports: Indicate procedures and values obtained.

1.6 QUALITY ASSURANCE

- A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet when tested in accordance with NFPA 262.
- B. Perform Work in accordance with State, Municipality, Highways, and Public Work's standard.
- C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

1.9 COORDINATION

- A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- B. Wire and cable routing indicated is approximate unless dimensioned.
- C. Determine required separation between wire, cable and other work. Determine cable routing to avoid interference with other work.

PART 2 - PRODUCTS

2.1 WIRE

- A. Product Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.
- E. Insulation Material: Thermoplastic.

2.2 SERVICE ENTRANCE CABLE

- A. Conductor: Copper.
- B. Insulation Voltage Rating: 600 volts.
- C. Insulation: Type SE.

2.3 PLASTIC TAPE:

- A. Black 7 mil thick general purpose electrical tape, Scotch 33 plus or equal.

2.4 INSULATING RESIN:

- A. Use two part liquid epoxy resin with resin and catalyst in premeasured, sealed mixing pouch. Scotchcast 4 or equivalent.

2.5 REDUCING ADAPTERS:

- A. Burndy, Thomas and Betts or approved equal.

2.6 TERMINATIONS

- A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.
- B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify mechanical work likely to damage wire and cable has been completed.
- B. Verify raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

- A. Route wire to meet Project conditions.
 - 1. Wire routing indicated is approximate unless dimensioned.
 - 2. Where wire destination is indicated and routing is not shown, determine exact routing and lengths required.
 - 3. Include wire lengths required to install connected devices within 10 ft. of location shown.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.
- D. Special Techniques--Wire in Raceway:
 - 1. Pull conductors into raceway at same time.
 - 2. Install building wire 4 AWG and larger with pulling equipment.
- E. Special Techniques - Wiring Connections:
 - 1. Clean conductor surfaces before installing lugs and connectors.
 - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 - 4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
 - 5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 - 6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

7. Terminate aluminum conductors with tin-plated, aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
 8. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.
 9. Encapsulate below grade splices at outlet, pull and junction boxes with specified insulating resin kits. Make all splices watertight.
 10. Install waterproof wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller in outdoor or wet locations.
 11. Where oversized cables are used to accommodate voltage drop, whether a single or parallel feeder, provide appropriate reducing adapter and conductors for termination.
- F. Install stranded conductors for branch circuits 10 AWG and smaller. Install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.
- G. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- H. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.
- I. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.4 WIRE COLOR

- A. General:
1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
 - a. Black and red for single phase circuits at 120/240 volts.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
 2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
 - a. Black and red for single phase circuits at 120/240 volts.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
- B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors:
 - 1. For 6 AWG and smaller: Green.
 - 2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.5 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rod electrodes.
 - 2. Wire.
 - 3. Grounding well components.
 - 4. Mechanical connectors.
 - 5. Exothermic connections.

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code, with California Amendments.
 - 2. NFPA 99 - Standard for Health Care Facilities.

1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
 - 1. Metal underground water pipe.
 - 2. Metal building frame.
 - 3. Concrete-encased electrode.
 - 4. Ground ring.
 - 5. Rod electrode.
 - 6. Plate electrode.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 25 ohms maximum.

1.5 SUBMITTALS

- A. Product Data: Submit data on grounding electrodes and connections.
- B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and grounding electrodes.

1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.
- B. Perform Work in accordance with State, Municipality, Highways, and Public Work's standard.
- C. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience.

1.9 PRE-INSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.11 COORDINATION

- A. Complete grounding and bonding of building reinforcing steel prior concrete placement.

PART 2 - PRODUCTS

2.1 ROD ELECTRODES

- A. Product Description:
 - 1. Material: Copper.
 - 2. Diameter: 0.75 inch.
 - 3. Length: 10 feet.
- B. Connector: Connector for exothermic welded connection.

2.2 WIRE

- A. Material: Stranded copper.
- B. Foundation Electrodes: 4/0 AWG or as indicated on drawings.
- C. Grounding Electrode Conductor: Copper conductor insulated.
- D. Bonding Conductor: Copper conductor insulated.

2.3 GROUNDING WELL COMPONENTS

- A. Well Pipe: 8 inches by 24 inches long concrete pipe with belled end.
- B. Well Cover: Cast iron with legend "GROUND" embossed on cover.

2.4 MECHANICAL CONNECTORS

- A. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.5 EXOTHERMIC CONNECTIONS

- A. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

- A. Remove paint, rust, mill oils, surface contaminants at connection points.

3.3 INSTALLATION

- A. Install in accordance with IEEE 142 and 1100.
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.
- C. Install grounding and bonding conductors concealed from view.
- D. Install grounding well pipe with cover at each rod location. Install well pipe top flush with finished grade.
- E. Install 4/0 AWG bare copper wire in foundation footing or as indicated on Drawings.
- F. Bond together metal siding not attached to grounded structure; bond to ground.
- G. Bond together reinforcing steel and metal accessories in pool and fountain structures.
- H. Install ground grid under access floors. Construct grid of 4 AWG bare copper wire installed on 24 inch centers both ways. Bond each access floor pedestal to grid.
- I. Bond together each metallic raceway, pipe, duct and other metal object entering space under access floors. Bond to underfloor ground grid. Install 2 AWG bare copper bonding conductor.
- J. Install grounding and bonding in patient care areas to meet requirements of NFPA 99.
- K. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

- L. Connect to site grounding system.
- M. Bond to lightning protection system.
- N. Install continuous grounding using underground cold water system and building steel as grounding electrode. Where water piping is not available, install artificial station ground by means of driven rods or buried electrodes.
- O. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- P. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- Q. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- R. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- S. Permanently attach equipment and grounding conductors prior to energizing equipment.

3.4 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground resistance testing in accordance with IEEE 142.
- D. Perform leakage current tests in accordance with NFPA 99.
- E. Perform continuity testing in accordance with IEEE 142.
- F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

3.5 INDEPENDENT TESTING ORGANIZATION AND PERSONNEL

- A. Obtain the services of an independent third-party testing organization to perform electrical tests.
- B. Provide written test results and a final report of electrical tests per NETA ATS 5.4 to Engineer.

END OF SECTION 26 05 26

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes conduit, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
 - 3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground More than 5 feet outside Foundation Wall: Provide thickwall nonmetallic conduit. Provide cast metal boxes or nonmetallic handhole.
- C. Underground Within 5 feet from Foundation Wall: Provide thickwall nonmetallic conduit. Provide cast metal or nonmetallic boxes.

- D. In Slab Above Grade: Not permitted.
- E. Below Slab on Grade: Use thickwall nonmetallic conduit. Terminate with coated rigid steel elbows and short length of coated rigid steel conduit out of concrete.
- F. Outdoor Locations, Above Grade: Provide galvanized rigid steel conduit. Provide cast metal outlet, pull, and junction boxes.
- G. Wet and Damp Locations: galvanized rigid steel conduit. Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.

1.4 DESIGN REQUIREMENTS

- A. Minimum Raceway Size:
 - 1. 0.75 inch unless otherwise specified.
 - 2. 1 inch for Homeruns unless otherwise specified.
 - 3. 1 inch for outside foundation line unless otherwise specified.

1.5 SUBMITTALS

- A. Product Data: Submit for the following:
 - 1. Liquidtight flexible metal conduit.
 - 2. Nonmetallic conduit.
 - 3. Raceway fittings.
 - 4. Conduit bodies.
 - 5. Wireway.
 - 6. Pull and junction boxes.
 - 7. Handholes.
- B. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

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

1.7 DELIVERY, STORAGE, AND HANDLING

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

1.8 COORDINATION

- A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.
- B. Coordinate Work of this Division and Work of other Divisions in advance of installation. Provide additional Work to overcome tight conditions at no increase in Contract Sum.
- C. Coordinate installation of outlet boxes for equipment specified in other divisions.

PART 2 - PRODUCTS

2.1 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Rigid Aluminum Conduit: ANSI C80.5.
- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: NEMA FB 1. Fittings shall be steel/malleable iron with threaded fittings. Use insulated metallic bushings with lug where ground connections are required. Use plastic bushing for non-bonding applications.

2.2 PVC COATED METAL CONDUIT

- A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 40 mil thick.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.

2.4 NONMETALLIC CONDUIT

- A. Product Description: NEMA TC 2; Schedule 40 PVC for normal power and 80 PVC for emergency power.
- B. Fittings and Conduit Bodies: NEMA TC 3.

2.5 WIREWAY

- A. Product Description: General purpose for indoor applications and raintight type for outdoor locations wire way.
- B. Knockouts: Manufacturer's standard.
- C. Cover: Hinged cover with full gaskets.
- D. Connector: Flanged.
- E. Fittings: Lay-in type with removable top, bottom, and side; captive screws and drip shield for outdoor.
- F. Finish: Rust inhibiting primer coating with gray enamel finish.

2.6 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 0.5-inch male fixture studs where required.
 - 2. Boxes for shall be 1.5-inch-deep by 4-inch square minimum.
 - 3. Boxes for telecommunications outlets shall be 2-1/8-inch-deep by 4-11/16-inch square minimum. Provide 1-gang device ring.
 - 4. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

2.7 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Hinged Enclosures: As specified in Section 262716.
- C. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.

2. Cover: Furnish with ground flange, neoprene gasket, and stainless-steel cover screws.
- D. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
 1. Material: Galvanized cast iron.
 2. Cover: Nonskid cover with neoprene gasket and stainless-steel cover screws.
 3. Cover Legend: "ELECTRIC".
- E. Concrete composite Handholes: Die-molded, concrete composite hand holes:
 1. Cable Entrance: Pre-cut 6-inch x 6-inch cable entrance at center bottom of each side.
 2. Extension: 12" reinforced concrete below box.
 3. Cover: Concrete composite cover with nonskid finish. Covers shall be marked "ELECTRIC", "SIGNAL", "GROUND" or as indicated on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- A. Ground and bond raceway and boxes.
- B. Fasten raceway and box supports to structure and finishes.
- C. Identify raceway and boxes.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

- D. Group related raceway; support using conduit rack. Construct rack using steel channel and provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wire way supports from steel channel.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maintain clearance between raceway and piping for maintenance purposes.
- L. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- M. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- N. Bring conduit to shoulder of fittings; fasten securely.
- O. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- P. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- Q. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2-inch size.
- R. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
- S. Install fittings to accommodate expansion and deflection where raceway crosses seismic and expansion joints.
- T. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- U. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- V. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.

- W. Close ends and unused openings in wire way.

3.4 INSTALLATION - BOXES

- A. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- B. Orient boxes to accommodate wiring devices.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- D. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- E. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- F. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- G. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- H. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- I. Install adjustable steel channel fasteners for hung ceiling outlet box.
- J. Do not fasten boxes to ceiling support wires or other piping systems.
- K. Support boxes independently of conduit.
- L. Install gang box where more than one device is mounted together. Do not use sectional box.
- M. Install gang box with plaster ring for single device outlets.

3.5 INSTALLATION CONCRETE COMPOSITE HANDHOLES

- A. Install boxes flush with finished grade or surface material.
- B. Provide hold down bolts for all covers.
- C. Provide minimum 12" depth of crushed rock or pea gravel below boxes for drainage. Ground bond steel cover plate with insulated green grounding conductor.

3.6 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.
- C. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.7 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

3.8 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION 26 05 33

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Underground Warning Tape.
 - 4. Lockout Devices.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's catalog literature for each product required.
 - 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
- B. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Municipality, Highways, Public Work's standard.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept identification products on site in original containers. Inspect for damage.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- C. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.
- B. Letter Size:
 - 1. 0.125 inch high letters for identifying individual equipment and loads.
 - 2. 0.25 inch high letters for identifying grouped equipment and loads.
- C. Minimum nameplate thickness: 0.125 inch.

2.2 LABELS

- A. Labels: Embossed adhesive tape, with 0.125 inch white letters on black background.

2.3 WIRE MARKERS

- A. Description: Self-adhering, pre-printed, machine printable or write-on, self-laminating vinyl wrap around strips. Blank markers shall be inscribed using the printer or pen recommended by manufacturer for this purpose.
- B. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawing
2. Control Circuits: Control wire number as indicated on shop drawings.

PART 3 - EXECUTION

3.1 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type, color yellow with suitable warning legend describing buried electrical lines.

3.2 LOCKOUT DEVICES

- A. Lockout Hasps:
 1. Anodized aluminum hasp with erasable label surface; size minimum 7.25 x 3 inches.

3.3 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.4 INSTALLATION

- A. Install identifying devices after completion of painting.
- B. Nameplate Installation:
 1. Install nameplate parallel to equipment lines.
 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
 4. Secure nameplate to equipment front using screws.
 5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
 6. Install nameplates for the following:
 - a. Switchboards.

C. Provide color coded nameplates that present, as applicable, the following information:

1. Equipment or device designation.
2. Amperage, kVA, or horsepower rating where applicable.
3. Voltage or signal system name.
4. Source or power or control.
5. Examples:
 - a. Boards: CH2A; 1000A; 277/480V, 3-Phase, 4-Wire.
 - b. Feeder Power Supply for Panel "XXX" Originates at Panel "XXX".
 - c. Transformers: T-1; 112.5kVA; 480V to 120/208V, 3-Phase, 4-Wire; Served from H2A; Load Served L2A.
 - d. Disconnects and Individual Motor Starters: AHU-1; 25HP; 480V, 3-Phase, 3-Wires; Served from EHD5.
 - e. Available Fault Current: XX,XXX Amperes. Date Calculated: XX/XX/XX.

D. Color coding for nameplates for power systems:

1. 277/480V Normal – Yellow with black letters.
2. 120/208V Normal – Blue with white letters.

E. Label Installation:

1. Install label parallel to equipment lines.
2. Install label for identification of individual control device stations, receptacles, and switches.
3. Install labels for permanent adhesion and seal with clear lacquer.

F. Wire Marker Installation:

1. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
3. Install labels at data outlets identifying patch panel and port designation as indicated on Drawings.

G. Underground Warning Tape Installation:

1. Install underground warning tape along length of each underground conduit, raceway, or cable 8 inches below finished grade, directly above buried conduit, raceway, or cable.

H. BRASS TAGS:

1. Provide brass tags for all feeder cables in underground vaults and pull boxes.
2. Provide brass tags for empty conduits in underground vaults, pull boxes and stubs.

I. WARNING, CAUTION AND INSTRUCTION SIGNS

1. Provide warning, caution or instruction signs where required by OSHA, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems.
 - a. Install engraved plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system of equipment operation
 - b. Provide polyester film self-adhesive signs for indoor/outdoor equipment and door warning. Use rigid polyethylene non-adhesive signs where adhesives will not work; for example, installing on a metal fence. Provide sign color and marking that meets OSHA regulations. For example, DANGER (red background with white letters), HIGH VOLTAGE (white with black letters).
 - 1) Use 2 by 4 inch signs for small equipment or enclosure doors.
 - 2) Use 7 by 10 inch or 10 by 14 inch signs for large equipment or enclosure doors.

END OF SECTION 26 05 53

SECTION 26 24 13 SWITCHBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes main and distribution switchboards.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C12.1 - Code for Electricity Metering.
 - 2. ANSI C39.1 - Requirements, Electrical Analog Indicating Instruments.
- B. Institute of Electrical and Electronics Engineers:
 - 1. IEEE C57.13 - Standard Requirements for Instrument Transformers.
 - 2. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
- C. National Electrical Manufacturers Association:
 - 1. NEMA FU 1 - Low Voltage Cartridge Fuses.
 - 2. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
 - 3. NEMA PB 2 - Deadfront Distribution Switchboards.
 - 4. NEMA PB 2.1 - General Instructions for Proper Handling, Installation, Operation, and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less.
- D. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- E. Underwriters Laboratories Inc.:
 - 1. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.
 - 2. UL 891 - Dead-Front Switchboards.

1.3 SUBMITTALS

- A. Shop Drawings: Indicate front and side views of enclosures with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; size and number of bus bars for each phase, neutral, and ground; and switchboard instrument details.
- B. Product Data: Submit electrical characteristics including voltage, frame size and trip ratings, fault current withstand ratings, and time-current curves of equipment and components.
- C. Test Reports: Indicate results of factory production and field tests.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations, configurations, and ratings of switchboards and their components on single line diagrams and plan layouts.
- B. Operation and Maintenance Data: Submit spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in 48-inch maximum width shipping splits, individually wrapped for protection and mounted on shipping skids.
- B. Accept switchboards on site. Inspect for damage.
- C. Store in clean, dry space. Maintain factory wrapping or provide additional canvas or plastic cover to protect units from dirt, water, construction debris, and traffic.
- D. Handle in accordance with NEMA PB 2.1. Lift only with lugs provided. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Conform to NEMA PB 2 service conditions during and after installation of switchboards.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 SEQUENCING

- A. Sequence Work to avoid interferences with building finishes and installation of other products.

PART 2 - PRODUCTS

2.1 DISTRIBUTION SWITCHBOARDS

- A. Product Description: NEMA PB 2, enclosed switchboard with electrical ratings and configurations as indicated on Drawings.
- B. Device Mounting:
 - 1. Main Section: Individually mounted and compartmented.
 - 2. Distribution Section: Individually mounted.
 - 3. Auxiliary Section: Individually mounted.
- C. Bus:
 - 1. Material: Copper standard size.
 - 2. Connections: Bolted, accessible from front for maintenance.
 - 3. Insulation: Fully insulate load side bus bars. Do not reduce spacing of insulated bus.
- D. Ground Bus: Insulated, extend length of switchboard.
- E. Minimum Short Circuit Rating: 65,000 symmetrical amperes rms, fully rated or as indicated on drawing.
- F. Line and Load Terminations: Accessible from front of switchboard, suitable for conductor materials and sizes as indicated on Drawings.
- G. Utility Metering Compartment: Furnish metering transformer compartment for Utility Company's use, in accordance with Utility Company requirements.
- H. Pull Section: Size as indicated on Drawings.
- I. Pull Box: Removable top and sides, same construction as switchboard size as indicated on Drawings.
- J. Future Provisions: Fully equip spaces for future devices with bussing and bus connections, insulated and braced for short circuit currents. Furnish continuous current rating as indicated on Drawings.
- K. Enclosure: Type 3R – Raintight for outdoor.

- L. Align sections at front and rear.
- M. Switchboard Height: 90 inches, excluding floor sills, lifting members and pull boxes.
- N. Finish: Manufacturer's standard light gray enamel over external surfaces. Coat internal surfaces with minimum one coat corrosion-resisting paint, or plate with cadmium or zinc.
- O. Mimic Bus: Show bussing, connections and devices in single line form on front panels of switchboard using black color factory painting, fastened flat against panel face with screws.

2.2 MOLDED CASE CIRCUIT BREAKER

- A. Product Description: UL 489, molded-case circuit breaker.
- B. Field-Adjustable Trip Circuit Breaker: Circuit breakers with frame sizes 200 amperes and larger have mechanism for adjusting long time delay, short time delay, continuous current, short time pickup, long time pickup, instantaneous pickup setting for automatic operation. Range of Adjustment: seconds, amperes, percent.
- C. Field-Changeable Ampere Rating Circuit Breaker: Circuit breakers with frame sizes 200 amperes and larger have changeable trip units.
- D. Current Limiting Circuit Breaker: Circuit breaker indicated as current-limiting have automatically-resetting current limiting elements in each pole. Let-through Current and Energy: Less than permitted for same size Class RK-5 fuse.
- E. Solid-State Circuit Breaker: Electronic sensing, timing, and tripping circuits for adjustable current settings; ground fault trip with integral ground fault sensing and zero sequence type ground fault sensor; instantaneous trip; and adjustable short time trip.
- F. Current Limiter: Designed for application with molded case circuit breaker.
 - 1. Coordinate limiter size with trip rating of circuit breaker to prevent nuisance tripping and to achieve interrupting current rating specified for circuit breaker.
 - 2. Interlocks trip circuit breaker and prevent closing circuit breaker when limiter compartment cover is removed or when one or more limiter is not in place or has operated.

2.3 INSULATED CASE CIRCUIT BREAKER

- A. Product Description: UL 489, enclosed, insulated-case circuit breaker.
- B. Trip Unit: Electronic sensing, timing, and tripping circuits for adjustable current settings; ground fault trip with integral ground fault sensing and zero sequence type ground fault sensor; instantaneous trip; and adjustable short time trip.

2.4 GROUND FAULT DEVICES

- A. Ground Fault Sensor: Zero sequence type.
- B. Ground Fault Relay: Adjustable ground fault sensitivity from 200 to 1200 amperes, time delay adjustable from 0 to 15 seconds. Furnish monitor panel with lamp to indicate relay operation, TEST and RESET control switches.

2.5 TRANSIENT VOLTAGE SUPPRESSION DEVICES

- A. Product Description: IEEE C62.41, factory-mounted transient voltage surge suppressor, selected to meet requirements for high exposure and to coordinate with system circuit voltage.

2.6 AMMETERS AND VOLTMETERS

- A. Ammeters: ANSI C39.1; direct-reading, full range, indicating ammeter with 4.5 inch square recessed case and 250 degree scale, white dial with black figures and pointer, 5 ampere, 60 Hertz movement, 1 percent accuracy.
- B. Voltmeters: ANSI C39.1; direct-reading, full range, indicating voltmeter with 4.5 inch square recessed case and 250 degree scale, white dial with black figures and pointer, 120 volt, 60 Hertz movement, 1 percent accuracy.

2.7 METER TRANSFER SWITCHES

- A. Ammeter Transfer Switch: Rotary multistage snap-action type with 600 volt AC-DC silver plated contacts, engraved escutcheon plate, pistol-grip handle, and four positions including OFF.
- B. Voltmeter Transfer Switch: Rotary multistage snap-action type with 600 volt AC-DC silver plated contacts, engraved escutcheon plate, pistol-grip handle, and four positions including OFF.

2.8 POWER METERS

- A. Watt-hour Meters and Wattmeters: ANSI C12.1; three phase induction type with two stators, each with current and potential coil, rated 5 amperes and 120 volts at 60 Hertz. Meter suitable for connection to 3- and 4-wire circuits. Furnish potential indicating lamps; adjustments for light and full load, phase balance, and power factor; four-dial clock register; integral demand indicator and contact devices to operate remote impulse-totalizing demand meter; ratchets to prevent reverse rotation; removable meter with draw-out test plug; semi-flush mounted case with matching cover.

- B. Impulse-Totalizing Demand Meter: ANSI C12.1; suitable for use with switchboard watt-hour meter, including two circuit totalizing relay; cyclometer; four dial totalizing kilowatt-hour register; positive chart drive mechanism; capillary pen holding minimum one-month ink supply; and roll chart with minimum 31-day capacity. Indicate and record fifteen minute integrated demand of totalized system.
- C. Furnish meters with appropriate multiplier tags.

2.9 METERING TRANSFORMERS

- A. Current Transformers: IEEE C57.13; 5 ampere secondary, wound type, with single secondary winding and secondary shorting device, primary/secondary ratio as indicated on Drawings, burden and accuracy consistent with connected metering and relay devices, 60 Hertz.
- B. Potential Transformers: IEEE C57.13; 120 volt single secondary, disconnecting type with integral fuse mountings, primary/secondary ratio as indicated on Drawings, burden and accuracy consistent with connected metering and relay devices, 60 Hertz.

2.10 ACCESSORIES

- A. Circuit Breaker Lifting Device: Portable, floor supported, elevating carriage with roller base, for movement of circuit breakers in and out of switchboard structure.
- B. Furnish thermostatically controlled electric heaters in each section, sized to prevent condensation under expected weather conditions at Project site. Furnish terminals for separate connection of heater power circuit. Voltage Rating: 120 volts.
- C. Concrete: 3,000 psi.

2.11 SOURCE QUALITY CONTROL

- A. Furnish shop inspection and testing in accordance with NEMA PB 2.
- B. Make completed switchboard available for inspection at manufacturer's factory prior to packaging for shipment. Notify Owner at least seven days before inspection is allowed.
- C. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Owner at least seven days before inspections and tests are scheduled.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify surface is suitable for switchboard installation.

3.2 INSTALLATION

- A. Install in accordance with NEMA PB 2.1.
- B. Tighten accessible bus connections and mechanical fasteners after placing switchboard.
- C. Install fuses in each switch and coordinate sizes with connected load.
- D. Install engraved plastic nameplates.
- E. Install breaker circuit directory.
- F. Ground and bond switchboards.

3.3 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.1.

3.4 ADJUSTING

- A. Adjust operating mechanisms for free mechanical movement.
- B. Tighten bolted bus connections.

3.5 CLEANING

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

END OF SECTION 26 24 13

SECTION 26 56 00 EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes exterior luminaires, poles, and accessories.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate dimensions and components for each luminaire not standard Product of manufacturer.
- B. Product Data: Submit dimensions, ratings, and performance data.

1.3 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle solid wood poles in accordance with ANSI O5.1.

1.5 COORDINATION

- A. Furnish bolt templates and pole mounting accessories to installer of pole foundations.

1.6 MAINTENANCE MATERIALS

- A. Furnish one gallon of touch-up paint for each different painted finish and color.
- B. Furnish two drivers of each lamp type installed.

PART 2 - PRODUCTS

2.1 LUMINAIRES

- A. Product Description: Complete exterior luminaire assemblies, with features, options, and accessories as scheduled.

2.2 LED DRIVERS

- A. Product Description: High-power-factor type electronic driver certified by Certified Ballast Manufacturers, Inc. to comply with ANSI C82.15, suitable for environmental conditions specified, with voltage to match luminaire voltage.

2.3 METAL POLES

- A. Material and Finish: As indicated on Drawings.
- B. Section Shape and Dimensions: As indicated on Drawings.
- C. Height: As indicated on Drawings.
- D. Base: As indicated on Drawings.
- E. Accessories:
 - 1. Handhole.
 - 2. Anchor bolts.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify foundations are ready to receive fixtures.

3.2 INSTALLATION

- A. Install concrete bases for lighting poles at locations as indicated on Drawings.
- B. Install poles plumb. Install shims to adjust plumb. Grout around each base.
- C. Install lamps, ballasts, and drivers in each luminaire.
- D. Bond and ground luminaries, metal accessories, and metal poles.

3.3 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
- B. Measure illumination levels to verify conformance with performance requirements.
- C. Take measurements during night sky, without moon or with heavy overcast clouds effectively obscuring moon.

3.4 ADJUSTING

- A. Aim and adjust luminaries to provide illumination levels and distribution as indicated on Drawings.

3.5 CLEANING

- A. Clean photometric control surfaces as recommended by manufacturer.
- B. Clean finishes and touch up damage.

3.6 PROTECTION OF FINISHED WORK

- A. Relamp luminaries having failed lamps at Substantial Completion.
- B. Replace drivers that have failed at Substantial Completion.

END OF SECTION 26 56 00

SECTION 31 20 00

EARTH MOVING

PART 1 GENERAL

1. SUMMARY

a. Section Includes:

- 1) Excavating and filling for rough grading the Site.
- 2) Preparing subgrades for slabs-on-grade, sidewalks, pavements, and plants.
- 3) Excavating and backfilling trenches for utilities and pits for buried utility structures.

2. DEFINITIONS

a. Backfill: Soil material used to fill an excavation.

- 1) Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
- 2) Final Backfill: Backfill placed over initial backfill to fill a trench.

b. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

c. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

d. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

e. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

- 1) Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- 2) Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

f. Fill: Soil materials used to raise existing grades.

- g. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
 - h. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
 - i. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
 - j. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.
3. FIELD CONDITIONS
- a. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

PART 2 PRODUCTS

1. SOIL MATERIALS
- a. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from
2. ACCESSORIES
- a. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored to comply with local practice or requirements of authorities having jurisdiction.

PART 3 EXECUTION

1. PREPARATION
- a. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

- b. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- c. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

2. EXCAVATION, GENERAL

- a. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1) If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3. EXCAVATION FOR WALKS AND PAVEMENTS

- a. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

4. EXCAVATION FOR UTILITY TRENCHES

- a. Excavate trenches to indicated gradients, lines, depths, and elevations.
- b. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
- c. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1) Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- d. Trenches in Tree- and Plant-Protection Zones:
 - 1) Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2) Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
 - 3) Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

5. SUBGRADE INSPECTION

- a. Proof-roll subgrade [**below the building slabs and pavements**] <Insert locations> with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- b. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

6. UTILITY TRENCH BACKFILL

- a. Place backfill on subgrades free of mud, frost, snow, or ice.
- b. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- c. Final Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
- d. Warning Tape: Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

7. SOIL FILL

- a. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- b. Place and compact fill material in layers to required elevations as follows:
 - 1) Under grass and planted areas, use satisfactory soil material.
 - 2) Under walks and pavements, use satisfactory soil material.
 - 3) Under steps and ramps, use engineered fill.
 - 4) Under building slabs, use engineered fill.

8. SOIL MOISTURE CONTROL

9. COMPACTION OF SOIL BACKFILLS AND FILLS

- a. Place backfill and fill soil materials in accordance with the project soils report and City of Hollister Standards.
- b. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

10. GRADING

- a. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- b. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

11. SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- a. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- b. On prepared subgrade, place subbase course in accordance with City of Hollister StandardsShape subbase course to required crown elevations and cross-slope grades.
 - 2) Place subbase course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.

12. FIELD QUALITY CONTROL

- a. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- b. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- c. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

13. PROTECTION

- a. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- b. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- c. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

- 1) Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

14. DISPOSAL OF SURPLUS AND WASTE MATERIALS

- a. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

****END OF SECTION 31 20 00****

SECTION 32 01 16
FLEXIBLE PAVEMENT REHABILITATION

PART 1 GENERAL

1. SUMMARY
 - a. Section Includes:
 - 1) Milling, remixing, placing, and compacting existing asphaltic concrete.

PART 2 PRODUCTS

1. FLEXIBLE PAVEMENT SURFACING RECOVERY
 - a. Furnish materials according to City of Hollister standards.
2. MATERIALS
 - a. In accordance with City of Hollister standards.

PART 3 EXECUTION

1. PREPARATION
 - a. Mechanically sweep pavement surfaces immediately prior to commencement of Work. Clean pavement surfaces of loose foreign matter. Verify surfaces are dry.
 - b. Protect existing improvements, overhanging trees, and plant life from heat damage by individual shielding
2. REMOVAL
 - a. Execute removal to depth not less than 2 inches at each point across full width of surface without detrimental aggregate degradation.
3. PROTECTION OF FINISHED WORK
 - a. Do not permit traffic over surface for two hours.

END OF SECTION 32 01 16

SECTION 32 01 90 LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Landscape Maintenance as specified in this Section during the landscape maintenance period, referred to herein as the Maintenance Period. The work includes establishing the plantings, providing pest and disease control, mowing, and maintaining the irrigation system and related construction elements during the Maintenance Period.
- B. Related Work:
 - 1. Irrigation
 - 2. Planting

1.3 MAINTENANCE PERIOD

- A. Time Limits: The Maintenance Period commences from the date of approval of substantial completion and extend for 60 calendar days, or until final completion approval, whichever is later.

1.4 REVIEWS

- A. Substantial Completion Review: Specifically request this review at least (5) five days in advance of the proposed start of the Maintenance Period. The Owners Representative will review for a final checklist of minor items to be completed. The Maintenance Period commences once the items are completed and approved by the Owners Representative. Items to be checked during this review include but are not limited to:
 - 1. All planted areas including turf and naturalized areas if applicable.
 - 2. Valve boxes, spray head / emitter / tree bubbler installation.
 - 3. Overall operation of the irrigation system.
 - 4. For point-source drip-irrigated areas, do not apply mulch until the system has been inspected unless permitted otherwise by the Owner's Representative.
 - 5. For sub-surface drip irrigated areas, ensure that the system was inspected earlier by the Owner's Representative prior to soil backfill over the drip lines.
- B. Punch-list Check: this review will be conducted by the Owners Representative half-way through the Maintenance Period, at the request of the Owner, when punch-list items identified at Substantial Completion have been corrected and are ready for

inspection. The Final Review may be rescheduled at the discretion of the Owners Representative, if additional time beyond the scheduled date of final completion is needed to correct Punch-list items.

- C. Final Review: Specifically request this review at least (5) five days in advance of the end of the Maintenance Period. Failure to request this notice automatically extends the date of completion. The Maintenance Period will continue until final completion is approved by the Owners Representative. Items to be checked during this review include but are not limited to:
 - 1. All planted areas including turf and naturalized areas if applicable, including all punch-list items identified at Substantial Completion Review and Punch-list Check.
 - 2. All irrigation punch-list items identified at Substantial Completion Review, and Punch-list Check.

1.5 MAINTENANCE PERIOD SUBMITTALS

- A. Fertilizer: Submit written certificate showing rates, materials, and date of fertilizer application, to the Owner within five (5) days of each application.
- B. Pesticides / herbicides: If pesticides / herbicides are used, submit written certificate showing rates, materials, and date to the Owner within five (5) days of each application.

1.6 CLOSE-OUT DOCUMENTATION

- A. Submit prior to the Final Review, the following additional documents for the Maintenance Binder.
 - 1. Work tags / reports, countersigned by the Owners Representative:
 - a. Fertilizer applications, including initial application.
 - b. Pesticide and herbicide applications, including initial application.
 - c. In-service meeting discussion / decisions.
 - 2. Copies of the following documents:
 - a. Amended soils test report.
- B. Controller Schedule: 8.5x11 size type-written and laminated irrigation schedule for established (mature) landscape at end of Maintenance Period for reference purposes inside the controller. Schedule is to include run-times and frequency for each station.
 - 1. Attach irrigation schedule to laminated valve stationing plan – see Specification Section Landscape Irrigation.
- C. The Final Review will take place only after additional submittals and documents have been reviewed and approved by the Owners Representative.

1.7 AMENDED SOILS TEST

- A. Test Samples: At no less than 2 weeks and no more than 3 weeks after first watering, take one-quart samples of the amended soil, from 0"-6" deep from at least

three separate locations in the planting areas. Mix samples from the three locations to provide a composite sample, representative of amended soil in the planting areas. Forward the amended soil samples to the Testing Lab for testing to determine any additional amendment and/or fertilizer applications during landscape maintenance.

1. Testing Lab: as specified in Specification Section Soil Preparation and is to be the same lab that provided the existing soils test report.
2. For landscape installations in separate project phases, an amended soils test will be required for each phase.
3. Submit the amended soils test report to the Owners Representative for review as soon as it is available.
4. Follow the instructions of the Owners Representative for additional applications of amendment and/or fertilizer, which in mulch areas will involve temporarily removing mulch at plant pits for application and raking / hand watering prior to recovering the pits with mulch.
5. Additional amendment and/or fertilizer applications, if required by the amended soils test report(s), will be at no additional cost to the Owner.

PART 2 - MATERIALS

2.1 FERTILIZER

- A. For maintenance fertilization: as specified in Specification Section Landscape Planting.

2.2 WATER

- A. During the course of construction and maintenance, water for landscape will be paid for by the Owner. Submit watering schedule with dates, times and frequency at start of the Maintenance Period.

2.3 CHEMICALS

- A. Insecticides, fungicides, pre and post-emergent herbicides as recommended by licensed Pest Control Operator and approved by the Owners Representative.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor's Responsibility: Work installed under this Contract damaged by vandalism, vehicular damage and/or theft during the installation of the work and up to the Substantial Completion approval, is to be repaired or replaced without additional cost to the Owner.
- B. Owner's Responsibility: Throughout the Maintenance Period, these damages and similar factors such as excessive litter, abuse and defacement will be the Owner's responsibility to repair or replace and will not be a part of this Contract. No planting is to be guaranteed beyond the Maintenance Period, except as to conformance to

specified species and variety, and as specified in Specification Section Landscape Planting.

3.2 BASIC REQUIREMENTS

- A. Irrigation and Erosion: Maintain all planting areas at optimum moisture for plant growth. Hand water planting not adequately served by the automatic irrigation system. Repair settlement of soil and plants and soil erosion and replant areas to the satisfaction of the Owners Representative. Replace dying or deficient plants as they become apparent or as directed by the Owners Representative.
- B. Cultivating and Clean-Up: Keep all planting areas neat and free from debris at all times and be cultivate at not more than ten (10) day intervals.
- C. Weed control: Keep all planting areas weed-free at all times during the Maintenance Period.
- D. Insect, Pest, and Disease Control: Control insects, pests, rodents and diseases by the use of insecticides and fungicides, as applied by a licensed pest control operator with the prior approval of the Owners Representative.
- E. Fertilizer: Application for all planting areas: as specified in Specification Section Landscape Planting.
- G. Pruning: Prune new trees and shrubs as directed by the Owners Representative. Do not remove lower branches from multi-trunk or low branching trees unless directed.
- H. Replacement Materials: Immediately replace any dead or damaged plant materials. Repair or replace turf areas not fully established and healthy as directed by the Owners Representative. Carry out replacements to the specifications and as required to match adjacent plantings at no additional cost to the Owner.
- I. Irrigation: Schedule and monitor controller stations as necessary to minimize water consumption while still providing adequate water for the plant material.
 - 1. Adjust and clean all heads, emitters, valves, filters, regulators and other equipment as necessary to maintain the system.
- K. Watering: For small plant material (under 1 gallon size) under drip irrigation, supplemental hand water as required during maintenance period until root structures develop enough for drip irrigation to be effective.

3.3 CONDITION OF PLANTING AT END OF MAINTENANCE PERIOD

- A. Complete the following tasks prior to Final Review, and bring all planting areas to a satisfactory condition before final acceptance of the work. Replace plantings that do not conform to specifications.

- B. Clean all mulched planting areas of all broadleaf and grass weeds including those sprouting from root balls. Remove all basal growth and tree suckers from tree trunks and branches.
- C. Remove all nursery tree stakes and associated tying materials.
- D. Mulch: Rake out watering basins from all plants under a permanent irrigation system and re-spread the mulch, keeping mulch away from the plant stem.

3.4 IN-SERVICE MEETING

- A. Specifically request, prior to Final Review, an In-Service meeting with the Owner's maintenance staff to identify any landscape maintenance issues and verify irrigation station sequence / run-times (controller schedule).
 - 1. Document any discussions / decisions at the in-service meeting and provide this to the Owners Representative. Include a copy in the Maintenance Binder. See Specification Section Landscape Irrigation for other documents to be included in the Maintenance Binder.
 - 2. The Final Review will take place only after the in-service meeting is completed, and final approval is contingent on the in-service meeting taking place to the satisfaction of the Owners Representative.

3.5 HARDWARE

- A. Provide the Owner at the in-service meeting the following:
 - 1. Quick Couplers – (2) quick coupler key / hose swivels
 - 2. Irrigation Controller – (2) enclosure keys
 - 3. Special tools required for the maintenance of specific components
 - 4. Other enclosures / back flow preventers – (2) enclosure lock keys

END OF SECTION 12 01 90

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aggregate base course.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Aggregate Fill Type : As noted on plans.
 - 1. Basis of Measurement: By square yard.

1.3 SUBMITTALS

- A. Samples: Not Required.
- B. Materials Source: Required.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aggregate Fill Type : As noted on plans.

PART 3 - EXECUTION

3.1 AGGREGATE PLACEMENT

- A. Level and contour surfaces to elevations and gradients indicated.

3.2 COMPACTION

- A. Compact materials to 98 percent of maximum density, as determined from test strip in accordance with ASTM D2940.

3.3 FIELD QUALITY CONTROL

- A. Compaction Testing: Required.

****END OF SECTION 32 11 23****

SECTION 32 12 16

ASPHALT PAVING

PART 1 GENERAL

1. SUMMARY

a. Section Includes:

- 1) Asphalt materials.
- 2) Aggregate materials.
- 3) Aggregate subbase.
- 4) Asphalt paving base course, binder course, and wearing course.
- 5) Asphalt paving overlay for existing paving.

2. SUBMITTALS

a. Product Data:

- 1) Submit product information for asphalt and aggregate materials.

3. QUALITY ASSURANCE

a. Perform Work in accordance with City of Hollister Standards.

PART 2 PRODUCTS

1. ASPHALT PAVING

- a. Performance / Design Criteria in accordance with City of Hollister Standards
- b. Asphalt Materials in accordance with City of Hollister Standards
- c. Aggregate Materials:
 - 1) Coarse Aggregate: ASTM D692; crushed stone, gravel, or blast furnace slag.

2. ACCESSORIES

- a. Sealant: per City of Hollister Standards.

PART 3 EXECUTION

1. EXAMINATION

- a. Verify gradients and elevations of base.

2. INSTALLATION

a. Primer

- 1) Apply primer in accordance with City of Hollister Standards
- 2) Use clean sand to blot excess primer.

b. Tack Coat

- 1) Apply tack coat on asphalt and concrete surfaces over subgrade surface at uniform rate.
- 2) Apply tack coat to contact surfaces of curbs, gutters and milled asphalt.
- 3) Coat surfaces of manholes and water valve frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

c. Single Course Asphalt Paving

- 1) Install Work in accordance with City of Hollister Standards.
- 2) Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
- 3) Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

d. Asphalt Paving Overlay

- 1) Place asphalt paving overlay within 24 hours of applying primer or tack coat.
- 2) Place overlay to thickness indicated on Drawings.
- 3) Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
- 4) Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3. TOLERANCES

- a. In accordance with City of Hollister Standards

4. FIELD QUALITY CONTROL

- a. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

****END OF SECTION 32 12 16****

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1. SUMMARY
 - a. Section Includes:
 - 1) Concrete paving for:
Concrete sidewalks.
Concrete curbs and gutters
Concrete driveway approaches.
2. SUBMITTALS
 - a. Product Data:
 - 1) Submit data on concrete materials
 - b. Design Data:
 - 1) Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required.

PART 2 PRODUCTS

1. CONCRETE PAVING
 - a. In accordance with City of Hollister Standards
2. CONCRETE MIX
 - a. Mix and deliver concrete in accordance with City of Hollister Standards

PART 3 EXECUTION

1. EXAMINATION

- a. Verify gradients and elevations of base..

2. PREPARATION

- a. Moisten substrate to minimize absorption of water from fresh concrete.

3. INSTALLATION

a. Forms:

- 1) Place and secure forms to correct location, dimension, and profile.
- 2) Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.
- 3) Place joint filler between paving components and other appurtenances.

b. Reinforcement:

- 1) Place reinforcing at in accordance with City of Hollister Standards

c. Placing Concrete:

- 1) Place concrete in accordance with City of Hollister Standards
- 2) Do not disturb reinforcing or formwork components during concrete placement.
- 3) Place concrete continuously between predetermined joints.
- 4) Place bumpers secure.

d. Finishing:

- 1) **Sidewalk Surfaces:** Light broom, radiused and trowel joint edges.
- 2) **Curbs and Gutters:** Light broom, radiused and trowel joint edges
- 3) Apply curing compound on exposed concrete surfaces immediately after finishing.

****END OF SECTION 32 13 13****

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 GENERAL

1. SUMMARY

a. Section Includes:

- 1) Traffic lines and markings.
- 2) Legends.
- 3) Paint.
- 4) Glass beads.

2. UNIT PRICES

3. SUBMITTALS

- a. Product Data: Formulation for each type of paint/thermoplastic.
- b. Manufacturer's Certificate: Products meet or exceed specified requirements.
- c. Manufacturer Instructions:
 - 1) Application temperatures, eradication requirements, application rate, line thickness, type of glass beads, and bead embedment and application rate.
 - 2) Installation requirements, including storage and handling procedures.

4. QUALITY ASSURANCE

- a. Perform Work according to City of Hollister standards.
 - 1)

5. AMBIENT CONDITIONS

- a. Do not apply materials if surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- b. Thermoplastic Compound: Do not apply unless pavement surface temperature are outside temperature ranges required by product manufacturer

- c. Maximum VOCs: Do not exceed limit required by State or Environmental Protection Agency.

6. WARRANTY

- a. Furnish three year manufacturer's warranty for pavement markings.

PART 2 PRODUCTS

1. PAINTED PAVEMENT MARKINGS

- 1) Furnish materials according to City of Hollister standards.
- b. Performance and Design Criteria:
 - 1) Paint Adhesion: Adhere to road surface, forming smooth continuous film one minute after application.
 - 2) Paint Drying: Tack free by touch as not to transfer by vehicle tires within two minutes after application.
- c. Thermoplastic Compound:
 - 1) Binder Component: Hydrocarbon resin, with pigment, beads, and filler uniformly dispersed.
 - 2) Asphalt Concrete Primer:

Description: Thermosetting adhesive with a solids content of pigment reinforced synthetic rubber and synthetic plastic resin dissolved or dispersed in a volatile organic solvent.
 - 3) Portland Cement Concrete Primer: Epoxy resin primer, as recommended by manufacturer of thermoplastic compound.

2. APPLICATION EQUIPMENT

- a. Paint Gun:
 - 1) Description: Simultaneously apply parallel lines of indicated width in solid or broken patterns or various combinations of those patterns.
 - 2) Type: Dual nozzle.
- b. Measuring Device: Automatically and continuously measure to nearest foot length of each line placed.

PART 3 EXECUTION

1. PREPARATION

- a. Do not apply paint to concrete surfaces until concrete has cured for seven days.
- b. Agitate paint for 10 to 30 minutes prior to application to ensure even distribution of pigment.
- c. Maintenance and Protection of Traffic:
 - 1) Prevent interference with marking operations and prevent traffic on newly applied markings before dry.
 - 2) Maintain access to existing residences and other properties requiring access.
- d. Surface Preparation.
 - 1) Clean and dry paved surfaces prior to painting.
 - 2) Blow or sweep surface free of dirt, debris, oil, grease, or gasoline.

2. DEMOLITION

- a. Remove existing markings in an acceptable manner, using methods that will cause least damage to pavement structure or surface.
- b. Do not remove existing pavement markings by painting over with blank paint.
- c. Repair pavement or surface damage caused by removal methods.
- d. Clean and repair existing lines and legends.

3. APPLICATION

- a. Application Rate:
 - 1) Thermoplastic Compound:

After surface preparation has been completed, prime pavement surface with spray equipment and allow primer materials to dry according to thermoplastic manufacturer recommendations
- b. Painting:
 - 1) Apply paint pneumatically, using guidelines and templates as necessary to control application.
 - 2) Manually paint numbers, letters, and symbols.
 - 3) Prevent splattering and overspray when applying markings.

- 4) Paint Guns: Simultaneously apply paint binder at uniform specified rates.
- 5) Dispense at ambient temperature.

c. Thermoplastic Compound:

- 1) Place on dry pavement.
- 2) Apply centerline, skip line, edge line, and other longitudinal type markings with mobile applicator.
- 3) Place special markings, crosswalks, stop bars, legends, arrows, and similar patterns with portable applicator.

d. Raised Pavement Markers:

- 1) Align prefabricated markers and permanently fix in place by means of epoxy adhesives.
- 2) Prior to applying adhesive, thoroughly clean area by water blasting and by compressed air.

e. Dimensions and Locations: As indicated.

f. Crosswalks, Intersections, Stop Lines and Legends

- 1) Use walk-behind stripers, hand spray, or stencil trucks.
- 2) Do not use hand brushes or rollers.
- 3) Glass beads may be applied by hand.

4. FIELD QUALITY CONTROL

a. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.

b. Acceptance:

- 1) Repair lines and markings which after application and curing do not meet following criteria:

Incorrect location.

Insufficient thickness, width, coverage, or retention.

Uncured or discolored material.

Insufficient bonding.

5. CLEANING

a. Collect and legally dispose of residues from painting operations.

6. PROTECTION

- a. Protect painted pavement markings from vehicular and pedestrian traffic until paint is dry and track free.
- b. Unless material is track free at end of paint application convoy, use traffic cones to protect markings from traffic until track free.
- c. If vehicle crosses a marking and tracks it, or if splattering or overspray occurs, eradicate affected marking and resultant tracking and apply new markings.
- d. Follow manufacturer instructions or use minimum of 30 minutes of dry time.
- e. Barrier cones are satisfactory protection for materials being dried.

7. MAINTENANCE

- a. Provide service and maintenance of traffic paints for three years from date of Substantial Completion.

****END OF SECTION 32 17 23****

SECTION 32 17 26

TACTILE WARNING SURFACING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Tactile warning surfacing.
- B. Fabricated precast detectable warning tiles.

1.2 REFERENCES

- A. ADAAG - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.
- B. CCR - California Code of Regulations, Title 24, Part 2.
- C. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06)
- D. ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810.
- E. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ)
- F. ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.
- G. American Society for Testing and Materials (ASTM) Test Methods B 117, C 501, C 1028, D 543, D 570, D 638, D 695, D 790, G 151, G 155, and E 84.
- H. California Code of Regulations (CCR 2007) Title 24 Part 1 Articles 2, 3 and 4, and Part 2 Section 205 definition of “Detectable Warning”, Section 1127B.5 for “Curb Ramps”, and Section 1133B.8.5 for “Detectable Warnings at Hazardous Vehicle Areas”. California Department of Transportation Detectable Warning Surface Authorized Material List. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11). IR 11B-4 (1/01/11) removed the requirement for a “staggered” pattern and now calls for the “square grid” (in-line) pattern.

1.3 RELATED SECTIONS

- A. Section 32 13 13 Concrete Paving

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit Product Data and manufacturer's installation instructions for each item. Submit two (2) tactile warning surface samples minimum 8 inch x 8 inch (203 mm x 203 mm) of the kind proposed for use.

- C. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer's Name, and Catalog Number.
- D. Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and the meet properties indicated.
- E. Maintenance Instructions: Include copies of manufacturer's specified maintenance practices for each type of tactile warning surface tiles and accessories.

1.5 REGULATORY REQUIREMENTS

- A. Conform to CCR, Title 24, Part 2 and ADAAG for access for the handicapped.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01 70 00.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced installer, certified in writing by tactile warning surface manufacturer, who has successfully completed tactile warning surface installations similar in material, design, and extent to work in project. Minimum of 5 years experience manufacturing precast pavers.
- B. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- C. Apply adhesive only when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (2 deg C) for 12 hours immediately before application. Do not apply when substrate is wet or contains excessive moisture.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602. Provide artificial shade and windbreaks, and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and higher.
- E. When ambient temperature exceeds 100 deg F (38 deg C), or when wind velocity exceeds 8 mph (13 km/h) and ambient temperature exceeds 90 deg F (32 deg C), set unit pavers within 1 minute of spreading setting-bed mortar.

PART 2 - PRODUCTS

2.1 TACTILE WARNING SURFACING, GENERAL

- A. Precast Detectable Warning Tiles: Accessible truncated-dome detectable warning tiles configured for setting flush in new concrete walkway surfaces, ramps, or new construction with slip-resistant surface treatment on domes and field of tile. Cast in Place Tiles have a 1/4 inch (6 mm) nominal thickness and feature embedment ribs 3 inches (76 mm) on center through entire length of tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide ADA Solutions, Inc.; Cast in Place Detectable Warning Tile or comparable product by one of the following:

- a. Tile Tech Warnings
- b. Armorcast Products Co.
- c. Detectile, Inc.

- B. Rectangular shape and size as indicated on drawings.

2.2 BASIS OF DESIGN:

- A. Tile Tech Warnings.

- 1) Warning Pavers.

- B. Paver size: Nominal 12" x 12", actual size 11.875" x 11.875"

- C. Color: Yellow

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that concrete is in suitable condition to begin installation according to manufacturer's written instructions. Verify that installation of tactile warning surfacing will comply with accessibility requirements upon completion.

3.2 INSTALLATION

- A. Fabricated Detectable Warning Tiles:
- B. Concrete Installation: Comply with installation requirements in Section 321313 "Concrete Paving." Mix, place, and finish concrete to conditions complying with detectable warning tile manufacturer's written requirements for satisfactory embedment of removable tile.
- C. Tile Installation: Follow manufacturer's detailed installation guidelines.
- D. To the maximum extent possible, the Cast in Place Replaceable Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple Cast in Place Replaceable Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.
- A. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.
- B. The Cast in Place Replaceable Tiles shall be tamped or vibrated into the fresh concrete to ensure that there are no voids or air pockets, and the field level of the Tactile Warning Surface Tile is flush to the adjacent concrete surface or as the

Drawings indicate to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

- C. On Continuous Runs: The Installer shall leave a 3/16" nominal gap between successive Tactile Warning Surface Tiles. As part of the concrete finishing operation, the Installer shall apply 1/8 - 1/4 inch (3.2 - 6.4 mm) edge treatment around the perimeter of the Tactile Warning Surface Tiles to facilitate future replacement of the Tactile Warning Surface Tile. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

- D. Clean tiles using methods recommended in writing by manufacturer.

3.3 CLEANING AND PROTECTION

- A. Protect detectable warning tiles against damage during construction period to comply with tile manufacturer's specifications.
- B. During and after the detectable warning tiles installation and the concrete curing stage, it is imperative that there are no walking, leaning, or external forces placed on the tile to rock the tile, causing a void between the underside of the tile and the concrete substrate.

3.4 GUARANTEES AND WARRANTIES

- A. Warranty service must be rendered within 4 hours and all problems resolved within 24 hours of notification by District.
- B. The manufacturer shall provide a five year warranty period.

END OF SECTION

SECTION 32 19 00 SITE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.
- B. Geotechnical Report by Earth Systems Pacific dated September 12, 2018.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the installation of plain, decorative Site Concrete as shown on the Drawings and as specified in this Section.
 - 1. The work includes installation of aggregate base.
- B. Related work includes but is not limited to:
 - 1. Earthwork and Grading
 - 2. Site Furnishings

1.3 STANDARDS AND DEFINITIONS

- A. Unless otherwise shown or specified all materials and methods shall conform to the appropriate current sections of the State of California, Department of Transportation Standard Specifications (DTSS) as they reasonably apply to this work, except for measurement and payment requirements.
- B. American Concrete Institute (ACI) specifications, latest editions, including:
 - 1. ACI 301 Specifications for Structural Concrete
 - 2. ACI 304 Guide for Measuring, Mixing, Transporting and Placing Concrete
 - 3. ACI 318 Building Code Requirements for Structural Concrete
- C. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:
 - 1. A185 Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
 - 2. A615 Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 3. A1064 Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 4. C33 Specification for Concrete Aggregates
 - 5. C39 Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - 6. C94 Specification for Ready-Mixed Concrete
 - 7. C114 Test Methods for Chemical Analysis of Hydraulic Cement
 - 8. C131 Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

9. C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
 10. C143 Test Method for Slump of Hydraulic-Cement Concrete
 11. C150 Specification for Portland Cement
 12. C157 Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
 13. C171 Specification for Sheet Materials for Curing Concrete
 14. C173 Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
 15. C260 Specification for Air-Entraining Admixtures for Concrete
 16. C309 Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 17. C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
 18. C330 Specification for Lightweight Aggregates for Structural Concrete
 19. C494 Specification for Chemical Admixtures for Concrete
 20. C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 21. C881 Specification for Epoxy-Resin-Base Bonding Systems for Concrete
 22. C920 Specification for Elastomeric Joint Sealants
 23. C979 Specification for Pigments for Integrally Colored Concrete
 24. C989 Specification for Slag Cement for Use in Concrete and Mortars
 25. C1240 Specification for Silica Fume Used in Cementitious Mixtures
 26. C1602 Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
 27. C1603 Test Method for Measurement of Solids in Water
 28. D448 Classification for Sizes of Aggregate for Road and Bridge Construction
 29. D1557 Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 30. D1751 Specification for Preformed Expansion Joint Filler for Concrete Paving
 31. D1883 Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
- C. California Air Quality Management District (AQMD) Rule 1113 Volatile Organic Compound (VOC) Limits.
- D. California Building Code (CBC), Part 2 of California Code of Regulations, Title 24: Walking surface finishes are to comply with accessibility provisions of the CBC, applicable edition.
- E. Relative compaction: is defined as the in-place dry density of the compacted soil divided by the laboratory compacted maximum dry density determined in accordance with ASTM D1557, expressed as a percentage.

1.4 QUALITY ASSURANCE

- A. Layout Review: Stake and layout all site concrete installations for review by the Owners Representative prior to excavation.

- B. Inspection: Notify the Owners Representative 24 hours prior to placement of any concrete to inspect sub-grade, forms, and reinforcement.
- C. Tolerances: Install the aggregate base and concrete to the minimum thickness shown and maintain tolerances for sub-grade, sub-base and finished grade as specified by DTSS. No combination of high and low tolerances will be permitted.
- D. Substitutions: shotcrete / gunite will not be permitted as a substitute for cast-in-place concrete.

1.5 SUBMITTALS

- A. Product data: All steel reinforcement, sealants, cure, expansion joint filler.
- B. Sieve analysis: Sieve analysis for aggregate base.
- C. Concrete Mix: Proposed mix design of each class of concrete specified with proportions of materials.
 - 1. Mix design: state the following:
 - a. Compressive strength in PSI at 28 days.
 - b. Slump
 - c. Water-cement ratio
 - d. Color, if applicable

1.6 TESTS

- A. Testing and analysis of concrete will be performed under provisions of DTSS Section 6-3.
- B. Testing firm shall take cylinders and perform slump, compression strength, and air entrainment tests in accordance with ASTM C143, C39 and C173.
 - 1. Testing shall be carried out for vertical surfaces equal to or greater than 48" as measured from bottom of footing to top of wall, and for vehicular concrete subject to increased loading conditions such as stress pads.
 - 2. All testing shall be at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 BASE, FORMWORK, AND REINFORCEMENT

- A. Aggregate Base: DTSS, Section 26, Class-2, 3/4" maximum.

AGGREGATE GRADING REQUIREMENTS

Sieve Sizes	Percentage Passing			
	1 1/2" Maximum		3/4" Maximum	
	Operating Range	Contract Compliance	Operating Range	Contract Compliance
2"	100	100		
1 1/2"	90-100	87-100		
1"			100	100
3/4"	50-85	45-90	90-100	87-100
No. 4	25-45	20-50	35-60	30-65
No. 30	10-25	6-29	10-30	5-35
No. 200	2-9	0-12	2-9	0-12

QUALITY REQUIREMENTS

Test	Operating Range	Contract Compliance
Resistance (R-value)		78 Min.
Sand Equivalent	25 Min.	22 Min.
Durability Index		35 Min.

- B. Formwork: Steel or wood, of size and strength to resist movement during concrete placement and to retain straight, true, and to proper elevation, horizontal and vertical alignment until removed. Use forms that are straight and free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required.
- C. Reinforcement Bars and Dowels: ASTM A615. Clean and free of paint and loose rust scale. Deformed steel bars, Grade 60 for bars #5 and larger; Grade 40 for bars #4 and smaller, unless otherwise shown.
- D. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A185 by Davis Wire Corporation or approved equal. Furnished in flat panels, not rolls.
- E. Form-release: form release agent, California AQMD Rule 1113 VOC-limits compliant.

2.2 CONCRETE

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C150. Type-II.
 - 2. Fly Ash: ASTM C618 & C311. Class C, F, or N.
 - a. Source fly ash from an experienced producer, conforming to all applicable standards.

- b. At no time during the course of the project will a change of fly ash source (plant) be permitted without the prior written consent of the Owners Representative.
- 3. Slag: ASTM C989 if specified in the concrete mix design.
- B. Coarse Aggregate: ASTM C33 and DTSS Section 90. Gravel, crushed gravel, crushed rock, or combinations thereof, free from organic matter and other deleterious substances, from an approved source.
- C. Fine Aggregate: ASTM C33 and DTSS Section 90. Natural sand or a combination of not less than 50% natural and manufactured sand, free from deleterious coatings, roots, bark, sticks, rags, and other extraneous material. Thoroughly and uniformly washed.
- D. Water: ASTM C94, clear and free from injurious amounts of oil, salts, acid, alkali, organic matter, or other deleterious substances. For ready-mix concrete water density shall be monitored with an automated device conforming to ASTM C1603.
- E. Chemical Admixtures:
 - 1. All admixtures: California AQMD Rule 1113 VOC-limits compliant
 - 2. Air Entraining: ASTM C260. Use five percent (5%) air entrainment: Manufactured by BASF, Sika, W.R. Grace or approved equal.
 - 3. Water Reducing: ASTM C494, manufactured by BASF, Sika, W.R. Grace or approved equal.
 - 4. Shrinkage Reducing: ASTM C494. Capable of reducing drying shrinkage up to 80% at 28 days per ASTM C157, BASF, W.R. Grace or approved equal.
 - 5. Accelerating: ASTM C494, non-corrosive admixture manufactured by BASF, W.R. Grace or approved equal.
 - 6. Hydration Controlling: ASTM C494, Type B, and Type D by BASF, or approved equal.
 - 7. Calcium chloride is not permitted in the manufacture of chemical admixtures.
- F. Cure: ASTM C309 Type 1, Class A&B, California AQMD Rule 1113 VOC-limits compliant, clear membrane curing compound, by W.R. Meadows, L.M. Scofield, or approved equal.
 - 1. Do not use white liquid membrane curing compound.
 - 2. For colored concrete, see clause on Concrete Colors in this Specification for cure-sealers that are applied to freshly placed concrete. Do not use this cure.
- J. Color & Finish: As shown on the Drawings.

2.3 CONCRETE MIX DESIGN

- A. Concrete mix: conform to applicable industry standards for concrete materials, admixtures, bonding materials, curing and other except as noted.
 - 1. Concrete mixes shall be properly proportioned for yield.
 - 2. Water / cement ratio: 0.50 max unless otherwise approved by the Owners Representative

3. Slump: maximum four (4") inches. A tolerance of up to one (1") inch above the maximum indicated is allowed for one batch in any five consecutive batches tested.
- B. Strength: ASTM C39 designated by class based on 28-day compressive strengths when tested:
1. Class-3 (505 lbs of cementitious material per cubic yard) for all sidewalks, pavements, sub-pavements, and sub-slabs unless otherwise noted. Minimum compressive strength of 2500 PSI at 28-days.
- C. Fly Ash: Incorporation of fly ash into the concrete mix is at the Contractor's discretion. If fly-ash is to be used in the mix, substitute up to 25% of Portland cement with fly ash for all classes of concrete, final proportions to be determined by the concrete supplier.
1. Concrete mixtures with fly ash must be properly designed for the application, and finishing procedures must be appropriately applied.
 2. For mix designs utilizing 25% or more fly ash, proportioning shall be based on field experience or trial mixtures or both, per ACI 318, Section 5.3.
- D. Slag: Incorporation of slag into the concrete mix is at the Contractor's discretion. If slag is to be used in the mix, substitute up to 40% of Portland cement with slag for all classes of concrete, final proportions to be determined by the concrete supplier.
1. Concrete mixtures with slag must be properly designed for the application, and finishing procedures must be appropriately applied.
- E. Chemical Admixtures
1. Concrete mixes for walls and/or structures equal to and over 4'-0" in height: do not include Air Entraining Mixtures.
 2. Concrete mixes for walls and/or structures equal to and over 4'-0" in height: include Water Reducing Admixtures.
 3. Chemical admixtures: at the Contractor's discretion or the mix design submitted by the concrete ready-mix supplier, with the two exceptions noted above.
 4. Chemical admixtures: specified within the range of the manufacturer's recommended concentration.

2.4 CONTROL JOINTS

- A. General: All adhesives, fillers, sealants: California AQMD Rule 1113 VOC-limits compliant
- B. Epoxy Adhesive: ASTM C881, injectable two-component epoxy adhesive, where used for threaded anchor rods or dowels. HIT-RE 500-V3 epoxy adhesive anchoring system by Hilti Inc. USA (800)879-8000, www.us.hilti.com, or equal.
- C. Expansion joint filler: ASTM D1751, 3/8" thick asphalt impregnated fiberboard, by W.R. Meadows or approved equal.

2.5 OTHER MATERIALS

- A. Wheel Stop: Pre-cast reinforced concrete wheel stop (parking bumper), length 3' tested to minimum 4000psi at 28 days. INCLUDE HERE IF NO ASPHALT CONCRETE SECTION
 - 1. American Precast Concrete, Inc. El Monte, CA, (626)443-0970
 - 2. Bertelson Precast Corporation, Modesto, CA, (209) 571-5430
 - 3. Approved Equal

PART 3 – EXECUTION

3.1 JOB CONDITIONS

- A. Weather Conditions: Construct concrete surface course only when atmospheric temperature is above 40 degrees F., when the underlying base is dry, and when weather is not rainy.
- B. Grade Control: Establish and maintain the required lines and grades, including cross-slope during construction operations.
- C. Protection: Take all steps necessary not to discolor or damage existing improvements. If damage occurs, repair immediately and if repair cannot be made to the satisfaction of the Owners Representative, remove and replace at no expense to the Owner.

3.2 BASE PREPARATION

- A. Sub-grade: See Specification Section Earthwork and Grading / Geotechnical Report for sub-grade preparation and compaction requirements. Verify that sub-grade preparation, compacted density and elevations conform to the Specifications.
- B. Place and compact aggregate base as specified in DTSS Section 26, to at least 95% relative compaction in accordance with ASTM D1557, and to a depth as noted on the Drawings. Verify grades to allow for finish paving.
- C. Clear aggregate base surface of all loose or unsuitable material.

3.3 INSTALLATION

- A. Form Construction: Set forms to the required grades and lines, rigidly braced and secured.
 - 1. Construct walls and seat walls less than 18" above finish grade without form ties unless essential for stability of formwork. Align form ties horizontally and vertically.
 - 2. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
 - 3. Remove forms without damage to the placed concrete.
 - 4. Install form ties and similar accessories such that all metal will be at least 1 inch from surface when forms are stripped.

- B. Reinforcement: Install per the Drawings, and secure in place. Do not pour concrete prior to the inspection by the Owners Representative.
- C. Placement: Moisten sub-grade as required to provide a uniform, dampened condition at the time concrete is placed. Place concrete using methods which prevent segregation of the mix, with as little re-handling as possible. Consolidate concrete along the face of forms and adjacent to transverse assemblies, reinforcement, or side forms. Use care to prevent dislocation of reinforcing, dowels, and joint devices. Deposit and spread concrete in a continuous operation between transverse joints. If interrupted for more than 1/2 hour, place a construction/cold joint.
- D. Control Joints: Construct control joints true-to-line with face perpendicular to surface of the concrete, unless otherwise shown. Construct transverse joints at right angles to the centerline, unless otherwise noted. See Control Joint Types specified herein for specific guidelines.
 - 1. Set all joints accurately to grade and straight in alignment as shown on the Drawings. Alignment shall not vary more than 1/8" in 10' length.
- E. Finishing: After striking-off and consolidating concrete, smooth the surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Distribute concrete as required to remove surface irregularities, and re-float repaired areas to provide a continuous, smooth finish. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2" radius, unless otherwise shown. Eliminate any tool marks on concrete surface.
 - 1. After floating, test concrete surface for trueness - maximum 1/8" variation in 10' length in any direction.
 - 2. After completion of floating and when excess moisture or surface sheen has disappeared, complete surface finishing, as specified herein.
 - 3. During finishing, do not apply cement to the dry concrete surface.
 - 4. See Concrete Finishing elsewhere in this Specification
- F. Curing: Protect and cure finished concrete, conforming to applicable requirements of DTSS.
 - 1. Cure all concrete for at least 7 days after placing.

3.5 CONTROL JOINTS

- A. Expansion Joints: locate as shown on the Drawings.
 - 1. Dowels: grease both ends.
 - 2. Joint fillers: one-piece lengths for the full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together. Form top edge of filler to conform to top profile of concrete.
- B. Construction (Cold) Joints: Construct cold joints
 - 1. At old and new concrete pours. Drill the existing concrete to accept dowels and embed. Grease both ends of dowel, or epoxy end in existing concrete and grease end in new concrete.
 - 2. At previous day's pour and fresh pour: Grease exposed ends of dowel.

3. When curb and/or gutter and pedestrian paving are poured separately, provide #3 dowels, 8" length 24" O.C.
- C. Weakened Plane Joints: locate as shown on the Drawings.
 1. Pedestrian paving: construct as shown on the Drawings.

3.6 CONCRETE FINISHING

- A. General: finishes as specified on the Drawings. Walking surfaces including curbs: slip-resistant and comply with accessibility provisions of CBC.
 1. Prior to finishing, fill in form holes flush with concrete surface. Excludes Form Finish.
 2. Remove all imperfections and blemishes that cannot be removed by specified finish type.
- B. Finish types:
 1. Broom finish - draw a stiff fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide a fine line texture. Texture must be true and straight across entire width of concrete slab.

3.7 REPAIR AND CLEAN-UP

- A. Repair: repair or remove and replace defective work such as under-strength concrete, concrete out of line, level or plumb, or showing objectionable cracks, honeycomb, rock pockets, voids, spalling, exposed reinforcing, etc., directed by the Owners Representative and at no additional cost to the Owner. All cleaning, patching, and repairs shall be subject to approval and acceptance by the Owners Representative.
- B. Protect new concrete from all construction activities for 72 hours; from construction material or equipment movement for 7 days; and from heavy vehicular movement for 28 days. Any activity on new concrete prior to 28 days is at the Contractor's discretion and risk.
- C. Clean up and remove from the site all spillage, overpour, discarded forming materials, rejected work or materials, and any other refuse or debris resulting from the work. Sweep concrete and wash free of stains, discolorations, dirt and other foreign materials just prior to final inspection.
 1. Clean step nosings of all cement or concrete.
- D. Disposal: Segregate surplus material and debris remaining upon completion of the work as to type, and transport from the job site and dispose of in a legal manner.

END OF SECTION 21 90 00

SECTION 32 84 00 IRRIGATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the installation of a complete and operational automatic Landscape Irrigation system as shown on the Drawings and as specified in this Section. The work includes:
 - 1. Trenching, excavation, backfill including base and backfill materials.
 - 2. Valve wiring associated with the system.
 - 3. Maintenance of the system during the maintenance period.
 - 4. Electrical wiring/conduit work associated with the controller.
- B. Related work includes but is not limited to:
 - 1. Earthwork and Grading
 - 2. Planting
 - 3. Landscape Maintenance
 - 4. Electrical

1.3 STANDARDS & DEFINITIONS

- A. Unless otherwise shown or specified, all materials and methods shall conform to the applicable current sections of:
 - 1. National Sanitation Foundation (NSF) Standard 61 Drinking Water System Components
 - 2. California Code of Regulations (CCR) Title 24 Part 5 California Plumbing Code (CPC)
 - 3. California Code of Regulations (CCR) Title 24 Part 3 California Electrical Code (CEC)
 - 4. State of California, Department of Transportation (CALTRANS) Standard Specifications (DTSS), except for measurement and payment requirements.
 - 5. South Coast Air Quality Management District's (SCAQMD) Laboratory Methods of Analysis for Enforcement Samples Method 316A for VOC content of PVC, CPVC, and ABS pipe cements, and adhesives.
- B. ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:
 - 1. D1557 Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D1784 Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds

3. D1785 Specification for Polyvinyl Chloride Plastic Pipe, Schedules 40, 80, and 120
 4. D2241 Specification for Polyvinyl Chloride Pressure-Rated Pipe (SDR)
 5. D2287 Specification for Non-rigid Vinyl Chloride Polymer, Copolymer Molding, & Extrusion Compounds
 6. D2464 Specification for Threaded Polyvinyl Chloride Plastic Pipe Fittings, Schedule 80
 7. D2466 Specification for Polyvinyl Chloride Plastic Pipe Fittings, Schedule 40
 8. D2467 Specification for Polyvinyl Chloride Plastic Pipe Fittings, Schedule 80
 9. D2564 Specification for Solvent Cements for Polyvinyl Chloride Plastic Piping Systems
 10. D2609 Specification for Plastic Insert Fittings for Polyethylene Plastic Pipe
 11. D2672 Specification for Joints for IPS PVC Pipe Using Solvent Cement
 12. D2737 Specification for Polyethylene (PE) Plastic Tubing
 13. D2855 Standard Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride Pipe and Fittings
 14. D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
 15. F656 Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
 16. F690 Standard Practice for Underground Installation of Thermoplastic Pressure Piping Irrigation Systems
 17. F1498 Specification for Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings
- C. All materials and methods shall conform to the applicable standards of the following organizations:
1. American Society of Irrigation Consultants (ASIC) Design Guidelines for Earth Grounding Electronic Equipment in Irrigation Systems
 2. American Society of Mechanical Engineers (ASME) Standards
 3. American Welding Society (AWS) Specifications
 4. Copper Development Association: Copper Tube Handbook.
 5. Manufacturers Standardization Society (MSS) Standards
 6. National Electrical Manufacturers Association (NEMA) Standards
 7. Underwriters Laboratories (UL) Standards
- D. Relative compaction: is defined as the in-place dry density of the compacted soil divided by the laboratory compacted maximum dry density determined in accordance with ASTM D1557, expressed as a percentage.
- E. Slope: as defined for installation of sub-surface drip irrigation, emitters low-flow bubblers, and tree bubblers on the uphill side of a plant or tree is any gradient in excess of 5%.

1.4 QUALITY ASSURANCE

- A. Materials: All materials shall be new and of the best quality available unless otherwise specified. Manufacturer shall be clearly marked on all material, containers, or certificates of contents for inspection.
- B. Codes: Install and test irrigation system and electrical power to controller in accordance with local codes and manufacturer's specifications.
- C. Guarantee: Guarantee irrigation system for one year from date of acceptance.

1.5 SUBMITTALS

- A. General:
 - 1. Product data: all specified irrigation equipment, including any proposed substitutions.
 - 2. Controller manufacturer's recommended grounding details.
- B. Certification: Prior to the Substantial Completion Review submit to the Owner's Representative:
 - 1. Written statement that the controller has been grounded adequately from the controller manufacturer's representative or other qualified testing professional.
- C. Drawings: Irrigation As-built Drawing(s) and Valve Stationing Plan(s).
- D. Close-out Documentation: As specified herein.

1.6 REVIEWS

- A. Request at least two (2) days in advance the following reviews prior to progressing with the work:
 - 1. Preliminary Review – Main-line layout, trenching, pressure-test, flushing of main-line.
 - 2. Intermediate Review - Irrigation coverage, controller location Requirements for irrigation coverage inspection are specified herein.
 - 3. Substantial Completion Review - valve box inspection, and overall operation of the irrigation system.
 - 4. Final Review (at the completion of Maintenance Period) - all punch-list items identified at Substantial Completion Review, Close-out Documentation
 - 6. See Specification Sections Soil Preparation, Planting, and Landscape Maintenance for other items to be inspected during these reviews.
 - 7. Each review will be conducted only after all items pertaining to that review as noted above and in related Sections have been completed.

1.7 DELIVERY, STORAGE AND HANDLING

- A. General: Exercise care in loading, unloading, storage, and handling of pipe, fittings, and irrigation equipment.

- B. Remove any pipe / fittings that have been cracked, dented, or otherwise damaged from the site. If installed, replace pipe / fittings with undamaged pipe / fittings as directed by the Owner's Representative at no additional cost to the Owner.

1.8 TESTING

- A. A licensed testing agency is to test the backflow preventer prior to substantial completion. Submit test results certificate to Owner as part of Substantial Completion review for Landscape Maintenance Period authorization.

PART 2 - PRODUCTS

2.1 PLASTIC PIPE AND FITTINGS

- A. Unless otherwise noted:
 - 1. Lateral lines: Schedule-40 PVC, solvent weld joints.
 - 2. Mainline up to 2" diameter: Schedule-40 PVC, solvent weld joints.
 - 3. Lateral line threaded / solvent weld fittings: Schedule 40 PVC.
 - 4. Mainline threaded / solvent weld fittings: Schedule 80 PVC.
 - 5. Risers and nipples: Schedule 80 PVC, molded thread. Machine threaded nipples will not be permitted.

2.2 CEMENTS, SEALANTS, AND PRIMERS

- A. Unless otherwise noted:
 - 1. Pipe Thread Sealant: low VOC, slow-drying, soft-setting multi-purpose sealant, Weld-On All Seal by IPS Corporation or approved equal. Do not use Teflon / PTFE tape.
 - 2. PVC cement: low VOC, high strength, heavy bodied, medium setting, solvent weld cement, ASTM D2564, Weld-On 711 by IPS Corporation or approved equal. Do not use fast setting cements.
 - 3. Primer: low VOC, industrial strength primer, ASTM F656, Weld-On P-70 by IPS Corporation or approved equal.
 - 4. Paint: Krylon Fusion spray paint for plastics, for PVC pipe only where approved by the Owner's Representative to be installed above grade.
 - 5. PVC Flex-hose glue: low VOC, medium bodied, fast setting solvent cement, ASTM D2564, Weld-on 795 Flex-PVC cement or approved equal.
 - 6. Ensure that cans of solvents and primers have labels intact and stamped with the date of manufacture. Do not use cans dated over 1-year old. Do not thin solvents and primers.

2.3 BACKFLOW PREVENTERS & STRAINERS

- A. Complying with NSF/ANSI Standard 61 for low lead requirements.

2.3 RED BRASS PIPE AND FITTINGS

- A. Pipe sizes less than 4": ASTM B43 Specification for Seamless Red Brass Pipe, Standard Sizes.
- B. Fittings: ANSI / ASME B16.15 Cast Bronze Threaded Fittings, Class 2

2.4 DRIP IRRIGATION

- A. Approved manufacturers of drip irrigation and associated products:
 - 1. Agrifim by NDS, Fresno CA, (800) 688-8108 www.ndspro.com
 - 1. King Brothers Industries (KBI) Valencia CA (800)325-9468 www.kbico.com
 - 2. Netafim, Fresno CA (888)638-2346 www.netafimusa.com
 - 3. Rainbird, Azusa CA (800)458-3005 www.rainbird.com
 - 4. Salco Products, Ontario CA (855)725-2648 www.salcodrip.com
 - 5. Toro, Riverside CA (877)345-8676 www.toro.com
- B. Supply system:
 - 1. Valve Assembly: solenoid valve, filter, and pressure regulator: as specified on the Drawings.
 - 2. Laterals, supply / exhaust headers: as specified under Plastic Pipe and Fittings in this Specification, size per the Drawings.
- C. General Drip Accessories:
 - 1. Fittings as provided by the drip irrigation pipe manufacturer or approved equal.
 - 2. Staples: 11-gauge x 6-inch galvanized steel irrigation round-head staples by An-Wil Bag Co., Southeastern Wire Fabricators or equal.
 - 3. Flush port / valve by manufacturer or approved equal where shown on the Drawings.
 - 4. In-line check valve by manufacturer or approved equal on all sloped areas. Spacing per manufacturer's recommendation. Swing-type for water flowing uphill; spring-type for water flowing downhill.
- D. Point-source with 1/4" emitters: *GENERIC DRIP IRRIGATION, USE WITH THE 1/4" PE TUBE DETAIL*
 - 1. Supply: polyethylene (PE) pipe ASTM D2737 as shown on the Drawings. 3/4" I.D. tubing with a minimum 0.055" (1.4mm) wall thickness. Color: black unless otherwise noted.
 - 2. Distribution: polyethylene tube ASTM D2737 as shown on the Drawings. 1/4" I.D. tubing with a minimum 0.04" (1mm) wall thickness. Color: black unless otherwise noted.
 - 3. Emitters: as shown on the Drawings.
- E. Point-source with 1/2" emitters: *GENERIC DRIP IRRIGATION, USE WITH THE 1/2" FLEX PVC PIPE DETAIL*
 - 1. Supply: PVC Flex Hose, 3/4" I.D. Color: black unless otherwise noted.
 - 2. Distribution: flexible PVC pipe as shown on the Drawings. 1/2" I.D. pipe with a minimum 0.045" (1.2mm) wall thickness. Color: black unless otherwise noted.
 - 3. Emitters: as shown on the Drawings.

2.5 SLEEVING

- A. Sleeves: As shown on the Drawings.

2.6 VALVE BOXES

- A. General: Pre-cast plastic with bolt-down covers free of all cracks, chips or structural defects.
 - 1. Size: valve boxes as required by equipment plus adequate clearance to operate valves unless otherwise noted. Ensure that for drip irrigation valves, the box is sized large enough so that the filter mounted sideways or pointing down as shown on the Drawings can be easily removed for cleaning.
 - 2. Rodent screen: welded wire mesh, hot-dip galvanized, size as shown on the Drawings.
 - 3. Color: unless otherwise noted on the Drawings: Green for turf areas. Black for shrub / groundcover / mulch areas.
- B. Models / Types:
 - 1. Shrub / groundcover / mulch areas: Carson, Rainbird PVB Series, NDS Standard Series (Commercial) or approved equal.
 - 2. Turf areas: ribbed / reinforced lids capable of withstanding the loads of ride-on lawn mowers. Carson TrussT Line, Rainbird VB Series, NDS Pro Plus Series or approved equal.
 - 3. Vehicular paving: concrete with traffic rated lids.
- C. Valve Identification (ID) Tags: Christy's Irrigation Standard size ID Tags by T.Christy Enterprises, Anaheim CA, (800)258-4583, or approved equal. Blue background for potable water, purple background for reclaimed/recycled water. If single controller, use the alphanumeric sequence starting with A1. For multiple controllers, use separate sequences starting with A1, B1, C1 to match controller identification shown on the Drawings.

2.7 IRRIGATION EQUIPMENT

- A. General: Supply and install irrigation equipment as shown on the Drawings.
- B. Backflow Preventer: lead-free as certified under NSF Standard 61 by NSF International.
 - 1. Enclosure: Guardshack or equal, size to fit backflow device plus 6" clearance at the top and sides.
 - 2. Enclosure Pad: Encpad or equal, size to fit backflow enclosure.
- C. Controller: As specified on the Drawings
 - a. ET-Sensor with auto shut-off switch: Install in an unobstructed area open to the sky. Depending on site conditions install sensor assembly: On the roof eaves / parapet wall coping wall

- b. A galvanized steel pole 80-inches above ground level mounted in an appropriate concrete footing.
 - c. Connect sensor to the controller by underground cable / conduit, all exposed conduit to be galvanized steel.
- D. Tree bubblers: field install socks / sleeves on root watering assemblies, supplied by manufacturer, size to match bubbler tube.
- E. Drip Irrigation Valve Pressure Regulators: in-line regulators as shown on the Drawings. Pressure regulating dials are not permitted unless otherwise noted. Pressure regulating dials if specified: preset/fixed type not exceeding 45 PSI.

2.8 CONDUCTORS

- A. Control Wire: Type UF, 600V, copper, common ground white, UL listed for irrigation control use.
 - 1. Minimum wire gauge #14, use gauge appropriate to distance to account for voltage loss.
 - 2. PVC (polyvinyl chloride) or PE (polyethylene) insulation.
 - 3. Seal splices with connectors using epoxy resin or sealant; grease filled connectors not permitted: Spears DS-100 connectors with Spears DS-300 sealant, 3M Scotchlok 3570 connector sealing pack, or approved equal.
- B. Controller Power: See Electrical Specifications

2.9 CONDUIT

- A. Conduits: rigid nonmetallic type, conforming to UL 651, rated 90 degrees C, and NSF certified. Schedule 40 PVC plastic for underground installations with glue-on PVC couplings and factory made elbows and sweeps. Carlon Plus 80 or approved equal.
 - 1. Size: minimum 1" diameter or size for the conductors, whichever is greater.
 - 2. Install conduits minimum 18" depth in planting areas, minimum 24" depth under paving.
 - 3. Make couplings and connectors watertight in all runs. Utilize solvent cement of type approved by conduit manufacturer.
 - 4. Join conduits with approved conduit couplings with ends butted in all such cases. Ream all conduit ends to remove burrs and sharp edges.
 - 5. Provide adapters and locknuts where conduit is attached to metal boxes and panels.
 - 6. Chamfer inner edges of conduits which open into pull boxes or install bushings.
 - 7. Bends: free from dents or flattening, made with standard conduit elbows or conduit bent to not less than same radius. No more than 360 degrees of bend between pull boxes.
 - 8. Leave a 14 AWG trace wire in each empty conduit.
 - 9. Use Duct Seal to seal all conduit ends.
- B. Conduits above grade: rigid galvanized steel.

1. Field wrap steel conduits extending below grade with 3M Scotchrap 50, with a 50% overlap. Complete with necessary fittings for a complete watertight installation.

PART 3 - EXECUTION

3.1 GENERAL

- A. Acceptance of Work: Complete site grading to specified tolerances before trenching. Verify the existing conditions on site and the removal and or reinstallation required making the grades.
- B. Existing Utilities: Verify location of all on site utilities prior to trenching. Notify Owner's Representative by telephone and in writing of any conflicts prior to installation. Restore damaged utilities as directed by the Owner's Representative at no additional cost to the Owner.
- C. Coordination: Coordinate trenching as required with trenching contractor as well as with any other trades affected by irrigation installation. Coordinate installation of pipe and other irrigation equipment with other existing and proposed utilities and planting locations.
- D. Grading: Install all irrigation features to their finished elevation and at depths indicated.
- E. Finish Grade: Unless otherwise noted, set all heads at and perpendicular to, finish grade.
- F. As-Built Conditions: regularly update a print of the system and any changes made to the system throughout the project. See Valve Stationing requirements elsewhere in this Specification.
- G. Unusual Conditions: Immediately notify the Owner's Representative in the event that any unusual soil conditions are encountered during irrigation trenching operations. Excavate unsuitable material encountered below the natural grade and dispose of as directed by the Owner's Representative. Unsuitable material is defined in Section 19 Earthwork Clause 1.01B of the CALTRANS Standard Specifications.
- H. Hazardous Materials: In the event existing asbestos pipe is encountered and needs to be modified and/or removed, comply with the requirements of Federal (OSHA) regulations, and California Code of Regulations Title 8 (Cal/OSHA).

3.2 INSTALLATION – TRENCHING & PIPE

- A. Point of Connection: below grade. Connect to water meter and plumb backflow device and remaining irrigation system.
- B. Excavation:

1. Depth – excavate trenches for mainline, sleeves, and laterals to the depth required for laying pipe or conduit, plus depth of bedding if required as noted below.
 2. For pipes 4" dia. and less - level bottom of trenches for a smooth flat grade, and excavate bell holes where necessary to ensure that pipe rests for entire length on solid ground. Should rock or other unsuitable material be encountered, excavate to 6" below bottom of pipe and replace with well tamped and compacted approved backfill material or sand before laying pipe.
 3. For pipes greater than 4" dia. – depth of pipe and bedding as shown on the Drawings, or 6" below bottom of pipe whichever is greater.
 4. Width – excavate trenches wide enough to provide adequate working space to align and lay pipe or to construct the trench, make up and inspect joints, and allow placing and compaction of bedding material. Maximum trench width at the top of the pipe is the pipe outside diameter plus 12- inches on each side of the pipe.
 5. Maintain excavations free of water while installing pipe and until backfilled.
- C. Bedding: Install bedding upwards from the bottom of the trench to the extent shown on the Drawings.
1. Bedding material: compacted approved sub-soil or sand as defined herein.
 2. In planting areas excluding natural turf sports fields, sand bedding may be jetted or ponded into place. Compact to equal that of the adjacent prepared sub-grade as specified herein. Mechanical compaction may be necessary to achieve this required density. If the bedding is jetted or ponded, the operation should be closely supervised and provisions should be made for the removal of excess water.
- D. Backfill: Cover no joints until system has been pressure tested and approved by the Owner's Representative.
1. Backfill material: selected on-site excavated/sub-soil material, imported sandy soils, subject to prior approval by the Owner's Representative. Backfill with potentially damaging rocks and debris is not permitted.
 2. When piping has been installed, tested, inspected, and approved, backfill excavations in layers not exceeding 8". Moisten and machine tamp as required.
 3. In planting areas, install on-site near surface soils in the top 6" of the trenches compacted to maximum 85% relative compaction. For trenches in existing planting areas maintain near surface soils as uniform as possible with existing upper stratum soils.
 4. In paving areas, install fill in maximum 8-inch (compacted layers) and compact by mechanical means only. Condition fill conditioned, at time of compaction, to 1% to 3% above the optimum moisture content of the soil, and compact each lift to minimum 95% relative compaction.
 5. For trenches in existing areas, restore the ground or paving to original condition.
 6. After backfilling, remove from the premises all surplus earth resulting from this work and dispose of same, to the satisfaction of the Owner's Representative.
- E. Pipe: pipes shown parallel on the Plan may be installed in a common trench. Where required, snake pipe from side to side when trench exceeds 30 feet in length.

1. Install pipes in planting areas including those shown schematically adjacent or parallel to such areas.
 2. Install all changes in depth of pipe using 45 degree fittings.
 3. Use Teflon tape on all threaded connections.
- F. Check Valve: On sloped sites, install in-line check-valves in sloped main / lateral / supply lines as required to prevent low sprinkler head / drip emitter / tree bubbler drainage. This may be omitted only on those circuits where all sprinkler heads or tree bubblers have built-in check valves.
- G. Sleeves: install sleeves for all wiring and irrigation lines to be placed (with ends clearly marked above grade) under driveways and walks prior to their construction.
1. Install sleeves minimum 24" under paving.
 2. Extend sleeves a minimum of 12-inches into planting areas.
 3. Install all wiring in a separate sleeve.
 4. Install temporary PVC caps to prevent intrusion of earth/debris prior to installation of pipes / wire.
 5. For longer lengths of sleeve (> 15'-20') with multiple pipes, consider installing pipes along with sleeve and connecting later.
 6. Install removable non-decaying plugs, expanding insulation foam, grout, or equal, at ends of sleeves and conduits to prevent entrance of earth and roots.
- H. Fabrication: Install all manifolds in a neat and orderly manner, for ease in maintenance operations. Install manifolds to allow valve boxes to be parallel to each other and to adjacent walls, walks, and curbs. Cuts and joints shall be free of burrs, smooth and minimum in quantity.
- I. Flushing of System: After installation of pipe lines and risers, but before installation of sprinkler heads, tree bubblers, and/or drip irrigation emitters, thoroughly flush the system to remove any foreign material in the pipes.
1. Flush the system in the presence of the Owner's Representative.
 2. For flushing mainline and sprinkler portions of the system utilize full water main pressure.
 3. For flushing downstream of drip irrigation valves via flush ports use drip system design pressure.
 4. After flushing, backfill and settle soil. Rake smooth to match surrounding grade.

3.3 INSTALLATION – EQUIPMENT

- A. General: Install irrigation equipment as shown on the Drawings
- B. Valve Boxes: Install valve boxes so that the top of box is ½" above finish grade in turf areas and 1-½" above finish grade in mulch areas. Install valve box assembly in ground cover / shrub and not in hard paved areas. Install in lawn area only if groundcover does not exist adjacent to lawn.
1. Label valve box lids with the valve station number using a weather resistant method. Plastic valve box lids may be labeled using a branding tool / branding iron.

2. Attach a Valve ID tag, with the valve station number clearly marked with weatherproof method, to the inside of each remote control valve, and attached by means of a weatherproof tie.
- C. Tree bubblers:
1. Install tree bubblers for boxed trees, unless otherwise noted on the Drawings.
 2. In sloped areas, install tree bubblers on the uphill side of the rootball as noted on the Drawings.

3.4 CONTROL WIRE

- A. General: Install control wire in pipe trenches wherever practical. Install wire below or level with the bottom of adjacent pipes. Install wire inside conduits as specified in this section where pipes are not available.
1. Bundle wire and tape to pipe every 10 feet. Size conduits or sleeve required based on control wires as specified herein.
 2. Enclose wiring above finish grade in steel conduit.
 3. Use a different color for control wires and the common wire.
 4. One solenoid valve per station unless otherwise indicated on the Drawings or with prior approval of the Owner's Representative.
 5. Test all wiring for continuity, open circuits and unintentional grounding prior to connecting.
- B. Splices: seal with direct bury connectors as specified in this section.
1. Install wire splices in valve boxes, locations as approved by the Owner's Representative. Install traffic rated boxes in vehicular areas.
- C. Additional wire:
7. Pull control wire for unused stations as noted on the Drawings.
 8. Pull control wire and common to each stub-out as shown on the Drawings. Minimum one control wire and common if not indicated on the Drawings.
 9. Provide 24" excess wiring in each valve box / pull box and in the nearest project valve box at 100-ft intervals on wire runs of greater than 100-ft. Neatly coil in valve box or pull box.

3.5 DRIP IRRIGATION – GENERAL

- A. Install all drip line and equipment as indicated on drawings. Follow equipment Manufacturers Instructions.
- B. Bury all supply and distribution pipes to the depths shown on the Drawings.
- C. Staples: Install steel staples on drip line as follows:
1. 3' on center in sand, 4' on center in loam, 5' on center in clay
 2. Two (2) staples on each change of direction (tee, elbow, or cross).

3.6 DRIP IRRIGATION (POINT-SOURCE) INSTALLATION *THE GENERIC PRODUCT*

- A. Install the flexible supply pipes through the planting to allow for expansion and movement, maximum length as shown on the Drawings. Do not kink the pipes, use right angle connectors in tight corners. Install and stake at the depth shown on the Drawings.
- B. Install rigid supply pipes under paved areas and to reach distant planting zones, as shown on the Drawings and specified in this Section.
- C. Do not back-fill over the supply pipes until inspected and approved by the Owner's Representative. Any back-fill work completed prior to inspection will need to be removed for review.
- D. Install the flexible distribution pipes as shown on the drawings, and adjust or cut length as necessary, maximum length as shown on the Drawings.
- E. Installing emitters directly into the supply pipes is not permitted. Incorrectly installed emitters will require replacement of the supply pipe.
- F. Locate emitters / low-flow bubblers at top of mulch. Verify that locations of and flow from emitters / low-flow bubblers is optimum for each root ball watering.
- G. Do not install mulch to the planting areas until the distribution pipes and emitter locations are inspected and approved by the Owner's Representative. Any mulch work completed prior to inspection will need to be removed for review.
- H. On sloped areas, install supply pipes parallel to the slope wherever possible. Locate emitters / low-flow bubblers on the uphill side of the plant.

3.7 CONTROLLER

- A. General: Based on existing soil types, soil imports, and final ground conditions, additional grounding equipment may require to be installed at no additional cost to the Owner.
 - 1. Submit manufacturers grounding equipment details recommended for the Project.
- B. Installation: install controller enclosure on to wall per the Drawings.
- C. Power: Install power to controller following all applicable electrical codes. Install GFCI switch and 9-volt battery.

3.8 VALVE STATIONING

- A. As-built Drawing: Provide the Owner's Representative as-built mark-ups of the most current irrigation drawings, to reflect changes to the irrigation system layout, including:
 - 1. Point of connection, isolation valves, filter, pressure regulator, master valve & flow sensor as applicable.

2. Remote control valve locations and renumbering if applicable.
 3. Isolation valve, quick couplers, and stub-out locations as applicable.
 4. Valve boxes for intermediate control wire splices.
 5. Main-line and lateral lines.
 6. Drip irrigation supply pipes. These are shown only in typical schematic form on the Drawings. Do not draw in drip irrigation distribution pipes.
 7. Dimensionally locate all the above irrigation equipment with at least two measurements from surface features such as pavements, fences and buildings. Dimensionally locate each direction of main-line with one offset measurement from a surface feature. Lateral lines and drip irrigation supply pipes do not require measurements but are required to be drawn accurately.
 8. Record all final changes before trenches are backfilled.
- C. Valve-stationing Plan (New Systems): Clearly label and sequence stations according to the assigned valve identification numbers shown on the As-built Drawings and color code the corresponding valve zones. Use a separate color for each valve zone.
3. Valve Stationing Maps shall be electronically and neatly prepared in color using software capable of annotating PDF documents. Hand colored mark-ups will not be accepted. Provide the Owner an unlocked copy of the PDF for future use.
 4. In case valve sequencing needs to be changed for ease in maintenance operations, verify changes in advance with the Owner's Representative.
 5. Provide (2) 11"x17" laminated copies for reference purposes inside the controller, and for the Owner's record.
 6. Include a non-laminated 3rd copy of the Valve-stationing Plan in the Post
 7. Submit completed valve-stationing plan to the Owner's Representative before final payment request.

3.7 PRESSURE TEST

- A. Pressure Test:
1. Notify the Owner's Representative a minimum of two (2) working days prior to pressure test.
 2. Furnish all equipment and temporary connections required for tests at no additional cost to the Owner.
 3. Exercise caution in filling the system to prevent excessive surge pressure and water hammer.
 4. Test pipe subject to continuous water pressure (pressure lines) at 125 lbs. of hydrostatic pressure for two hours with a maximum 5 PSI drop.
 5. Pressure test all lateral supply lines (non-pressurized) with joints under paving that are connected to planters.
 6. Repair any leaks, if necessary, and re-test.
 7. Have the Owner's Representative visually inspect the pressure gauge at the start and end of the test period, without which the test will not be approved.
- B. Closing in Un-inspected Work: Pay all costs necessitated by requiring opening, restoration and correction of all work closed in or concealed before inspection, testing as required and approval by Owner's Representative. Notify Owner's Representative 48 hours in advance of required testing.

3.8 IRRIGATION COVERAGE

- A. Inspection of irrigation coverage shall take place during the Intermediate Review, as specified herein.
 - 1. In the presence of the Owner's Representative, perform a coverage and operation test to determine if the system is fully operational.
 - 2. If it is determined that adjustments in the irrigation equipment and the re-spacing of heads and/or relocation of emitters / low-flow bubblers will provide more complete coverage, then make such adjustments prior to planting. Adjustments may also include changes in nozzle or emitter / low-flow bubbler sizes, and degrees of nozzle arc as necessary.
 - 3. Make changes and obtain complete and adequate coverage in all irrigated areas at no additional cost to the Owner.

3.9 HARDWARE

- A. Provide the Owner at the in-service meeting the following:
 - 1. Quick Couplers – 2 quick coupler keys / hose swivels
 - 2. Irrigation Controller – 2 enclosure keys
 - 3. Special tools required for the maintenance of specific components
 - 4. Other enclosures / back flow preventers – 2 enclosure lock keys

3.10 CLOSE-OUT DOCUMENTATION

- A. Submit prior to Final Review, the following documents:
 - 1. Sheet containing:
 - a. Contractor's name, address, and phone number.
 - b. Controller manufacturer's service address, and phone number
 - 2. Copies of the following documents:
 - a. Valve-stationing Plan
 - b. Existing soils test report – see Specification Section Soil Preparation.
 - 3. Warranties and Certificates. Warranty documents or accompanying letters on company letterhead are to include project name and location and effective start date for warranties.
 - a. Irrigation Controller Warranty.
 - b. Backflow Prevention Device testing certificate.
 - 5. In-service Meeting discussions & decisions. See Specification Section Landscape Maintenance.
 - 6. For new projects, include all the documents in a 3-ring binder.
- B. The Final Review will not be considered complete until the Close-out Documentation has been reviewed and approved by the Owner's Representative.

3.11 CLEAN-UP

- A. Keep project area clean on a daily basis, removing debris from the site.

END OF SECTION 32 84 00

SECTION 32 91 13 SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Soil Preparation of planting areas as shown on the Drawings and as specified in this Section. The work includes installation of soil amendments, finish grading and plant pit backfill.
- B. Related work includes but is not limited to:
 - 1. Earthwork and Grading
 - 2. Landscape Planting

1.3 QUALITY ASSURANCE

- A. Finish Grade: is defined as the finished top surface of the soil after all grading and soil preparation activities, and prior to installation of mulch.
- B. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:
 - 1. C602 Specification for Agricultural Liming Materials
- C. Fertilizers: Comply with the requirements of the Fertilizing Materials Inspection Program of the California Department of Food and Agriculture.

1.4 SUBMITTALS

- A. Product Data: to be approved by the Owners Representative before the material is delivered to the site.
 - 1. Amendments, fertilizers and chemicals.
 - 2. Planter soil – components, dry bulk density and saturated bulk density.
- B. Samples: to be approved by the Owners Representative before the material is delivered to the site.
 - 1. 1-quart bag of soil amendments
 - 2. 1-quart bag of planter soil mix
- C. Test Samples: Provide samples, as specified herein, to an agricultural soil testing laboratory approved by the Owners Representative, referred to herein as the Testing Lab, unless delivered to the site in original, unopened containers, each bearing the manufacturer guaranteed analysis.
 - 1. Pre-approved Testing Labs include:

- a. Waypoint Analytical (formerly Soil & Plant Laboratory) 4741 E Hunter Ave Suite A, Anaheim, CA 92807, (714)282-8777
 - b. Wallace Laboratories LLC, 365 Coral Circle, El Segundo, CA 90245, (310) 615-0116
 - c. Soil Control Lab, 42 Hangar Way, Watsonville CA 95076, (831) 724-5422
 2. The Owners Representative reserves the right to reject the analysis from an alternate soil testing lab without prior approval.
 3. Do not deliver any soil or amendment material to the site without approval by the Owners Representative.
 4. Use the same Testing Lab for all tests specified herein.
 5. Pay for all testing fees from the Testing Lab for all tests specified herein.
- D. Testing – Amendments: Provide, along with a sample, latest analysis of amendments / compost / bulk organic materials by the Testing Lab for verification of conformance to this specification, and specific recommendations as to exact quantities to be used in planting.
1. Analysis is to conform to physical and chemical properties specified herein.
 2. Analysis is to assume tilling of the amendments into the soil as described elsewhere in this Specification
 3. Analysis is to be carried out / reported no more than three months prior to the date of amendment installation, not the start of the project.
- E. Testing – Existing Soil: Prior to finish grading operations or at least four weeks before proposed planting operations, take a sample each of the topsoil and sub-soil, from 0"-12" deep, in at least three separate locations across the site, or as directed by the Owners Representative. Topsoil stockpiled from the same site is to be considered as one of the locations. Mix the samples from the locations to provide a composite sample, representative of the entire site, combined volume of samples not less than 2 quarts. Forward the soil samples to the Testing Lab for testing and recommendations as to exact fertilizers and soil amendments to be used in planting, A05-2 complete analysis or approved equal.
1. Amendment and fertilizer recommendations by the Testing Lab shall be specific to the proposed amendments and topsoil to be used and include the amendment lab test / sample ID number and testing date as reference. Generic recommendations will be rejected and will require specific recommendations to be re-obtained from the Testing Lab.
 - a. For planting other than turf sod, reference the amendment test report by number.
 2. Soils report shall include an estimated infiltration rate for the tested soils.
 3. Provide a sketch on an 8.5"x11" site plan of the locations from which samples were taken.
- F. Submit delivery tags for all amendments and fertilizers delivered to the Site for the Project, if required by the Owners Representative.
1. Fertilizer delivery tags should clearly indicate the product and NPK designation.
 2. Amendment delivery tags should clearly indicate the lab test number corresponding to the approved amendment test report.

1.5 REVIEWS

- A. Specifically request at least (2) two days in advance the following review prior to progressing with the work:
 - 1. Intermediate Review – completion of site grading, amendment depths, finish grade.
 - 2. See Specification Sections Landscape Irrigation and Landscape Planting for other items to be inspected during this review.
 - 3. The review shall be conducted only after all items pertaining to the review as noted above and in related Sections have been completed.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver fertilizers and manufactured amendments to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Materials in broken containers or which become caked or contaminated making them unsuitable for use will not be accepted and are to be removed from the site.

1.7 PROTECTION

- A. Protect concrete from any sulfate-based amendments that may be specified from soils analysis to avoid staining. Concrete damaged from amendment placement shall be replaced at the Contractor's expense.

PART 2 - PRODUCTS

2.1 EXISTING SOIL

- A. Topsoil: The top layer of existing soil in planting areas, containing minerals and organic materials including humus, and completely free of weeds, roots, rocks/clods over 1 cubic inch and other objectionable material. Depth of topsoil shall be taken to be 4-6 inches deep or as determined by the Owners Representative at the time of construction after clearing and grubbing.
 - 1. Topsoil is a Fat Clay, Site Class D ("stiff soil") type. See Geotech report.
 - 2.. At planting areas other than turf, topsoil starts below the mulch and organic matter layer.
 - 4. Soil underneath paving and aggregate base areas will not be considered as top soil.
- B. Sub-soil: The remaining existing soil on the site after clearing & grubbing, after topsoil has been removed, and after all rocks over 1 cubic inch and all foreign debris and organic material have been removed.
 - 1. Soil under paving and aggregate base areas may be considered as subsoil provided contamination testing as specified elsewhere in this section indicates that it is free of contaminants that are harmful to plant growth.

2.2 IMPORTED TOPSOIL

- A. Imported Topsoil: rich sandy loam topsoil blends with organic materials without mushroom compost. Reference blend: Screened Topsoil Mix as supplied by Pacific Coast Soils, (831) 724-8032, www.pacificcoastsoils.com, or approved equal.

2.3 FERTILIZER

- A. Soil amendment fertilizer: commercial fertilizer, 16-6-8 (N-P-K) uniform pellet. For bidding purposes only, exact fertilizer type and quantity to be determined by Testing Lab analysis.
- B. Plant fertilizer: commercial fertilizer packets / tablets, two-year controlled-release 20-10-05 (N-P-K). Best Tabs by Simplot Professional Products, Agriform by The Scotts Company, or equal.

2.4 SOIL AMENDMENTS

- A. Amendment: nitrogen stabilized organic amendment / compost produced only from landscape / yard trimmings, grass clippings, food scraps or agricultural residues. Compost is to have a dark brown color, does not exhibit a sour or putrid smell, does not contain recognizable grass or leaves, and is not hot upon delivery or rewetting.
1. Compost gradation:

Sieve Size	Percent Passing
3/8" (9.5 mm)	100%
1/4" (6.25mm)	At least 95%
#8 (2.36mm)	At least 60%
#16 (1.18mm)	20%-70%
#32 (500 um)	0%-30%
- B. Amendment Chemistry – Suitability Considerations
1. Nitrogen (dry weight basis): 0.4 to 0.6%
 2. Iron (minimum): 0.08%
 3. Organic content: above 17%
 4. Carbon-Nitrogen Ratio: below 25
 5. pH: below 8.0
 6. Salinity (ECe): a value such that when combined with the existing site soil at a use rate determined by the Testing Lab Analysis, the salinity of the amended soil shall not exceed 4.0 dS/m (mmhos/cm).
- C. Gypsum (if required by existing soils test): agricultural grade, OMRI listed.
1. Cal-Sul Pelletized Gypsum by North Pacific, Portland OR
 2. Ultra Fine AG Gypsum by Western Mining & Minerals
 3. Approved equal.
- D. Sulfur (if required by existing soils test): granular degradable sulfur product, Tiger 90CR Organic 0-0-0-90 Sulfur by TigerSul.com, or approved equal.

2.5 CHEMICALS

- A. The following brand names of various chemicals to be used in this Section are provided for ease of specifying; equals or brands with similar chemicals that will

match or improve performance may be used at the Contractor's discretion. Verify use of any chemicals with Owner's Representative prior to application:

1. Pre-emergent herbicides - (granular form only) Treflan, Ronstar, or prior approved equal.

2.6 PLANTER SOIL

- A. Planter Soil Mixture: as specified for at-grade soil preparation.
- B. Drainage layer: 3/4" red or black lava rock, supplied by Lyngso Garden Materials, Redwood City CA, (650) 364-1730 or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Limits and Grades: Prior to commencing soil preparation operations, request a review by the Owners Representative to verify rough / mass grading work completed to date and specified limits of soil preparation work to commence.
- B. Finish grade all non-hardscape areas to round the top and toe of all slopes, providing natural contouring to integrate newly graded areas with the existing natural topography.
- C. Protect concrete from any sulfate-based amendments that may be specified from soils analysis to avoid staining. Replace any concrete damaged from amendment placement at the no additional cost to the Owner.

3.2 TOPSOIL PLACEMENT

- A. Stockpiled topsoil shall be installed and completed as necessary to produce final finish grade requirement, minimum depth 6" (six inches).
 1. Existing undisturbed landscape areas that are to be replanted (excluding bio-retention areas) as shown on the Drawings, do not require topsoil across the areas, only individual plant pit preparation per Specifications.
 2. Proposed landscape areas including areas to be graded or that have been disturbed by construction that are to be planted as shown on the Drawings require topsoil across the entire planting areas. Amended excavated subsoil cannot be used as topsoil for these areas.
- B. Sub-grade shall be cross-ripped or cultivated to a depth of 10 inches. Water shall be added and ripping or cultivation shall be continued until the entire 10 inch depth is loose and friable. Place two inches of topsoil uniformly over sub-grade and thoroughly cultivate before placing remaining topsoil. Place topsoil and bring to a smooth, even grade. Soil shall be thoroughly water settled and high/low areas re-graded in accordance with paragraph "Finish Grading" this Section.
- C. Stockpiled Topsoil: See Civil specs.

3.3 AMENDMENT PLACEMENT

- A. The requirements below are for bidding purposes only, adjustments to the bidding formula shall be determined by the Testing Lab analysis. SEE NOTE IN 1.04 SUBMITTALS
- B. Cross-rip all planting areas thoroughly to a minimum 10-inch depth. Upon completion of cross-ripping apply the amendments, as follows:
- | <u>Amount/1000 Square Feet</u> | |
|--------------------------------|---------------------------------------|
| 6 cubic yards | Nitrogen Stabilized Organic Amendment |
| 12 lbs. | Commercial Fertilizer |
| 50 lbs | Gypsum |
- C. Uniformly spread and incorporated the materials to obtain a homogeneously blended soil, 6-inches in depth.
- D. Plant pits: Use soil which has been amended in the above manner as the backfill mix around the sides of the root balls. See Specification Section Landscape Planting for plant pit requirements.
- E. Watering: Apply water to areas to be drip irrigated to thoroughly mix in amendments and fertilizers immediately after amending soil, and a minimum of 24-hours prior to planting, unless rain is forecast for that period.
1. Water may be manually applied by spray attachments or impact sprinklers on stands.
 2. Connect hose pipes to quick couplers or hose bibs. If neither is available or the main line has not been pressurized, use a portable lawn sprinkler pump connected to a water tank.
 3. The cost of watering to mix in amendments is at no additional cost to the Owner.

3.4 FINISH GRADING

- A. Finish grade all areas, including those indicated to be planted on the Drawings, and remove all rocks and clods over 1 cubic inch. Finish grade all planting areas smoothly and uniformly. Repair all erosion damage during the construction period.
- B. All soil finish grades shall be 1-inch below finish surface of walks, pavements, and curbs.

3.5 CHEMICALS

- A. Herbicides and pesticides: Verify compatibility, dosage and other application procedures with the manufacturer. All chemicals shall be applied by a pest control operator licensed in the State of California.
- B. Planting areas: Treat all planting and non-naturalized areas for weed control with pre-emergent herbicide, as recommended by the manufacturer. See Specification Section Landscape Maintenance for related work.

- C. Include copies of documentation of pesticide and herbicide applications, countersigned by the Owner's Representative, as part of Close-out Documentation – see Specification Section Landscape Maintenance.

3.6 PLANT FERTILIZER

- A. Apply additional fertilizer to all container stock, in the form of commercial fertilizer packets / tablets at the rate of:

Container size	Fertilizer Packets / Tablets
4-inch pot	one (1)
1-gallon plant	two (2)
5-gallon plant	four (4)
15-gallon plant	ten (10)

1. Space the packets / tablets evenly around the ball halfway up backfill touching side of root ball.
2. The additional fertilizer requirement is independent of the Testing Lab analysis.

3.7 CLEAN UP

- A. After completion of all soil preparation operations, remove all trash, excess soil and other debris. Sweep and wash clean all walks, walls, and pavement. Leave the entire area in a neat, orderly condition.

END OF SECTION 32 91 13

SECTION 32 93 03 PLANTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the provision and installation of plant materials as shown on the Drawings and as specified in this Section.
- B. Related work includes but is not limited to:
 - 1. Soil Preparation
 - 2. Irrigation Irrigation
 - 3. Landscape Maintenance

1.3 QUALITY ASSURANCE

- A. Quality: Minimum quality of all plant material shall unless otherwise indicated conform to:
 - 1. ANSI Z60.1-2004 American Standard for Nursery Stock, Sponsored by the American Nursery and Landscape Association (ANLA)
 - 2. Prevailing published specifications of the California Association of Nurserymen.
 - 3. Additional standards as indicated on the Drawings and as specified herein.
- B. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:
 - 1. D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- C. Fertilizers: Comply with the requirements of the Fertilizing Materials Inspection Program of the California Department of Food and Agriculture.

1.4 SUBMITTALS

- A. Product Data: to be approved by the Owners Representative before the material is delivered to the site.
 - 1. Summary list certifying species / size of plant material ordered, the nursery supplier(s), along with nursery photographs of species.
 - 2. Note any plant material not available at that time, or proposed substitutions to be reviewed.
 - 3. All associated planting products specified herein and shown on the Drawings.

- B. Samples: to be approved by the Owners Representative before the material is delivered to the site.
 - 1. 1-quart bag sample of each mulch type specified.

1.5 REVIEWS

- A. Specifically request at least (2) two days in advance the following review prior to progressing with the work:
 - 1. Intermediate Review – plant material approval and layout/locations. See Specification Sections Landscape Irrigation and Soil Preparation for other items to be inspected during this review.
- B. Specifically request at least (5) five days in advance the following reviews prior to progressing with the work:
 - 1. Substantial Completion Review (to initiate Maintenance Period) – all planting areas including See Specification Section Landscape Maintenance.
 - 2. Final Review (at the completion of Maintenance Period) - all planting including all punch-list items identified at Substantial Completion Review. See Specification Section Landscape Maintenance.
- C. Each review will be conducted only after all items pertaining to that review as noted above and in related Sections have been completed.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver fertilizers and manufactured amendments to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Materials in broken containers or which become caked or contaminated making them unsuitable for use will not be accepted and are to be removed from the site.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Nomenclature and Labels: Plant botanical names conform to "Standardized Plant Names," second edition, and secondly, "A Checklist of Woody Ornamental Plants of California," "Manual 32, University of California. Deliver all plants of each clone, species, and cultivar to the site labeled with their full botanical name. Label every plant species with no less than one label for every ten plants of a species.
- B. Quantities: The quantities shown on the plant list and in labels are for the use of the Owners Representative use and are not to be construed as the complete and accurate limits of the Contract. Furnish and install all plants shown schematically on the Drawings.
- C. Root Systems: All container-grown stock shall be grown in its container for at least six months prior to its planting. Allow a minimum of two (2) and maximum of five (5) % of the quantity of plants of each species for removal and inspection. Any plant

material, within twelve (12) months following the final acceptance of the project, determined by the Owners Representative to be defective, restricted, declining or otherwise deficient due to abnormal root growth, shall be replaced to the equal condition of the adjacent plants, at the time of replacement.

- D. Health: Foliage, roots and stems of all plants shall be of vigorous health and normal habit of growth for its species. All plants shall be free of all disease, insect stages, burns or disfiguring characteristics.
- E. Untrue Species: All plant material, within 12-months following the final acceptance of the Project, determined by the Owner to be untrue to the species, clone, and/or variety specified, shall be replaced to the equal condition of adjacent plants at the time of replacement.

2.2 TREES

- A. All trees shall have straight trunks of uniform taper, larger at the bottom. Trunks shall be free of damaged bark, with all minor abrasions and cuts showing healing tissue. Remove sucker basal growth and lateral growth and treated surface to eliminate re-sprouting. Allow normal lower side branching to remain. Trees unable to stand upright without support shall be rejected.

2.3 FERTILIZER

- A. 15-15-15 (N-P-K) Commercial Fertilizer, uniform pellet.
 - 1. The requirements above are for bidding purposes only, exact fertilizer types per Testing Lab analysis.

2.4 MULCH

- A. General: Mulch is to contain less than 1% foreign matter including soil, weeds, seeds, etc. by dry weight.
 - 1. Pneumatically applied mulch will not be permitted.
- B. Mulch: 100% recycled construction wood with biodegradable coloring, ½-inch to 2-inches.
 - 1. Pre-approved products / suppliers:
 - a. Woodchip Mulch by Vision Recycling, CA Color – golden (natural)
 - b. Decorative Mulch by Recology Organics. Color – gold
 - c. Republic Services, Milpitas CA (formerly BFI), CA

2.5 TREE STAKES AND GUYS

- A. Wood Pole Staking
 - 1. Stakes: Peeled and pressure-treated (EPA approved chemical not containing arsenic) lodgepole pine tree stakes, smooth, clean, and new, sized as follows:
 - a. 2" dia x 8' long for trees less than and equal to 8' height for the main cluster of foliage.

- b. 3" dia. x 10' long for trees greater than 8' height for the main cluster of foliage.
- 2. Ties: Flat rubber / vinyl ties with U.V. inhibitors, meeting ASTM D412, width 1" minimum & length per container size requirements (24" minimum), by Gro Strait Products, Walnut Creek, CA / V.I.T Products, Escondido CA, or approved equal.
 - a. Use roofing nails of adequate length to firmly attach ties to stake.
- B. Steel Pole Staking (at tree grates)
 - 1. Stakes: 3/4" dia. Sch.40 steel pipe stakes, powder coated black, with straps, accessories and fittings as supplied by J.R. Partners, Turlock CA, (209) 634-7791, www.treestake.com, or approved equal.
 - 2. Grate Stake for 15 Gal & 24" box trees, Mega Grate Stake for 36" box trees.
 - 3. Two (2) stakes per tree unless otherwise noted on the Drawings.
- C. Guying
 - 1. Duckbill Aluminum Earth Anchor by Foresight Products, Commerce City CO, (800) 325-5360 or equal.
 - 2. Model / Size as required by tree size. Model 40 & 1/16" cable for light loads (300 lbs), Model 68 & 1/8" cable for medium loads (1100 lbs), Model 88 & 1/4" cable for heavy loads (3000 lbs). Provide wire clamps appropriate for wire size. For rocky or hard soils, use the equivalent ductile iron anchor by the manufacturer.
 - 3. Tubing: 12" long PVC tubing

2.6 ROOT BARRIER

- A. Tree root barrier: locking panel type, fabricated from a high density and high impact extruded ABS, Polyethylene, or Polypropylene and ultraviolet inhibitors, with minimum 50% post-consumer recycled plastic. 1/2 - 3/4-inch-high raised vertical ribs on the inner surface spaced not more than 6-8 inches apart.
 - 1. Minimum mean thickness 0.08"
 - 2. At new trees, depth of root barrier shall be 18"
 - 3. Length and layout of root barrier per the Drawings.
- B. Approved Products / Suppliers:
 - 1. Universal Barrier (UB) Series by Deep Root Partners, L.P. San Francisco, CA, (800)458-7668
 - 2. Vespro, Inc., San Rafael CA, (800)554-0914
 - 3. CP-Series by Century Products, Anaheim CA, (714) 632-7083
 - 4. EP / RP Series by NDS, (800)726-1994
 - 5. Villa Root Barrier, Inc. Lake Elsinore CA, (800) 654-4067
- C. Bamboo root barrier: 30" x 60 mil polythene rhizome barrier as available from the Bamboo Sourcing, Sebastopol, CA (707)823-5866, bamboosourcing.com. Plastic two-sided sealing tape as supplied the manufacturer.
- D. Root Barrier Fabric (Buildings & Retaining Walls): Biobarrier by Typar Geosynthetics, Roseville MN, (877)642-9929. Roll width: 39-inches.

PART 3 - EXECUTION

3.1 GENERAL

- A. Plant Material Approvals: Before planting operations commence, review all plant material with the Owners Representative. Remove defective plants from the site and substitute acceptable material in its place. The review does not accept defective plants which may be installed.
- B. Layout: Lay out only those plants to be planted in any single day. Review locations of all plants prior to planting. Plants installed without this review may have be relocated and replanted as directed by the Owners Representative.
- C. Protection of Plants: Maintain all plant material in a healthy growing condition prior to and during planting operation. Contractor shall be responsible for vandalism, theft, and damage to plant material until commencement of the maintenance period.
- D. Pruning: Do not prune without specific authorization of the Owners Representative. Replace plants pruned without authorization if directed by the Owners Representative.

3.2 PLANTING

- A. Rest the rootball only on undisturbed soil, or in the case of fill areas, on compacted, un-amended sub-grade. See Specification Section Soil Preparation for backfill mix requirements. Loosen / scarify the sides and bottoms of plant rootball and pits to prevent glazing or compaction.
 - 1. Plant pit sizes: as shown on the Drawings.
 - 2. Plant pits in paved areas are to extend to the edge of the planter opening in all directions unless otherwise noted on the Drawings.
- B. Watering basins: Construct basins only if required to hand water plants during establishment period. Basin bottoms are to drain away from plant stems. See Specification Section Landscape Maintenance for removal of basins.
- C. Foliage: trim foliage and lower branches if necessary, so that watering basin is clearly visible. Bubblers/emitters if installed should be clearly visible for maintenance.

3.3 TREE STAKING & GUYING

- A. Wood Pole Staking: Stake all trees supplied as 'Standard' form, unless otherwise noted on the Drawings. Install stakes as shown on the Drawings.
 - 1. Drive stakes securely into existing soil on opposite sides of the rootball. If there is a prevailing wind direction then install stakes on the windward side of the tree. Install a minimum of (2) two figure-eight, rubber tree ties.
 - 2. If using rubber ties without wire, nail rubber ties to the back of stakes in areas of severe wind conditions

3.4 CHEMICALS

- A. Pesticide: Verify compatibility, dosage and other application procedures with the manufacturer. All pesticides shall be applied by a pest control operator licensed in the State of California.
- B. Include copies of documentation of pesticide applications, countersigned by the Owner, as part of Close-out Documentation – see Specification Section Landscape Maintenance.

3.5 FERTILIZER

- A. Apply Commercial Fertilizer at 5 pounds per 1,000 square feet to all planting areas 30 days after planting. Schedule re-application at 45 day intervals until completion of Landscape Maintenance.
 - 1. The requirements above are for bidding purposes only, exact application rates per Testing Lab analysis.
- B. Include copies of documentation of fertilizer applications, countersigned by the Owner as apart of Close-out Documentation – see Specification Section Landscape Maintenance.

3.6 MULCH

- A. Install mulch to a minimum depth after settling / natural compaction as specified below – see the Drawings for areas to be covered and for tapering mulch down to the edge of adjacent hard surfaces.
 - 1. Wood Mulch – three (3”) inches
 - 2. In drip irrigation areas do not install mulch until inspection of irrigation by the Owner’s Representative.
 - 3. At planters with soil mixture, do not install mulch until the Owner’s Representative is able to verify soil settlement.

3.7 ROOT BARRIER

- A. General: Install root barriers per manufacturer’s instructions, and as shown on the Drawings. Irrigation / utility lines are not permitted to penetrate root barrier. The top of the root barrier is to be 1/2 inch above finished grade.
- B. New trees: Install root barrier panels around trees planted within 5-feet of curbs, paving and landscape walls.
 - 1. Linear Applications: At tree planters in paved areas, parking islands, medians, and parkway strips less than or equal to 10-ft wide inside dimension, install the root barrier at the edge of the surrounding curb or paving. Number of root barrier panels per the Drawings.

3.8 WEED MAT

- A. Install weed mat as shown and/or noted in the Drawings per manufacturer's instructions. Weed mat is to completely cover the soil in shrub, groundcover, planting areas, including areas to be mulched only. Overlap fabric pieces by at least 6 inches and staple per manufacturer's instructions.

3.9 MAINTENANCE

- A. See Specification Section Landscape Maintenance

3.10 CLEAN UP

- A. After completion of all planting operations, remove all trash, excess soil and other debris. Sweep and wash clean all walks, walls, and pavement. Leave the entire area in a neat, orderly condition.

END OF SECTION 32 93 03

SECTION 33 05 07
UTILITY DIRECTIONAL BORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation for approach trenches and pits.
2. Horizontal directional drilling.
3. Pipe.
4. Drilling fluid system.

PART 2 - PRODUCTS

2.1 HORIZONTAL DIRECTIONAL DRILLING

A. Performance and Design Criteria:

1. Drilling Steering System: Remote with continuous electronic monitoring of boring depth and location.
2. Ratio of Reaming Diameter to Pipe OD:
 - a. Nominal Pipe Diameter of 4 inches and Smaller: Maximum of 1.5.

B. Materials:

1. Drilling Fluid: Liquid bentonite clay slurry; totally inert with no environmental risk.

C. PVC Piping:

1. Pipe: Schedule 80 min

PART 3 - EXECUTION

3.1 INSTALLATION

A. Dewatering:

1. Intercept and divert surface drainage, precipitation, and ground water away from excavation using dikes, curb walls, ditches, pipes, sumps, or other approved means.
 2. Comply with County of San Benito requirements for discharging water to watercourse, preventing stream degradation, and controlling erosion and sediment.
- B. Excavation:
1. Excavate approach trenches and pits as Site conditions require; minimize number of access pits.
 2. Provide sump areas to contain drilling fluids.
 3. Restore areas after completion of drilling and carrier pipe installation.
- C. Drilling:
1. Drill pilot bore with vertical and horizontal alignment as indicated.
 2. Survey entire drill path and mark entry and exit locations with stakes.
 3. Guiding: Guide drill remotely from ground surface to maintain alignment by monitoring signals transmitted from drill bit.
 4. Drilling Fluid: Inject drilling fluid into bore to stabilize hole, remove cuttings, and lubricate drill bit and pipe.
- D. Drilling Obstructions: If obstructions are encountered during drilling, notify Architect/Engineer immediately.
- E. Piping:
1. Attach pipe to pipe pulling head and pull reamer and pipe to entry pit along pilot bore.
 2. Inject drilling fluid through reamer to stabilize bore and lubricate pipe.
 3. Trace Wire: Install trace wire continuous with each bore, and splice wire only at intermediate bore pits.
 4. Allow minimum of 24 hours for stabilization after installing pipe before making connections to pipe.
- F. Slurry Removal and Disposal: Contain excess drilling fluids at entry and exit points until recycled or removed from Site; provide recovery system to remove drilling spoils from access pits.

****END OF SECTION 33 05 07****

SECTION 33 14 13

PUBLIC WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for water line.
 - 2. Valves.
 - 3. Pipe and fittings for water service lines.
 - 4. Backflow preventers.
 - 5. Underground pipe markers.
 - 6. Bedding and cover materials.

SUBMITTALS

- B. Product Data:
 - 1. Piping: Submit data on pipe materials, fittings, and accessories as needed
 - 2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.

CLOSEOUT SUBMITTALS

- C. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- D. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- E. Operation and Maintenance Data: Submit spare parts list, exploded assembly views, and recommended maintenance intervals.

QUALITY ASSURANCE

- F. Valves: Manufacturer's name and pressure rating marked on valve body.

PART 2 PRODUCTS

WATER PIPING

- A. PVC Pipe: AWWA C900 Class 150:
 - 1. Fittings: AWWA C111, cast iron.
 - 2. Joints: ASTM D3139 compression gasket ring.

UNDERGROUND PIPE MARKERS

- B. Trace Wire: Magnetic detectable conductor, per City of Hollister Standards.

BEDDING AND COVER MATERIALS

- C. Bedding: Fill Type: PG&E sand
- D. Soil Backfill from Above Pipe to Finish Grade: Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

PART 3 EXECUTION

EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

FIELD MEASUREMENTS

- C. Verify field measurements prior to any fabrication.

PREPARATION

- D. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- E. Remove scale and dirt on inside and outside before assembly.
- F. Prepare pipe connections to equipment with flanges or unions.

INSTALLATION - PIPE

- G. Maintain separation of water main from sewer piping in accordance with California Building Code.
- H. Route pipe in straight line.
- I. Install access fittings to permit disinfection of water system.
- J. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- K. Establish elevations of buried piping with not less than 3 ft of cover.

DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- L. Flush and disinfect system in accordance with City of Hollister Public Work's Standards and the California Building Code.

****END OF SECTION 33 14 13****

SECTION 33 14 17

SITE WATER SERVICE UTILITY LATERALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for water service lines.
 - 2. Meter boxes
 - 3. Bedding and cover materials.

SUBMITTALS

- B. Product Data:
 - 1. Piping: Submit data on piping materials, fittings, and accessories as needed
 - 2. Meter boxes: Submit manufacturers catalog information for meter boxes.

CLOSEOUT SUBMITTALS

- C. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- D. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- E. Operation and Maintenance Data: Submit spare parts list, exploded assembly views, and recommended maintenance intervals.

QUALITY ASSURANCE

- F. Valves: Manufacturer's name and pressure rating marked on valve body.

PART 2 PRODUCTS

WATER PIPING

- A. Services in accordance with the City of Hollister Standards.

UNDERGROUND PIPE MARKERS

- B. Trace Wire: Magnetic detectable conductor, per City of Hollister Standards.

BEDDING AND COVER MATERIALS

- C. Bedding: Fill Type: PG&E sand

- D. Soil Backfill from Above Pipe to Finish Grade: Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

PART 3 EXECUTION

EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

FIELD MEASUREMENTS

- C. Verify field measurements prior to any fabrication.

PREPARATION

- D. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- E. Remove scale and dirt on inside and outside before assembly.
- F. Prepare pipe connections to equipment with flanges or unions.

INSTALLATION - PIPE

- G. Maintain separation of water main from sewer piping in accordance with California Building Code.
- H. Route pipe in straight line.
- I. Install access fittings to permit disinfection of water system.
- J. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- K. Establish elevations of buried piping with not less than 3 ft of cover.

****END OF SECTION 33 14 17****

SECTION 33 14 19

FIRE HYDRANTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fire hydrants.
 - 2. Section 33 11 13 - Public Water Utility Distribution Piping.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- 1. Basis of Measurement: Each.
- 2. Basis of Payment: Includes excavation, fire hydrant, accessories, test and backfill.

1.3 REFERENCES

- A. American Water Works Association:
 - 1. AWWA C502 - Dry-Barrel Fire Hydrants.
 - 2. AWWA C503 - Wet-Barrel Fire Hydrants.
 - 3. AWWA C550 - Protecting Epoxy Interior Coating for Valves and Hydrants.
 - 4. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
- B. National Sanitation Foundation:
 - 1. NSF 61 - Drinking Water System Components - Health Effects
- C. National Fire Protection Association:
 - 1. NFPA 281 - Recommended Practice for Fire Flow Testing and Marking of Hydrants

1.4 SUBMITTALS

- A. Manufacturer's Certificates: Submit Statement of Compliance, supporting data, from material suppliers attesting that hydrants and accessories provided meet or exceed AWWA Standards and specification requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of fire hydrants.
- B. Provide Operation and Maintenance Data for fire hydrants.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with City of Hollister Public Work's standard.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Prepare hydrants and accessories for shipment according to AWWA Standards and seal hydrant and ends to prevent entry of foreign matter into product body.
- B. Store products in areas protected from weather, moisture, or possible damage; do not store products directly on ground; handle products to prevent damage to interior or exterior surfaces.

1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate work with City of Hollister Public Work's standards and utilities within construction area.

PART 2 PRODUCTS

2.1 FIRE HYDRANTS

- A. Furnish materials in accordance with City of Hollister Public Work's standards.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Determine exact location and size of hydrants from Drawings; obtain clarification and directions from Architect/Engineer prior to execution of work.
- C. Verify invert elevations [of existing work] prior to excavation and installation of fire hydrants.

3.2 PREPARATION

- A. Identify required lines, levels, contours and datum locations.
- B. Locate, identify, and protect utilities to remain from damage.
- C. Do not interrupt existing utilities without permission and without making arrangements to provide temporary utility services.

3.3 INSTALLATION

- A. Install fire hydrants; provide support blocking and drainage gravel; do not block drain hole.
- B. Set hydrants plumb with pumper nozzle facing roadway; set hydrants with centerline of pumper nozzle 18 inches above finished grade and safety flange not more than 6 inches nor less than 2 inches above grade.
- C. Paint hydrants in accordance with local color scheme.
- D. Install Work in accordance with City of Hollister Public Work's standards.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with City of Hollister Public Work's standards.

3.5 FIELD QUALITY CONTROL

- A. Perform pressure test on domestic site water distribution system in accordance with City of Hollister Public Work's standards.

****END OF SECTION 33 14 19****

SECTION 33 42 00
STORMWATER CONVEYANCE

PART 1 GENERAL

1. SUMMARY

- a. Section Includes:
 - 1) Stormwater drainage piping.
 - 2) Manholes.
 - 3) Catch basins.
 - 4) Cleanouts.
 - 5) Pile support systems.
 - 6) Concrete encasement and cradles.
 - 7) Bedding and cover materials.

2. DEFINITIONS

- a. ABS: Acrylonitrile butadiene styrene.

3. SUBMITTALS

- a. Manufacturer's Certificate: Products meet or exceed specified requirements.
- b. Manufacturer Instructions: Special procedures required to install specified products.

4. QUALITY ASSURANCE

- a. Perform Work according to City of Hollister standards.

5. DELIVERY, STORAGE, AND HANDLING

- a. Store materials according to manufacturer instructions.
- b. Protection:
 - 1) Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2) Provide additional protection according to manufacturer instructions.

6. EXISTING CONDITIONS

a. Field Measurements:

- 1) Verify field measurements prior to fabrication.

PART 2 PRODUCTS

1. STORM DRAINAGE PIPING

- a. Comply with City of Hollister Standards

2. MANHOLES

- a. Comply with City of Hollister Standards

3. CATCH BASINS

- a. Comply with City of Hollister Standards

4. CLEANOUTS

- a. Comply with City of Hollister Standards

5. MATERIALS

- a. Comply with City of Hollister Standards.

6. MIXES

- a. Comply with City of Hollister Standards

PART 3 EXECUTION

1. INSTALLATION

- a. Comply with City of Hollister Standards

2. TOLERANCES

- a. Comply with City of Hollister Standards

3. FIELD QUALITY CONTROL

- a. Inspection:

- 1) Request inspection by City Inspector prior to and immediately after placing aggregate cover over pipe.

- b. Testing:

- 1) Comply with City of Hollister Standards

4. PROTECTION

- a. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

****END OF SECTION 33 42 00****