SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA



ITEM: 3.11 (ID # 16874) MEETING DATE:

Tuesday, October 19, 2021

Kecia R. Harper

Clerk of the Bo

FROM:

FACILITIES MANAGEMENT:

SUBJECT: FACILITIES MANAGEMENT: Mecca Sports Park - Approval of Plans and Specifications to Advertise for Bids, District 4. [\$0] (Clerk to Advertise for Bids)

RECOMMENDED MOTION: That the Board of Supervisors:

- 1. Approve the plans and specifications for the Mecca Regional Sports Park (Mecca Sports Park) Project and authorize the Clerk of the Board to advertise for bids;
- 2. Upon completion of the bid process, authorize the Director of Facilities Management to submit the construction contract for award of the bid to the lowest responsive and responsible bidder in a not to exceed amount of \$3,233,222, to the Chair of the Board, and authorize the Chair of the Board to execute the contract on behalf of the Board, provided that, if any of the following occur, the award will be submitted to the Board for action: there is a bid protest, the lowest bid exceeds the estimated construction budget, the low bidder is disqualified, two or more bids are the same and are the lowest, or a bidder requests relief from its bid due to an error; and

Continued on Page 2

ACTION:Policy, CIP

MINUTES OF THE BOARD OF SUPERVISORS

On motion of Supervisor Perez, seconded by Supervisor Spiegel and duly carried by unanimous vote, IT WAS ORDERED that the above matter is approved as recommended.

Ayes:

Jeffries, Spiegel, Washington, Perez and Hewitt

Nays:

None

Rose Salgado, Director of Facilities Management

Absent:

None

Date:

October 19, 2021

XC:

FM. COBzm

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SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

RECOMMENDED MOTION: That the Board of Supervisors:

3. Authorize the Director of Facilities Management to administer the contract for the awarded low bidder in accordance with applicable Board Policies.

FINANCIAL DATA	Current Fi	scal Year;	Next Fisc	cal Year:	Total (Cost:	Ongoin	g Cost
COST	\$	0	\$	0	\$	0	\$	0
NET COUNTY COST	\$	0	\$	0	\$	0	\$	0
SOURCE OF FUNDS:	N/A			6.0	Budget A	djustme	nt: No	
					For Fisca	al Year: 2	2021/22	431

C.E.O. RECOMMENDATION: Approve

BACKGROUND:

Summary

On April 21, 2020, Item 3.8, the Board of Supervisors (Board) accepted a grant award of \$5,817,660 from the Proposition 68 Statewide Park Development and Community Revitalization Program (Prop 68 Grant) for the Mecca Regional Sports Park Project. On January 12, 2021, Item 3.11, the Board approved an amendment to the contract between the County of Riverside (County) and the State of California Natural Resource Agency Department of Parks and Recreation for an extension of grant performance to June 30, 2024. In the same Board item, a revised project budget of \$6,700,660 was approved.

On August 4, 2020, Item 3.22, the Board approved a Professional Services Agreement between the County and Holt Architecture (Holt) for design and engineering services for the Mecca Sports Park Project. The plans and specifications for the Project are now complete. Facilities Management (FM) requests the Board approve the plans and specifications and authorize the Clerk of the Board to advertise the Notice Inviting Bids. Upon completion of the bid process, FM recommends the Board authorize the Director of Facilities Management to award the bid to the lowest responsive and responsible bidder as long as it falls within the specified parameters; and authorize the Chair of the Board to execute the construction contract on behalf of the Board upon Counsel's review and approval.

Impact on Residents and Businesses

The Mecca Regional Sports Park will provide a community gathering space in the town of Mecca and will transform a vacant lot into an active, lively and green place. The park will provide organized sports leagues a local space to compete. In additional to sports fields, the sand volleyball courts, the planned open green space, picnic areas and outdoor exercise

SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

stations will provide residents an amenity for families, seniors and community groups for a variety of activities.

Additional Fiscal Information

There are no costs associated with this Board action. All costs were previously approved on January 12, 2021 (Item 3.11), in the amount of \$6,700,660. The Project is funded as follows: Statewide Park Development and Community Revitalization Grant Funds-86.82%, Riverside County Transportation Purchase of Right of Way Funds-10.94%, Community Development Block Grant Funds-2.24%.

Attachment:

- Construction Specifications for the Mecca Sports Park Project
- Construction Plans for the Mecca Sports Park Project
- Specifications and Contract Documents

RS:SP:SC:AR:tv FM08100009946 MT #16874
G:\Project Management Office\FORM 11'S\Form 11's_In Process\16874_D2 - 009946 - Mecca Reg Sports Park-Plans&Specs-Advertise to Bid 101921.doc

Meghan Hahn, Senior Management Analyst 10/12/2021 Gregory V. Prianos, Director County Counsel 10/8/2021

SPECIFICATIONS AND CONTRACT DOCUMENTS FOR

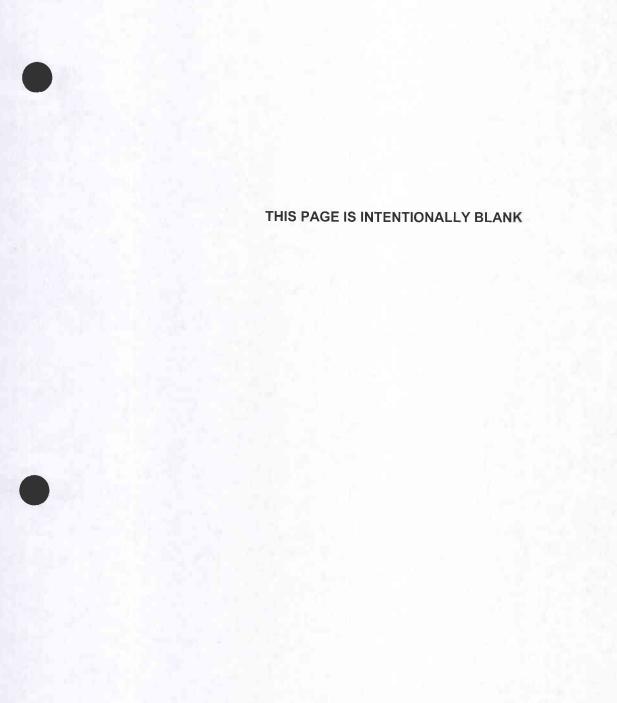
COUNTY OF RIVERSIDE MECCA REGIONAL SPORTS PARK

91391 66TH AVENUE, MECCA, CA 92254



Prepared by HOLT ARCHITECTURE 36951 Cook Street, Palm Desert, CA 92211 August/2021





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00 03 00 -	Post-Bid Interview
00 04 00 -	FM Construction Long Form Contract Rev 02.17.21 Placeholder)
00 05 00 -	General Conditions 05-29-20 (Placeholder)

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01 23 00 -	Alternates
01 25 00 -	Substitution Procedures
01 25 01 -	Substitutions Request Form
01 31 00 -	Construction Schedules
01 31 13 -	Project Coordination
01 31 19 -	Project Meetings
01 33 00 -	Submittal Procedures
01 45 29 -	Testing Laboratory Services
01 50 00 -	Construction Facilities
01 66 00 -	Product Storage and Handling Requirements
01 71 23 -	Field Engineering
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03 10 00 -	Concrete Forming and Accessories
03 21 00 -	Reinforcing Steel
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DIVISION 4 - MASONRY

Not Applicable

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DIVISION 8 – DOORS AND WINDOWS FOR THE PREFABRICATED RESTROOM BUILDING See Section 13 00 00 - Prefabricated Restroom Building.

DIVISION 9 - FINISHES FOR THE PREFABRICATED RESTROOM BUILDING See Section 13 00 00 - Prefabricated Restroom Building.

<u>DIVISION 10 – SPECIALTIES FOR THE PREFABRICATED RESTROOM BUILDING</u> See Section 13 00 00 - Prefabricated Restroom Building.

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DIVISION 13 - SPECIAL CONSTRUCTION

13 00 00 -Prefabricated Restroom Building 13 31 00 -Prefabricated Site Shelters

DIVISION 14 - CONVEYING EQUIPMENT

Not Applicable

DIVISION 15 - DIVISION 20

Not Applicable

DIVISION 21 - FIRE SUPPRESION

Not Applicable

DIVISION 22 - PLUMBING FOR THE PREFABRICATED RESTROOM BUILDING See Section 13 00 00 - Prefabricated Restroom Building.

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See Section 13 00 00 - Prefabricated Restroom Building.

<u>DIVISION 26 - ELECTRICAL - BOTH SITE WORK AND FOR THE PREFABRICATED RESTROOM BUILDING</u>

26 01 00 -	Basic Electrical Requirements
26 05 19 -	Low-Voltage Electrical Power Conductors and Cables
26 05 26 -	Grounding and Bonding for Electrical Systems
26 05 33 -	Raceway and Boxes for Electrical Systems
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26 05 53 -	Identification for Electrical Systems
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26 28 16 -	Enclosed Switches and Circuit Breakers
26 56 00 -	Exterior Lighting

Also see Section 13 00 00 - Prefabricated Restroom Building.

DIVISION 27 - COMMUNICATIONS

Not Applicable

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

Not Applicable

DIVISION 31 – EARTHWORK

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31 20 00 - Earth Moving and Building Excavation

31 23 17 - Trenching 31 23 23 - Backfilling

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32 01 90 -	90-Day Landscape Maintenance
32 11 00 -	Stabilized Decomposed Granite

32 13 13 - Sitework Concrete

32 17 73 - Concrete Paving Joint Sealants 32 18 16 - Playground Protective Surfacing

32 31 19 - Decorative Metal Fences and Gates

32 33 00 - Site Furnishings

32 33 01 - Playground and Exercise Equipment

32 33 02 - Aquatic Play Equipment

32 84 00 - Planting Irrigation

32 91 13 - Soil Preparation 32 92 00 - Turf and Grasses

32 93 00 - Plants

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SPECIFICATIONS AND CONTRACT DOCUMENTS FOR

FM08100009946

MECCA SPORTS PARK PROJECT



PREPARED BY COUNTY OF RIVERSIDE FACILITIES MANAGEMENT

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NOTICE INVITING BIDS

NOTICE IS HEREBY GIVEN that the County of Riverside ("County") invites sealed Bids for the construction of the following project ("Work"):

MECCA SPORTS PARK PROJECT

Bids shall be prepared in conformance with the Instructions to Bidders and other Bidding Documents. Bids must be received, by hand delivery or mail, by the Clerk of the Board located on the 1st floor of the County Administrative Center, 4080 Lemon Street, Riverside, CA 92501, no later than the Bid Closing Deadline of 2:00 p.m. on 11/18/21, to be thereafter on said date and at said location publicly opened and read aloud. The Bidder assumes sole responsibility for timely receipt of its Bid.

On and after 10/20/21, and up to ninety-six (96) hours prior to the Bid Closing Deadline, copies of Bidding Documents will be available to Bidders for pick-up by Bidder at, or for mailing to Bidder upon written request by Bidder submitted to, PlanIT Print Works & Reprographics, 39350 Berkey Drive, Palm Desert, CA 92211, (760) 345-2500. At the time of such pick-up or request for mailing, a non-refundable fee of one hundred dollars (\$100.00.) for each set of Bidding Documents shall be paid by Bidder by cash or by check or money order made payable to PlanIT Print Works & Reprographics. The Bidding Documents may also be viewed in person between the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday (except Holidays) at PlanIT Print Works & Reprographics, 39350 Berkey Drive, Palm Desert, CA 92211, (760) 345-2500.

Pursuant to Labor Code section 1771.1, any contractor bidding, or subcontractor to be listed on a bid proposal subject to Public Contract Code section 4104, shall not be qualified to bid after March 1, 2015, unless currently registered and qualified to perform public works pursuant to Labor Code section 1725.5. No Contractor or subcontractor may enter into a contract (after April 1, 2015) without proof of current registration to perform public works.

A mandatory Pre-Bid Conference will be conducted on 11/04/21, commencing promptly at 10:00 a.m., at 91-391 66th Avenue, Mecca, CA 92254. Attendance at the mandatory Pre-Bid Conference is required as a condition of bidding. Sign language services are available for the Pre-Bid Conference upon written request received by Anna Rodriguez at aarodriguez@rivco.org at least three (3) business days prior to the Pre-Bid Conference.

The Bidder receiving the Award by the County is required:

- (1) to furnish a Performance Bond and Payment Bond as provided in the Instructions to Bidders and other Bidding Documents;
- Award, to: (a) hold a contracting license, active and in good standing, issued by the Contractors State License Board for the State of California for the following license classification(s): B; and (b) hold, or designate a Subcontractor that holds, the certification(s) required by Applicable Laws to perform the following work: landscape and irrigation improvements, paving, lighting, plumbing, and grading; and
- (3) to comply with the provisions of the California Labor Code, including, without limitation, Sections 1771.4, 1773.1, 1774, 1775 and 1776 of the California Labor Code and including, without limitation, the obligations to pay the general prevailing rates of wages in the locality in which the Work is to be performed and comply with Section 1777.5 of the California Labor Code governing employment of apprentices. Copies of the prevailing rates of per diem wages are on file at California State Department of Industrial Relations, 464 West Fourth St., Suite 348, San Bernardino, CA 92401, and are available to any interested party on request.

THIS IS A PUBLIC WORKS PROJECT AND SUBJECT TO COMPLIANCE MONITORING AND ENFORCEMENT BY THE DEPARTMENT OF INDUSTRIAL RELATIONS. The awarded prime contractor shall post job site notices as prescribed by regulation starting January 1, 2015. Contractor or subcontractor shall furnish records specified in Labor Code section 1776 to the Labor Commissioner.

Substitution of securities for any moneys withheld by County shall be permitted as provided for by Section 22300 of the California Public Contract Code.

Capitalized terms used herein shall have the meanings assigned to them in the Bidding Documents. For information contact: Facilities Management, 3133 Mission Inn Avenue, Riverside, CA 92507.

INSTRUCTIONS TO BIDDERS

ARTICLE 1 GENERAL PROVISIONS

1.1 DEFINITIONS

Capitalized terms used on the Bidding Documents shall have the meanings assigned to them in the forms of Construction Contract and General Conditions that are included in the Bidding Documents. Capitalized terms not so defined shall have the meanings assigned to them in, or if none is assigned as reasonably interpreted according to the context of, the portion of the Bidding Documents where such terms are used.

1.2 SUMMARY OF PROJECT

- **1.2.1 Project Description**. The Project to be constructed generally consists of the following: Construction of an approximate 6.67 acres public park in Mecca, California. The identifying name of the Project is MECCA SPORTS PARK Project.
- **1.2.2** Contract Time. Substantial Completion of the Work must be achieved within two hundred fifty-six (256) Days from the Date of Commencement. Final Completion must be achieved within forty-five (45) Days after the occurrence of Substantial Completion.
- 1.2.3 Liquidated Damages. The Construction Contract includes provisions: (1) permitting the County to assess liquidated damages to the Contractor of \$500.00 per Day for each Day after the expiration of the Contract Time for Substantial Completion that the Work is not Substantially Completed by Contractor; and (2) for payment by County to Contractor of liquidated damages to Contractor of \$500.00 per Day for each Day of Compensable Delay for which Contractor is entitled to a Contract Adjustment of the Contract Time and Contract Price.
- 1.2.4 County Furnished Materials. County reserves the right to elect to furnish the following County Furnished Materials for incorporation by Contractor as part of the Work pursuant to an assignment of one or more County Materials Contract(s) in accordance with Section 2.5 of the General Conditions: N/A. Said County Materials Contract(s) are available for review by Bidders at Riverside County Facilities Management-Project Management Office, 44-199 Monroe Street, Suite B, Indio, CA 92201, (760) 863-2537. Bidder is solely responsible to familiarize itself prior to submission of its Bid with the terms and conditions of such County Materials Contract(s). County shall notify the successful Bidder prior to Award if the County elects to assign any of such County Materials Contracts to Contractor for incorporation Contractor of the County Furnished Materials as part of the Work.
- 1.2.5 Licensing. The Bidder to whom the Construction Contract for the Work is Awarded by the County is required, both at the time of the Bid Closing Deadline and at the time of Award, to: (1) hold a contracting license, active and in good standing, issued by the Contractors State License Board for the State of California for the following license classification(s): B; and (2) hold, or designate in the Designation of Subcontractors a Subcontractor that holds, the certification(s) required by Applicable Laws to perform the following work: landscape and irrigation improvements, paving, lighting, plumbing, and grading.
- 1.2.6 No Warranty by County. Bidders are solely responsible to satisfy themselves as to the suitability of any estimates, projections, budgets, criteria, surveys, reports, test data, recommendations, opinions, and other information provided by County relating to the Site, Work or Project (including, without limitation, all information contained in any Reference Documents) and nothing stated in the Bidding Documents, Contract Documents or in any other information provided by the County shall be construed as implying the creation or existence of any warranty, express or implied, on the part of the County with respect to the completeness, accuracy or sufficiency thereof.

ARTICLE 2 BIDDER'S REPRESENTATIONS

2.1 THE BIDDER BY SUBMITTING ITS BID REPRESENTS THAT:

- **2.1.1 Bidding Documents.** The Bidder has, in its capacity as contractor and not a design professional, carefully and thoroughly examined, compared and understood the Bidding Documents (including, without limitation, the Drawings, Specifications and Reference Documents identified in the Bidding Documents), and acting in that capacity has satisfied itself that the Bidding Documents are free of any errors, conflicts, ambiguities, lack of coordination and violations of Applicable Laws that might affect the Bidder's ability to complete the Work for the amount of its Bid and within the time period(s) for construction required by the Bidding Documents.
- 2.1.2 Site Information. In order to fully acquaint itself with all conditions, restrictions, obstructions, difficulties and other matters which might affect the Bidder's ability to complete the Work for the amount of its Bid and within the time period(s) for construction required by the Bidding Documents, the Bidder has carefully and thoroughly inspected: (1) the Site and its surroundings; (2) all Existing Improvements on the Site and their existing uses by the County, its invitees and the public; (3) routes of ingress and egress to and from the Site; (4) local conditions in the vicinity of the Site (including, without limitation, sources and availability of labor, materials and equipment); (5) the status of construction, if any, that is in-progress at the Site; and (6) all reports, data, as-built drawings and other information (including, without limitation, the Reference Documents identified in the Bidding Documents) concerning visible and concealed conditions (including, without limitation, locations and capacities of utility sources and lines) above and below the surface of the ground and in Existing Improvements that have been made available by the County to Bidders or that are disclosed by public records of the County of Riverside or the City in which the Project is located, and has correlated its observations with the requirements of the Bidding Documents.
- **2.1.3 Bid Compliance**. The Bid and other Bid Submittals are in compliance with the Bidding Documents.
- **2.1.4 No Exceptions**. The Bid is based upon the materials, equipment, systems and other work required by the Bidding Documents, without any exception, exclusion or qualification.
- 2.1.5 Legal Status. If the Bidder is a corporation, or if one or more of the partners or joint venturers of the Bidder (where the Bidder is a partnership or joint venture) is a corporation, such corporation(s) is(are) duly incorporated, authorized to do business and in good standing under the laws of the State of California.
- **2.1.6 Licensing.** Bidder currently holds and, if and when an Award is made to Bidder, Bidder will hold at the time of Award, a license, active and in good standing, issued by the Contractors State License Board for the State of California authorizing the Bidder to contract to perform work in the requisite license classification(s) stated in the Notice Inviting Bids and/or in these Instructions to Bidders.
- **2.1.7 Due Authorization**. The person or persons signing the Bid and other Bid Submittals on behalf of the Bidder are authorized to do so on behalf of the Bidder.
- **2.1.8 Balanced Bid.** Cost breakdowns of the Bid that are provided by the Bidder are balanced, reflecting in each line item category of Work a reasonable estimate of the Bidder's cost commitments to perform that category of Work and a proportionate share of overhead and profit.
- **2.1.9 Labor Compliance.** The Bid includes sufficient funds to enable Bidder to comply with, and Bidder will comply with, all of the applicable provisions of the California Labor Code, including, without limitation, payment of prevailing wages, maintenance and submission of weekly certified payrolls and hiring of apprentices.

2.2 MISREPRESENTATION BY BIDDER

The County may determine as unresponsive any Bid in which any statement or representation made or incorporated by reference in the Bid, including any Bid Submittal comprising the Bid, is false, incorrect or materially incomplete and misleading.

ARTICLE 3 BIDDING DOCUMENTS

3.1 COPIES

- **3.1.1** Availability. Copies of Bidding Documents will be available, on and after 10/20/2021, and up to ninety-six (96) hours prior to the Bid Closing Deadline, for pick-up by Bidder at, or for mailing to Bidder upon written request by Bidder submitted to, PlanIT Print Works & Reprographics, 39350 Berkey Drive, Palm Desert, CA 92211, (760) 345-2500. At the time of such pick-up or request for mailing, a non-refundable fee of one hundred dollars (\$100.00.) for each set of Bidding Documents shall be paid by Bidder by cash or by check or money order made payable to PlanIT Print Works & Reprographics. The Bidding Documents may also be viewed in person between the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday (except Holidays) at PlanIT Print Works & Reprographics, 39350 Berkey Drive, Palm Desert, CA 92211. Bidders may retain their copies of Bidding Documents.
- **3.1.2 Sub-Bidders**. Unless otherwise stated in the Notice Inviting Bids, the County assumes no obligation to distribute Bidding Documents directly to Sub-Bidders.
- **3.1.3** Complete Sets. The Bidder shall use complete sets of Bidding Documents in preparing its Bid. The County assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- **3.1.4 No License.** No license to Bidder is intended or conferred by the County's issuance to Bidders of copies of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

- 3.2.1 Examination by Bidder. The Bidder shall, with reasonable care and diligence in its capacity as a contractor and not a design professional, carefully and thoroughly examine the Bidding Documents and prior to the Bid Closing Deadline report to the County in writing by means of a request for clarification provided in accordance with Paragraph 3.2.3, below, any information contained in the Bidding Documents constituting an error, conflict, ambiguity, lack of coordination or violation of Applicable Laws that might affect the Bidder's ability to complete the Work for the amount of its Bid and within the time period(s) for construction required by the Bidding Documents. Failure by the Bidder to do so shall not relieve the Bidder from its representations set forth in these Instructions to Bidders nor serve as the basis for any claim by the Bidder that it was mistaken or misled in connection with the preparation of its Bid or its planning for construction of the Work.
- 3.2.2 Pre-Bid Conference. A mandatory Pre-Bid Conference will be conducted on 11/04/21, commencing promptly at 10:00 a.m., at 91-391 66th Avenue, Mecca, CA 92254. Attendance at the mandatory Pre-Bid Conference is required as a condition of bidding. Sign language services are available for the Pre-Bid Conference upon written request received by Anna Rodriguez at laarodriguez@rivco.org at least three (3) business days prior to the day of the Pre-Bid Conference. Regardless of whether the Pre-Bid Conference is described in the Bidding Documents as mandatory or optional, Bidder shall be deemed charged with knowledge of all facts, circumstances and other information that were apparent, available or provided to Bidders at the Pre-Bid Conference, including, without limitation, any and all of the physical conditions of the land and Existing Improvements at the Site that were visible or available for inspection or review by the Bidders attending the Pre-Bid Conference.

- **3.2.3** Requests for Clarification. If the Bidder requires clarification or interpretation of the Bidding Documents, it shall make a written request to County by a request for clarification. All requests for clarification of the Bidding Documents must be submitted, in writing, between the hours of 8:00 a.m. and 5:00 p.m. on any Day, Monday through Thursday (except Holidays) up to, including and no later than the three (3) Day prior to Bid Closing Deadline, by hand delivery, mail, or e-mail to the following: Project Management Office, 44-199 Monroe Street, Suite B. Indio, CA 92201, aarodriguez@rivco.org, phone: (760) 863-2537. No response will be made to requests for clarification received after that time.
- **3.2.4** Addenda. Interpretations, corrections and changes of the Bidding Documents will be made by Addenda. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding and the Bidder shall not rely upon them.
- **3.2.5 Communications**. The Bidder shall not, at any time during the bidding process following advertisement of the Notice Inviting Bids and prior to issuance of the Notice of Intent to Award, communicate with the County, Architect, County Consultants or any employee or representative of any of them, concerning the Project except by means of a written requests for clarification submitted by Bidder in accordance with Paragraph 3.2.3, above.

3.3 SUBSTITUTIONS

- 3.3.1 Requests for Substitutions. The Bidder shall make requests for Substitutions on the County's Request for Substitution form included in the Bidding Documents. Such requests shall comply with the requirements of the Bidding Documents, including without limitation, the Plans and Specifications. Without limitation to the other requirements of the Request for Substitution form, requests for Substitutions shall include: (1) a description of the material, equipment or other work that is to be replaced or eliminated by the Substitution; (2) a description of any other changes to the Work, Existing Improvements, the Site or the work of Separate Contractors that would be necessary if the proposed Substitution were incorporated as part of the Work; (3) a statement that the Bidder accepts responsibility for the inclusion in its Bid of all of the costs of implementing the Substitution, including, without limitation, the costs of any related changes to the Work, Existing Improvements, the Site or the work of Separate Contractors; (4) all drawings, performance and test data and other information necessary for an evaluation of the Substitution by the County, Architect and County Consultants; and (5) a statement that the Bidder understands and agrees that if the Substitution is not approved and the Bidder submits a Bid, Bidder will provide the Work as specified in the Bidding Documents without such Substitution. The burden of proof of the merit of a proposed Substitution is entirely upon the Bidder requesting the Substitution.
- **3.3.2 Deadline for Submission**. Any completed Request for Substitution form that Bidders wishes to have considered by County must be submitted, between the hours of 8:00 a.m. and 5:00 p.m. on any Day, Monday through Thursday (except Holidays) up to, including and no later than the seventh (7th) Day prior to the Bid Closing Deadline, in writing, by hand delivery, mail, or to the following: Project Management Office, 44-199 Monroe Street, Suite B, Indio, CA 92201, aerodriguez@rivco.org, phone: (760) 863-2537. No response will be made to any Requests for Substitution form received after that time.
- 3.3.3 Review by County. To the maximum extent permitted by Applicable Laws, approval or disapproval of a Substitution proposed by a Bidder is in the sole and absolute discretion of the County. The County's decision to approve or disapprove of a proposed Substitution shall be final and binding. An Addendum shall be issued to all Bidders describing any Substitution properly and timely requested prior to the Bid Closing Deadline that is approved by the County. Failure by County to respond to a properly and timely submitted Request for Substitution prior to 11:00 a.m. of the second (2nd) working day before the Bid Closing Deadline shall be automatically deemed to be a disapproval by County thereof.
- 3.3.4 Standards. In evaluating a Request for Substitution form submitted by a Bidder, the materials, products and equipment described in the Bidding Documents are generally viewed by the County as establishing the standards for function, dimension, appearance and quality to be met by the requested Substitution.

- **3.3.5 Performance by Bidder**. In the event the Bidder has submitted a Request for Substitution form and the request for Substitution is denied, or deemed denied, by the County and the Bidder thereafter submits a Bid and receives the Award, then the Bidder shall execute the Construction Contract and provide the Work as specified, without such Substitution and at no additional cost or expense to the County.
- **3.3.6 No Postponement**. Delays associated with the review, processing or approval of a Request for Substitution form submitted by Bidder shall not entitle Bidder to a postponement of the deadlines set forth in the Bidding Documents.
- **3.3.7 No Bid Adjustment**. Neither approval nor disapproval of a Request for Substitution form shall be grounds for adjustment of a Bid.

3.4 ADDENDA

- **3.4.1 Transmittal**. Addenda will be transmitted by County to all prospective Bidders who (1) attended and signed in at the Pre-Bid Conference (if any) or (2) have submitted a written request to County for notice of Addenda at Project Management Office, 44-199 Monroe Street, Suite B, Indio, CA 92201, including in such request the Bidder's name and address for mailing.
- **3.4.2 Inspection**. Copies of Addenda will also be made available for in-person inspection wherever Bidding Documents are on file for that purpose.
- 3.4.3 Issuance. Without limitation to the County's right to withdraw its request for Bids, Addenda may be issued up to, but not later than, seventy-two (72) hours prior to the Bid Closing Deadline; provided, however, that an Addendum withdrawing the request for Bids or one which postpones the Bid Closing Deadline may be issued at any time prior to the Bid Closing Deadline.
- **3.4.4** Receipt by Bidder. Failure of the Bidder to receive any Addendum shall not relieve the Bidder from any of its obligations under its Bid Submittal. The costs of performance by Bidder of all items of Work and other obligations contained in all Addenda issued by County shall be deemed included in the amount of the Bidder's Bid. The Bidder shall identify and list in its Bid all Addenda received and included in its Bid. The Bidder's failure to so acknowledge the receipt of all Addenda in its Bid may be asserted by the County as a basis for determining its Bid non-responsive.

ARTICLE 4 BIDDING PROCEDURES

4.1 PREPARATION OF BIDS

- **4.1.1 Bid Form**. Bidder shall state its Bid price using the Bid Form included in the Bidding Documents. A Bid presented on other forms shall be disregarded.
 - **4.1.2** Blanks. All blanks on the Bid Form shall be legibly executed in a nonerasable medium.
- **4.1.3 Figures**. Sums shall be expressed in a Bid in both words and figures. In case of discrepancy, the amount written in words shall govern.
- **4.1.4 Alterations.** Interlineations, alterations and erasures in a Bid must be initialed by each and all of the signer(s) of the Bid.
- **4.1.5** Alternative Bids. Alternative Bids will not be accepted unless specifically requested in the Bidding Documents.
- **4.1.6 Multiple Bids**. Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the Bid Security, state in its Bid the Bidder's refusal to

accept the Award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on or conditions to its Bid Form nor qualify its Bid in any other manner.

- **4.1.7 Name of Bidder**. Each copy of the Bid shall state the legal name of the Bidder and its legal form of business (i.e., sole proprietor, partnership, joint venture or corporation). Bids shall be submitted in the name of Bidder that appears in the Bidder's license issued by the State of California Contractors State License Board for the license classification(s) that the Bidder is required to hold pursuant to the Notice Inviting Bids. Each Bid shall bear the longhand signature and printed name and title of the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.
- **4.1.8** Bid Submittals. Each Bid shall include the following Bid Submittals executed in the manner required by the Bidding Documents:
 - .1 Bid Form, in the form specified in the Bidding Documents;
- .2 Bid Security, consisting of either (a) a Bid Bond, in the form specified in the Bidding Documents, or (b) such other form of Bid Security as is permitted by these Instructions to Bidders;
 - .3 Bid Security Receipt, in the form specified in the Bidding Documents;
- .4 Designation of Subcontractors, in the form specified in the Bidding Documents; and
 - .5 Non-Collusion Declaration, in the form specified in the Bidding Documents.
 - .6 Iran Contracting Act Certification
- **4.1.9 Modifications by Bidder.** Changes or additions to the Bid Form, recapitulations of the Work bid upon, conditions or limitations on the Work to be done, alternative proposals or any other modification of the Bid Form not specifically called for by the Bidding Documents may result in the County's rejection of the Bid as being non-responsive. No oral, telephonic, electronic, facsimile or telegraphic modification of any Bid submitted will be considered.
- Designation of Subcontractors. The Bidder shall submit, on the Designation of Subcontractors form specified in the Bidding Documents, a list of the proposed Subcontractors and the portion of Work to be done by each Subcontractor as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code Sections 4100 et seq). Unless the Notice Inviting Bids expressly states otherwise, any information requested in the Designation of Subcontractors other than a Subcontractor's name and location of business must be submitted as part of the Bid and may not be submitted after the Bid Closing Deadline. If additional sheets are needed to provide the information requested in the Designation of Subcontractors, they shall be included by Bidder as part of its Bid and shall accompany the Designation of Subcontractors. If bidding of Alternates is called for by the Bidding Documents and the Bidder intends to use different or additional Subcontractors or if acceptance of the Alternate by County would cause the value of the Work to be performed by a Subcontractor not identified in the Designation of Subcontractors accompanying the Base Bid to exceed the threshold dollar amount required by Applicable Law for listing of Subcontractors, then a separate Designation of Subcontractors form must be submitted for each such Alternate. If the Bidding Documents require the performance of Work for which the Bidder or a Subcontractor must hold a certification required by Applicable Laws to perform the work, and if the Bidder intends to use a Subcontractor holding such certification to satisfy said requirement and to perform such Work, then Bidder shall, without limitation to any other information that may be required by Applicable Laws, include in the Designation of Subcontractors the name of such Subcontractor and a description of the Work requiring such certification that the Subcontractor will be performing.

- 4.1.11 Builder's All Risk (Course of Construction) Insurance. The Bid Form states whether the Bidder shall include Builder's All Risk (Course of Construction) Insurance for the Project. If the Bid Form states that such insurance shall be included by the Bidder in its Bid, then Contractor shall provide a policy of Builder's All Risk (Course of Construction) insurance coverage that conforms to the requirements set forth in Subparagraph 11.1.1.5 and the other applicable provisions of Article 11 of the General Conditions. NOTWITHSTANDING THE FOREGOING, COUNTY RETAINS THE RIGHT exercised at any time prior to award TO ELECT TO USE ITS OWN BUILDER'S ALL RISK (COURSE OF CONSTRUCTION) INSURANCE and in the event County so elects to deduct the price for such insurance that is stated in Contractor's Bid, or if not so stated the amount included by Contractor for such insurance in the preparation of the Contractor's Bid, from the Contract Price by means of a Contract Adjustment pursuant to Change Order or Unilateral Change Order. If the County so provides the All Risk (Course of Construction) insurance for the Project, then Contractor shall assume the cost of any and all applicable policy deductibles (currently, \$50,000 per occurrence) and shall insure its own machinery, equipment, tools, etc. from any loss of any nature whatsoever.
- **4.1.12** Interested Bidder. No person, partnership, joint venture, corporation or other association of persons or entities submitting a Bid shall be allowed to submit more than one Bid or be interested in a Bid submitted by any other Bidder. A person, partnership, joint venture, corporation or other association of persons or entities that, in the capacity as a Subcontractor to a Bidder, has quoted a bid price to a Bidder is not disqualified from submitting a proposal or quoting prices to other Bidders or making a Bid as a general contractor for the entirety of the Work. For the purpose of this Paragraph, "interested in" means having a managerial or financial interest in another Bidder.
- 4.1.13 Prequalification. If the County has stated in the Notice Inviting Bids that bidding is limited only to bidders that were prequalified pursuant to a Prequalification conducted by County, and if Bidder was previously prequalified pursuant to that process to submit a Bid for the Project, then in addition to the requirements of the Bidding Documents the Bidder must comply with any additional requirements for bidding that are set forth in the Prequalification Documents, including, without limitation, compliance by Bidder with any continuing responsibilities for disclosure of any changes in ownership, management or financial condition. If the Bidder has been prequalified to submit a Bid for the Project it shall, if requested by County, submit prior to or with its Bid any certification(s) that the County is authorized to request by the terms of the Prequalification Documents governing the Bidder's prequalification.
- **4.1.14 Applicable Laws**. All Bids must be submitted, filed, made and executed in accordance with Applicable Laws relating to bids for contracts of the nature provided for by the Bidding Documents, whether such Applicable Laws are expressly referred to herein or not.
 - 4.1.15 Non-Transferable. A Bid is non-transferable.
- **4.1.16 Registration with Department of Industrial Relations**. Pursuant to Labor Code section 1771.1, any contractor bidding, or subcontractor to be listed on a bid proposal subject to Public Contract Code section 4104, shall not be qualified to bid after March 1, 2015, unless currently registered and qualified to perform public works pursuant to Labor Code section 1725.5. No contractor or subcontractor may enter into a contract after April 1, 2015, without proof of current registration to perform public works.

4.2 BID SECURITY

4.2.1 Forms of Bid Security. Each Bid shall be accompanied by a Bid Security in the form of (1) cash, (2) a certified or cashier's check made payable to the County or (3) a Bid Bond (using the form of Bid Bond included in the Bidding Documents) issued by an Admitted Surety, in an amount equal to at least ten percent (10%) of the Bid Amount, as a guarantee that the Bidder, if awarded the Construction Contract, will enter into a Construction Contract with the County and furnish the Performance Bond, Payment Bond and other Post-Award Submittals required by the Bidding Documents. Should the Bidder refuse to enter into the Construction Contract or fail to furnish the Performance Bond, Payment Bond or any other Post-Award Submittal, then the Bid Security shall be forfeited to the County in an amount equal to the difference between the amount of Bidder's Bid Amount and the amount for which the County may procure the work

from another Bidder plus the costs to the County of redrafting, redrawing and republishing the Bidding Documents.

- **4.2.2** Retention by County. The County will have the right to retain the Bid Security of any Bidder to whom an Award is being considered until either (1) the Construction Contract has been executed and the Performance Bond, Payment Bonds and other Post-Award Submittals have been furnished, or (2) all Bids have been rejected.
- **4.2.3 Return by County.** Bid Security of an unsuccessful Bidder will be returned no later than sixty (60) Days after the Award by the County. Bid Security of the successful Bidder will be returned upon signing of a Construction Contract by the Bidder and County and submission by Bidder to the County of the Performance Bond, Payment Bond and other Post-Award Submittals in accordance with the requirements of the Bidding Documents.

4.3 SUBMISSION OF BIDS

- **4.3.1 Sealed Envelope**. All copies of the Bidder's Bid, Bid Security and other Bid Submittals shall be enclosed by the Bidder in a sealed opaque envelope. Said envelope, as well as any other, outer envelope or packaging in which said envelope may have been placed by Bidder or the carrier for delivery, shall be addressed and delivered as provided in the Notice Inviting Bids and shall be clearly and conspicuously labeled with the Project name, the Bidder's name and address and the identifying name of the Project as set forth in Paragraph 1.2.1, above.
- **4.3.2 Deposit**. Bids shall be hand delivered to, or received by mail at, the Clerk of the Board located on the 1st floor of the County Administrative Center, 4080 Lemon Street, Riverside, CA 92501, at any time Monday through Thursday (excepting Holidays) between the hours of 8:00 a.m., to 5:00 p.m. up to the Bid Closing Deadline of 2:00 p.m. on 11/18/21. Bids must be received at the designated location prior to the Bid Closing Deadline. Bids, or any Bid Submittal comprising a Bid, that is received after the Bid Closing Deadline will be returned unopened.
- **4.3.3 Postponement.** The County reserves the right to postpone the Bid Closing Deadline by issuance of an Addendum to the Bidding Documents at any time prior to the Bid Closing Deadline.
- **4.3.4 Timely Receipt**. The Bidder assumes full and sole responsibility for timely receipt of its Bid, including its Bid Security and all other Bid Submittals, at the location designated in the Bidding Documents for receipt of Bid.
- **4.3.5 Delivery Methods.** Deposit of Bids shall be by hand delivery or mail, only. **Oral**, telephonic, telegraphic, facsimile or other electronic transmission is not permitted.

4.4 WITHDRAWAL OR RESUBMISSION OF BID

- **4.4.1 Before Bid Closing Deadline**. Prior to the Bid Closing Deadline, a Bid may be withdrawn by notice to the County at the place designated for receipt of Bids stated in the Notice Inviting Bids. Such notice shall be in writing and signed by the Bidder. Partial withdrawal of a Bid or any Bid Submittal is not permitted.
- **4.4.2 After Bid Closing Deadline**. Except as otherwise permitted by these Instructions to Bidders, each Bid shall constitute an offer that shall remain open for a period of sixty (60) Days after the Bid Closing Deadline and during that period of time shall not, without the written consent of the County, be modified, withdrawn or canceled by the Bidder.
 - **4.4.3 Resubmission**. Withdrawn Bids may be resubmitted up to the Bid Closing Deadline.
- **4.4.4 Bid Security**. If a Bid is withdrawn and re-submitted, the amount of Bid Security shall be based on the Bid Amount based on the Bid as resubmitted.

4.5	BID ALT 4.5.1	ERNATES Alternates.	The Bi	dding	Documents 🖾 do 🔲 do not include Alternates.
the E	Bidder dete	such Alterna	ate shall he Alter	be in	s are included in the Bidding Documents, then a Bid amount for included in the spaces provided in the Bid Form for that purpose. If does not affect the amount of its Base Bid, then the Bidder shall
	4.5.3 e box prov applies):				e the Bidding Documents include Alternates, the method checked determine the lowest Bid price (only wording following a checked
					: The lowest Bid price shall be the lowest Base Bid price without der's prices on the Alternates.
					The lowest Bid price shall be the lowest total of the Base Bid price tes that will be used for the purpose of determining the lowest Bid
			1.		
			2.	-	
			3.		
			4.		
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		price and the Bidder's am	ne follow ount for r equal t	ing A	3: The lowest Bid price shall be the lowest total of the Base Bid Alternates taken in the order as shown below which, when the Alternate is added to or deducted from such Base Bid price, are a funding amount publicly disclosed by the County before the first
			1.	1	
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		prevent any	informat	ion th	The lowest Bid price shall be determined in a manner that will hat would identify any of the Bidders or any of their Subcontractors e County before the ranking of Bidders from lowest to highest has

4.5.4 Bid Escrow Provisions. The following provisions apply only if <u>Subparagraph 4.5.4.1</u>, below, provides that a Bid Escrow will be used for the Project.

.1 Bid Escrow. A Bid Escrow will will not be used for the Project.

been determined.

- .2 Escrow Bid Documents. Escrow Bid Documents, as that term is defined in the General Conditions, shall: (1) be in English; (2) be legible; (3) be detailed and comprehensive, showing a complete breakdown of quantities, prices, productivity calculations, crew sizes, direct and repair labor, plant and equipment usage, general conditions (i.e., direct overhead) costs, indirect overhead and profit and contingencies, and all other numerical factors used to compute the Bid (provided, however, with respect to Bid items having an estimated cost under \$10,000, estimated unit costs are acceptable without detailed cost estimates provided that the indirect costs, contingencies and markups are shown and allocated); (4) if estimates are based, in whole or in part, on a Geological Baseline Report (GBR) or other report on surface or subsurface conditions at the Site, clearly reference any statements, data, opinions or recommendations used or relied upon from the GBR or such other report; and (5) if the Bidder's Bid is based on a price from a Sub-Bidder that exceeds five percent (5%) of the Bid Amount, provide documentation and electronic files from such Sub-Bidder relating to its bid submitted to Bidder that comply with all of the requirements herein for Escrow Bid Documents, in which case such documents and electronic files from such Sub-Bidder shall be considered and submitted by Bidder as part of the Escrow Bid Documents that are required to be submitted pursuant to this Paragraph 4.5.4.
- .3 Deposit with County. Each of the Bidders submitting the apparent three (3) lowest Bid prices shall place its Escrow Bid Documents in a sealed container, marked on the outside with (1) the words "Escrow Bid Documents", (2) the name of the Project, (3) Bidder's name and (4) the date of submission. The sealed container with the Escrow Bid Documents shall be delivered by such Bidders to the County, at the place for submission of Bids, within twenty-four (24) hours after the Bid Closing Deadline.
- **Review by County.** County will review the Escrow Bid Documents of the apparent successful Bidder to ensure that the Escrow Bid Documents comply with the requirements of this <u>Paragraph 4.5.4</u>, and any other requirements of the Bidding Documents relating to use of a bid escrow. Such review shall not constitute approval or acceptance by County of the proposed means, methods, techniques or procedures of the Bidder, confirmation by County that the Escrow Bid Documents comply with the Bidding Documents, nor shall such review or alter any term or condition of the Contract Documents.
- .5 Noncompliance by Bidder. Failure by Bidder to comply with any of the requirements of this Paragraph 4.5.4 or any other requirements of the Bidding Documents relating to use of a bid escrow shall be grounds for County to determine that the Bidder's Bid is non-responsive. Without limitation to the foregoing, County shall have the right, in the exercise of its sole and absolute discretion, if it finds that the Escrow Bid Documents submitted by a Bidder do not so comply to: (1) direct that the Bidder submit the required documentation and electronic files within twenty-four (24) hours of written request by County; and/or (2) discuss with the Bidder any questions that may exist concerning the Escrow Bid Documents in an effort to clarify and reconcile the information contained in the Escrow Bid Documents.
- .6 Escrow Procedure. The Escrow Bid Documents of the successful Bidder receiving the Award shall be placed and held in storage at a safe and secure location, at the expense of County, for the duration of the performance of the Work and until the later of (1) ninety (90) Days after Final Completion is achieved or (2) final resolution by settlement or final judgment in legal proceedings of all disputes relating to the Construction Contract or Work (the "Escrow Bid Documents Storage Period"). Escrow Bid Documents of the unsuccessful Bidders will be returned to them within sixty (60) Days following Award. Upon expiration of the Escrow Bid Documents Storage Period, County shall destroy or return to Bidder, and shall not retain, copies of that Bidder's Escrow Bid Documents. County will take reasonable steps to protect and preserve the Escrow Bid Documents from damage; however, County shall not be liable for damage or loss occasioned by circumstances beyond the reasonable control of County, such as, without limitation, fire or Acts of God.
- .7 Bidder's Warranty and Representation. Submission by a Bidder of its Escrow Bid Documents shall constitute a warranty and representation by such Bidder that it has no other written documents or electronic files containing information used in computing its Bid that are within the definition of Escrow Bid Documents as defined in the Bidding Documents and that Bidder agrees, in the event it receives Award of the Construction Contract, that it shall have no right to submit or offer into evidence in any legal proceedings in support of any request for Contract Adjustment, Claim or other request for any

legal remedy or relief, any documentation or electronic files constituting Escrow Bid Documents that were not included in the Escrow Bid Documents submitted by Bidder.

- **.8 Not Contract Documents**. The contents of the Escrow Bid Documents shall not be considered part of the Contract Documents.
- .9 Property Rights, Confidentiality. The Escrow Bid Documents are, and shall always remain, the property and confidential information of the Bidder, subject to rights of review by the County and Bidder and other Permitted Uses as further described below. To the maximum extent permitted by Applicable Laws, County shall safeguard the Escrow Bid Documents, and all information contained therein, against disclosure and in so doing shall not disclose the Escrow Bid Documents to anyone who is not an employee, attorney or consultant of the County having a reason and need to review the Escrow Bid Documents in connection with one or more of the Permitted Uses.
- .10 Permitted Uses. The Escrow Bid Documents may be opened, examined and used at any time by County or Bidder (including, without limitation, admission into evidence in any legal proceedings) for the purposes of aiding in an evaluation by County or Bidder, or a resolution by negotiation, settlement or legal proceedings, of a dispute between County and Bidder involving: (1) the submission or content of the Escrow Bid Documents submitted by Bidder; (2) a request by Bidder for relief from its Bid or for relief from any other obligation of Bidder in connection with the bidding process; (3) questions or disputes over the Bidder's right to, or the terms of, a Contract Adjustment; or (4) a Claim or other demand by County or Bidder for a legal remedy or recovery of money ("Permitted Uses"). Escrow Bid Documents shall not be used for any other purpose.
- .11 Examination. Examination of the Escrow Bid Documents shall be in the presence of a representative of both County and Contractor unless a party fails, after reasonable notice from the party seeking to examine the Escrow Bid Documents, to arrange for a representative to be present, in which case the examination may take place by the requesting party alone. Copies of any portion of the Escrow Bid Documents may be made by either County or Bidder at the time of examination.

ARTICLE 5 CONSIDERATION OF BIDS

5.1 OPENING OF BIDS

All Bids shall be publicly opened and read aloud at the location for receipt of Bids on the Day of the Bid Closing Deadline. Without limitation to the County's right to reject all Bids, if two or more responsive Bids from responsible Bidders are the same and lowest, then the successful Bidder may be chosen by the County.

5.2 REJECTION OF BIDS

- **5.2.1** Rejection of Bid. Any Bid that is in any way incomplete or irregular is subject to rejection by County.
- **5.2.2** Rejection of All Bids. The County has the right to reject all Bids, with or without extending the opportunity to any Bidder to re-bid.

5.3 WAIVER OF IRREGULARITIES

The County has the right to waive informalities and irregularities in a Bid received or in the bidding process.

5.4 AWARD

- **5.4.1** Basis of Award. It is the intent of the County to Award the Construction Contract to the responsible Bidder submitting a Bid in accordance with the requirements of the Bidding Documents for the lowest Bid Amount.
- 5.4.2 Notice of Award. Within fourteen (14) Days following public opening and reading of Bids, the County will issue a Notice of Intent to Award identifying the name of the Bidder to whom the County intends to Award the Construction Contract. Such notice will be mailed to all Bidders submitting a Bid. The County may, in its sole and absolute discretion, elect to extend the time for its issuance of its Notice of Intent to Award.
- **5.4.3** Bid Protests. Any Bidder submitting a Bid to the County may file a protest of the County's proposed Award of the Construction Contract provided that each and all of the following are complied with:
 - .1 The bid protest is in writing.
- .2 The bid protest is both: (1) filed with and received by the Clerk of the Board at the following address, 4080 Lemon St. 1st Floor Riverside, CA 92501, not more than five (5) Days following the date of issuance of the Notice of Intent to Award. Failure to timely file and serve the bid protest as aforestated shall constitute grounds for the County's denial of the bid protest without consideration of the grounds stated therein.
- .3 The written bid protest sets forth, in detail, all grounds for the bid protest, including without limitation all facts, supporting documentation, legal authorities and argument in support of the grounds for the bid protest. Any grounds not set forth in the bid protest shall be deemed waived. All factual contentions must be supported by competent, admissible and credible evidence. Any bid protest not conforming to the foregoing shall be rejected as invalid.
- .4 Provided that a bid protest is filed in conformity with the foregoing, the Director of Facilities Management, such individual(s) as may be designated by the Director of Facilities Management in his/her discretion, shall review and evaluate the basis of the bid protest, and shall provide a written decision to the Bidder submitting the bid protest, either concurring with or denying the bid protest. The written decision of the Director of Facilities Management or his/her designee shall be final, unless overturned by the Board of Supervisors.

ARTICLE 6 POST- AWARD

6.1 POST- AWARD SUBMITTALS

- **6.1.1** Construction Contract. The Bidder identified in the Notice of Intent to Award as the successful Bidder to receive Award by the County shall execute the Construction Contract and return it to the County within five (5) Days after issuance by County to Bidder of the Construction Contract from the County and prior to execution of the Construction Contract by County.
- **6.1.2** Other Post-Award Submittals. Within the time periods set forth below, the Bidder identified in the Notice of Intent to Award as the successful Bidder shall submit the following additional Post-Award Submittals, completed and signed in the manner required by the Bidding Documents, to the County at 3133 Mission Inn Avenue, Riverside, CA 92501:
- .1 within ten (10) Days after issuance by County to Bidder of the Notice of Intent to Award and prior to commencement of the Work, such Bidder shall submit to County the following:

- (1) Performance Bond and Payment Bond (issued by Surety);
- (2) Evidence of Insurance, in the form specified in the Bidding Documents;
- (3) Workers' Compensation Certificate, in the form specified in the Bidding

Documents;

- (4) Declaration of Sufficiency of Funds (required only if the Bidder has not entered into a collective bargaining agreement covering the workers to be employed for performance of the Work), in the form specified in the Bidding Documents;
- .2 within twenty-one (21) Days after issuance by County to Bidder of the Notice of Intent to Award, such Bidder shall submit to the County the following:
- (1) Construction Schedule, prepared by Bidder in the manner required by Section 3.9 of the General Conditions and Section 01 31 00 of the Specifications; and
- (2) Schedule of Values, prepared by Bidder in the manner required by <u>Section</u> 9.3 of the General Conditions and <u>Section</u> 1.1.124 of the Specifications.
- **6.1.3 Failure to Submit.** Failure of the successful Bidder to submit any the Post-Award Submittals specified in <u>Paragraphs 6.1.1 and 6.1.2</u>, above, within the time periods specified therein shall be deemed to be a failure or refusal to execute the Construction Contract and shall be cause for forfeiture of such Bidder's Bid Security.

6.2 BIDDER RESPONSIBILITY

County reserves the right to request that any Bidder submit, as a condition of Award, information demonstrating that the Bidder and/or any of the Subcontractors listed in the Designation of Subcontractors submitted by Bidder, is financially and in all other respects possessed of the attributes of trustworthiness, as well as quality, fitness, capacity and experience, to satisfactorily perform under the terms and conditions of the Bidding Documents, Contract Documents and its Bid. Bidder shall comply with such request by submitting the information requested within five (5) Days of receipt of County's request. Failure to do so may be treated by County as a grounds to reject Bidder's Bid. Failure by the County to make such a request shall not constitute a waiver of its right to determine that Bidder or any such Subcontractor is not responsible to perform the Work.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

- 7.1.1 Performance and Payment Bonds. The successful Bidder will be required to furnish: (1) a Performance Bond in the form included in the Bidding Documents guaranteeing faithful performance of all obligations under the Construction Contract; and (2) a Payment Bond that complies with the requirements of Civil Code Section 9554 in the form included in the Bidding Documents. The penal sums of the Performance Bond and Payment Bond shall each be initially in the amount of one hundred percent (100%) of the Contract Price. The penal sum shall be increased for Contract Adjustments increasing the Contract Price that are authorized by Change Order or Unilateral Change Orders.
- **7.1.2** Cost of Bonds. The cost of Performance Bonds and Payment Bonds shall be deemed included in the amount of a Bidder's Bid.
- **7.1.3** Surety. Both the Performance Bond and Payment Bond shall be issued by an Admitted Surety. The Surety on the Performance Bond shall have an A.M. Best's Insurance Rating of A:VIII (A:8) or better.

7.2 TIME OF DELIVERY AND FORM OF BONDS

- **7.2.1** Submission by Bidder. Within the time period set forth in <u>Subparagraph 6.1.2.1</u>, above, the successful Bidder shall deliver the required Performance Bond and Payment Bond to the County fully executed and issued by the Bidder's Surety(ies).
- **7.2.2 Execution of Bonds.** Notary acknowledgements of the signatures of the Bidder and Surety(ies) is required. The attorney-in-fact who executes the required Performance Bond or Payment Bond on behalf of a Surety shall affix thereto a certified and current copy of the power of attorney authorizing such attorney-in-fact to execute same on behalf of such Surety.

ARTICLE 8 CONSTRUCTION CONTRACT

8.1 EXECUTION OF CONTRACT

The successful Bidder shall execute the Construction Contract in the form included in the Bidding Documents.

8.2 BOARD APPROVAL

The Construction Contract shall not be binding upon the County until it has been awarded by the Director of Facilities Management or Board of Supervisors, and executed by the Board Chair, or designee.

BID FORM

TO THE GOVERNING BOARD OF THE COUNTY OF RIVERSIDE: Date: Bidder: The undersigned Bidder, having carefully examined the Bidding Documents for the following Project: Mecca Sports Park Project, including, without limitation, the Plans and Specifications made part thereof, and taking into consideration all matters disclosed thereby, all matters of which Bidder is charged with knowledge by the terms thereof and all matters that are reasonably ascertainable by Bidder in the exercise of its duties of inquiry or investigation created by the terms set forth in the Bidding Documents (including, without limitation, the terms of Section 3.2 of the General Conditions, proposes, agrees to furnish in strict accordance with the Contract Documents all of the following: labor, materials, equipment, services, transportation; permits, licenses and taxes, Builder's Risk (Course of Construction) Insurance coverage in accordance with the terms of Subparagraph 11.1.1.5 of the General Conditions; and all other work, services and other things necessary for the undersigned to perform its obligations under the Contract Documents, excepting only those that are expressly stated in the Bidding Documents to be the responsibility of County, for the total Base Bid price of (state in figures) \$ (state in words) dollars The foregoing Base Bid is submitted based upon and taking into consideration all of modifications and additions to the Bid Documents and other information set forth in each Addendum listed below, receipt and review of which is hereby acknowledged by Bidder (state below each and every Addendum number and date): Addendum No. Date: Addendum No. Date: Addendum No. Date: Addendum No. Date: Addendum No. Date:

Addendum No.

Addendum No.

Date:

Date:

Subject to County's acceptance of such Alternate(s) in the manner set forth in the Instructions to Bidders, the foregoing Base Bid shall be adjusted as hereinafter stated for the following Alternates set forth in the Bidding Documents and/or the above-listed Addenda:

	Amount and figures)		State if Amount is an "Add" or "Deduct" to Base Bid or, if Base Bid is Not Affected, Enter "No Change"
Alternate 1: Course of Construction Insu	rance	10.70	
Figures: \$ Words:	Dollars	Cents	☐ Add ☑ Deduct ☐ No Change
Alternate 2: Kiosko			
Figures: \$ Words:	Dollars	Cents	☑ Add☐ Deduct☐ No Change
Alternate 3: Musco Lights - West Side			77.
Figures: \$ Words:	Dollars	Cents	☑ Add☐ Deduct☐ No Change
Alternate 4: Splash Pad			
Figures: \$ Words:	Dollars	Cents	☑ Add☐ Deduct☐ No Change
Alternate 5: insert description here			
Figures: \$ Words:	Dollars	Cents	☐ Add ☐ Deduct ☐ No Change

THE UNDERSIGNED BIDDER HEREBY MAKES THE FOLLOWING REPRESENTATIONS AND COVENANTS:

- 1. Except as otherwise permitted by the Instructions to Bidders, this Bid shall remain open for a period of sixty (60) Days after the Bid Closing Deadline (as defined in the Bidding Documents) and during that period of time shall not, without the written consent of County, be modified, withdrawn or canceled by the Bidder.
- **2.** Bidder adopts and incorporates into this Bid all of the representations set forth in the Instructions to Bidders and hereby warrants that all such representations are true and correct.
- 3. The Bid Security submitted by Bidder is given as a guarantee that if Award of the Construction Contract that is the subject of this Bid is made to Bidder that Bidder will execute the Construction Contract and furnish the Performance Bond, Payment Bonds, evidence of insurance and other documents that Bidder is required to submit under the terms of the Bidding Documents, and in the event that the Bidder fails or refuses to execute and deliver same, such Bid Security shall be charged with the all losses and damages suffered by County as a result thereof and permitted by Applicable Law, including, without limitation, the difference between the amount of the Bid and amount for which the County may legally contract with another party to perform the Project (if such latter amount be greater than the Bid), costs of publication, and all other Losses suffered by County (including, without limitation, those associated with Delay to the Project).
- **4**. Capitalized terms used in this Bid Form shall have the meanings assigned to them in the Bidding Documents.

Individual Bidder

Name of Bidder:	
Ву:	
(Signature)	
Print Name:	
Title:	
Date:	
Business Address:	
Business Telephone:	
Business Fax:	
Business E-mail:	
Contractor's License:	
Dept. of Industrial Relations	
Registration No:	
Corporation Bidder	
Corporate Name	
of Bidder:	Space for Corporate Seal and Attestation
	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation:	Space for Corporate Seal and Attestation
of Bidder:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature)	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date: Business Address:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date: Business Address: Business Telephone:	Space for Corporate Seal and Attestation
of Bidder: State of Incorporation: By: (Signature) Print Name: Title: Date: Business Address: Business Telephone: Business Fax:	Space for Corporate Seal and Attestation

Partnership Bidder

Name of Bidder:	
By:	
(Signature)	
Print Name:	
Title:	
Date:	
Business Address:	
Business Telephone:	
Business Fax:	
Business E-mail:	
Contractor's License:	
Dept. of Industrial Relations	
Registration No:	
If additional partners are signing, attach additional sheets se	etting fortif the above signature information for each
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name	s/are a corporation, then for each such corporate
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner:	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner: State of Incorporation:	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner:	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner: State of Incorporation: By: (Signature)	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach a	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner: State of Incorporation: By: (Signature)	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach additional shee	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if no Corporate Name of Partner: State of Incorporation: By: (Signature) Print Name: Title:	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach additional shee	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach additional shee	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach additional shee	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the followi	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the followi	s/are a corporation, then for each such corporate ecessary):
signing partner. If the partner or partners signing on behalf of the Bidder is partner complete the following (attach additional sheets, if note that the following (attach additional sheets) at the following (attach additional sheets) at the following (attach additional sheets) at the following (attach additional sh	s/are a corporation, then for each such corporate ecessary):

Joint Venture Bidder

Name of Bidder:	
By:	
(Signature)	
Print Name:	
Title:	
Date:	
Business Address:	
Business Telephone:	
Business Fax:	
Business E-mail:	
Contractor's License:	
Dept. of Industrial Relations	
Registration No:	
If the joint venture partner or partners signing on behalt corporate joint venture partner complete the following (a Corporate Name of Partner:	f of the Bidder is/are a corporation, then for each such attach additional sheets, if necessary): Space for Corporate Seal and Attestation
State of Incorporation:	
By:	
(Signature)	
Print Name:	
Title:	
Date:	
Date:	
Date:	
Date: Business Address:	
Date:	
Date: Business Address:	
Date: Business Address: Business Telephone:	
Date: Business Address: Business Telephone: Business Fax:	

Project No.	FM08100009946
Bond No.	

BID BOND

(Public Work – Public Contract Code Section 20129 (a))

KNO	OW ALL MEN BY THESE PRESENTS THAT	
WH	EREAS, The undersigned	("Principal") is herewith submitting
		d 20, in the amount of
(\$ Amount") fo Park Project	or the award by County to Principal of a co	unt, as defined in the Instructions to Bidders] ("Bid ntract ("Contract") for the following: Mecca Sports
ANI	D, WHEREAS, Principal is obligated as a co	ondition of said Bid to submit security pursuant to
Public Cont	ract Code Section 20129 (a) in the amour	nt of ten percent (10%) of the Bid Amount, which
security may	y be in the form of a Bid Bond issued by ar	n admitted surety insurer pursuant to Code of Civil
Procedure S	Section 995.120 ("Admitted Surety");	
NO	W THEREFORE, the Principal and	("Surety"), an Admitted Surety,
are held and	firmly bound unto the County in the penal su	ım of
	(\$) for the payment of which sum in
		made, we, Principal and Surety, bind ourselves, our jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that if Principal is awarded the Contract upon such Bid and thereafter within the period of time specified in County's bidding documents governing the bidding process applicable to such Bid ("Bidding Documents") enters into the Contract with County on the terms and conditions required by the Bidding Documents and furnishes the performance and payment bonds, evidence of insurance and other documents that Principal is required to submit under the terms of the Bidding Documents, then this obligation shall be null and void; otherwise, it shall remain in full force and effect and the sum guaranteed by this bond shall, at the option of County, be forfeited to County to pay all losses and damages suffered by County as a result thereof and permitted by applicable law, including, without limitation, the difference between the Bid Amount and amount for which the County may legally contract with another party to perform the Work (if such latter amount be greater than the Bid Amount), costs of publication, and all other losses and damages suffered by County (including, without limitation, those associated with delay to the Project); provided, however, that Surety's liability shall not exceed the penal amount of this bond.

Surety, for value received, hereby agrees that no change, extension of time, alteration or addition to the terms of the Contract or the Bidding Documents, or to the work to be performed thereunder, nor any withdrawal of the Bid in a manner not permitted by the requirements of the Bidding Documents shall in any way

extensions of time, alterations or additions.	s nereby waive notice of any such change:
IN WITNESS WHEREOF the undersigned parties has several seals this day of, 20, the name a being hereto affixed and these presents duly signed by its undersit of its governing body.	and corporate seal of each corporate part
	Affix Seal if Corporation
(Firm Name – Principal)	
(Business Address)	
Ву	
(Original Signature)	
(Title)	
(Corporation Name – Surety)	Affix Corporate Seal
(Business Address)	
Ву	
(Original Signature) ATTORNEY-IN-FACT	

Note: Notary acknowledgment for Surety's signature and Surety's Power of Attorney must be included or attached

BID SECURITY RECEIPT

The uappropriate box):	indersigned Bidder has	submitted as Bid Security for its Bid in the form of (check
	Riverside, cash, cashier's check pa	ed by an Admitted Surety, made payable to the County of ayable to the order of the County of Riverside, or yable to the order of the County of Riverside,
in the amount of		
dollars/the Bidder's Bid Am	cents (\$ ount, as defined in the In), which amount is equal to ten percent (10%) of
		Signature
	Prin	t Name of Bidder
	Prin	t Name of Signer

DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (Chapter 4, commencing at Section 4100, Division 2, Part 1 of the Public Contract Code of the State of California) and any amendments thereto ("Act"), Bidder sets forth below the information required by the Act for those Subcontractors who are required to be listed by Bidder pursuant to the provisions of the Act [Insert information requested. Attach additional sheets, if needed.]:

Portion of Work	Subcontractor Name	CSLB License No. And DIR Registration No.	<u>Location</u>
			TEN YEAR
ate:			
			(Name of Bidder) By:
			(Signature of Bidder)
			Address:
			Phone:

NON-COLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

(Public Contract Code Section 7106)

The undersigned declare	S:	
I am the foregoing bid.	of	, the party making the
association, organization directly or indirectly inductive directly or indirectly collucted bid, or that anyone shall by agreement, communic	, or corporation. The bid is genuine ced or solicited any other bidder to ded, conspired, connived, or agreed refrain from bidding. The bidder has	any undisclosed person, partnership, company and not collusive or sham. The bidder has not put in a false or sham bid. The bidder has not with any bidder or anyone else to put in a shan as not in any manner, directly or indirectly, sough of fix the bid price of the bidder or any other bidder, or of that of any other bidder.
price of any breakdown the corporation, partnership, or	nereof, or the contents thereof, or div company, association, organization, t	s not, directly or indirectly, submitted his or her bi- ivulged information or data relative thereto, to an , bid depository, or to any member or agent therecy will not pay, any person or entity for such purpose
limited liability company,	is declaration on behalf of a bidder limited liability partnership, or any ot d does execute, this declaration on be	er that is a corporation, partnership, joint venture other entity, hereby represents that he or she had behalf of the bidder.
and that this declaration	perjury under the laws of the State of is executed on[state].	of California that the foregoing is true and correction [date], at[city]
	[Signature of Decla	slarant]
	[Printed Name of Perso	on Signing]
	[Name of Bidde	ler]
	[Office or Title]	e]

Iran Contracting Act

(Public Contract Code sections 2200-2208)

In accordance with Public Contract Code Section 2204(a), prior to bidding on, submitting a proposal or executing a contract or renewal for a County of Riverside contract for goods or services of \$1,000,000 or more, a Contractor must either:

- a) Certify it is not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b) and is not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS; or
- b) Demonstrate it has been exempted from the certification requirement for that solicitation or contract pursuant to Public Contract Code section 2203(c) or (d).

To comply with this requirement, please insert your Contractor or financial institution name and Federal ID Number (if available) and complete one of the options below. Please note: California law establishes penalties for providing false certifications, including civil penalties equal to the greater of \$250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Public Contract Code section 2205.)

Option #1 - Certification

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

Contractor Name/Financial Institution (Printed)		Federal ID Number (or n/a)
By (Authorized Signature)	un graduatur	
Printed Name and Title of P	erson Signing	
Date Executed	Executed in	

Option #2 - Exemption

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a Contractor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services.

If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

nstitution (Printed)	Federal ID Number (or n/a)
	The state of the s
erson Signing	
Executed in	
	erson Signing

Project No.	FM08100009946
Bond No.	

PAYMENT BOND

(Public Work - Civil Code Sections 9550 et seq.)

KNOW ALL PERSONS BY THESE PRESENTS:
THAT WHEREAS, the County of Riverside ("County") by action of the Board of Supervisors on, 20, has awarded Construction Contract Number
("Contract") to the undersignedas Principal ("Principal") to perform the work ("Work") for the following project Mecca Sports Park Project;
AND, WHEREAS, said Principal is required by the Contract and/or by Division 3, Part IV, Title XV,
Chapter 7 (commencing at Section 9550) of the California Civil Code to furnish a payment bond in connection
with the Contract;
NOW THEREFORE, we, the Principal and ("Surety"), an admitted
surety insurer pursuant to Code of Civil Procedure, Section 995.120, are held and firmly bound unto County in
the penal sum of Dollars
(\$), this amount being not less than one hundred percent (100%) of the total sum
payable by County under the Contract at the time the Contract is awarded by County to the Principal, lawful
money of the United States of America, for the payment of which sum well and truly to be made, we, Principal
and Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally,
firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if Principal, its heirs, executors, administrators, successors, or assigns approved by County, or its subcontractors, of any contracting tier, shall fail to pay any person or persons named in California Civil Code, Section 9554, then Surety will pay for the same, in or to an amount not exceeding the penal amount hereinabove set forth.

Surety, for value received, agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the Work to be performed thereunder, nor any rescission or attempted rescission of the Contract or this bond, nor any conditions precedent or subsequent in the bond or Contract attempting to limit the right of recovery of any claimant otherwise entitled to recover under the Contract or this bond shall in any way impair or affect Surety's obligation under this bond, and Surety does hereby waive notice of any such changes, extensions of time, alterations or additions.

Surety is not released from liability to those for whose benefit this bond has been given, by reason of any breach of the Contract by County or Principal.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, joint and

severally, or against any one or more of them or against less than all of them, without impairing County's rights against the others.

	Affix Seal if Corporation
(Firm Name – Principal)	
(Business Address)	
Ву	
(Original Signature)	
(Title)	
(Corporation Name – Surety)	Affix Corporate Seal
(Business Address)	
Ву	
(Signature – Attached Notary's Acknowledgment)	
ATTORNEY-IN-FACT	
(Title-Attach Power of Attorney)	

Note: Notary acknowledgment of signatures of Bidder and Surety, and Surety's Power of Attorney, must be included or attached

Project	
No.	FM08100009946
Bond No.	

PERFORMANCE BOND

(Public Work – Public Contract Code Section 20129 (b))

KNOW ALL	PERSONS	BY THESE	PRESENTS:
----------	---------	----------	-----------

THAT WHEREAS, the County of Riverside ("County") by action of the Board of Supervisors on
AND, WHEREAS, said Principal is required by the Contract and/or by California Public Contract Code,
Section 20129 (b) to furnish a performance bond for the faithful performance of the Contract;
NOW THEREFORE, we, the Principal and ("Surety"), an admitted surety
insurer pursuant to Code of Civil Procedure, Section 995.120, are held and firmly bound unto County in the penal sum of
Dollars (\$), this amount being not less than one hundred percent (100%) of the total
sum payable by County under the Contract at the time the Contract is awarded by County to the Principal,
lawful money of the United States of America, for the payment of which sum well and truly to be made, we,
Principal and Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and

THE CONDITION OF THIS OBLIGATION IS SUCH that if Principal, its heirs, executors, administrators, successors or assigns approved by County, shall in all things stand to and abide by and well and truly keep and perform all the undertakings, terms, covenants, conditions and agreements in the Contract, including, without limitation, all obligations during the original term and any extensions thereof as may be granted by County, with or without notice to Surety thereof (including, without limitation, the obligation for Principal to pay liquidated damages), all obligations during the period of any warranties and guarantees required under the Contract and all other obligations otherwise arising under the terms of the Contract (such as, but not limited to, obligations of indemnification), all within the time and in the manner therein designated in all respects according to their true intent and meaning, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

Whenever Principal shall be, and is declared by County to be, in default under the Contract, the Surety shall promptly either remedy the default, or, if the Contract is terminated by County or the Principal's performance of the Work is discontinued, Surety shall promptly complete the Contract through its agents or independent contractors, subject to acceptance of such agents or independent contractors by County as

severally, firmly by these presents.

hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract (including, without limitation, all obligations with respect to payment of liquidated damages) less the "Balance of the Contract Price" (as hereinafter defined); subject to the penal amount of this bond as set forth above. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by County under the Contract and any modifications thereto, less the amount previously paid by County to the Principal and less amounts that County is authorized to withhold under the terms of the Contract.

If County determines that completion of the Contract by Surety or its agents or independent contractors must be performed by a lowest responsible bidder selected pursuant to a competitive bidding process, then Surety shall comply with such processes in accordance with the requirements of County and applicable laws. Unless otherwise approved by District, in the exercise of its sole and absolute discretion, Surety shall not utilize Principal in completing performance of the Work.

No right of action shall accrue on this bond to or for the use of any person or entity other than County or its successors or assigns.

Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

Surety, for value received, agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work to be performed thereunder, shall in any way impair or affect Surety's obligation under this bond, and Surety does hereby waive notice of any such changes, extensions of time, alterations or additions.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, joint and severally, or against any one or more of them or against less than all of them, without impairing County's rights against the others.

	Affix Seal if Corporation
(Firm Name – Principal)	

(Business Address)	
Ву	
(Original Signature)	
(Title)	
(Corporation Name – Surety)	Affix Corporate Seal
(Business Address)	
Ву	
(Signature – Attached Notary's Acknowledgment)	
ATTORNEY-IN-FACT	
(Title-Attach Power of Attorney)	

Note: Notary acknowledgment of signatures of Bidder and Surety, and Surety's Power of Attorney, must be included or attached

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION

Labor Code Section 3700 states:

"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 by 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 employee.
- (c) For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702.

For purposes of this section, 'state' shall include the superior courts of California."

I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

	(Name of Contractor)	
Ħ	Ву:	H
	(Name of Signer)	
	(Signature)	

(In accordance with Article 5 (commencing at Section I860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under this contract.)

DECLARATION OF SUFFICIENCY OF FUNDS

(California Labor Code Section 2810)

1. The Bidd	er's employer identifi	cation number for state t	tax purposes is
2. The E	Ridder's workers'	compensation ins	surance policy number
	and the name,	address, and telephone	e number of the insurance carri
oviding said insurance i	S:		
e Bidder and that will	be used for transp that is the subject	ortation in connection	and all vehicles that are owned with any service provided for to sert information requested. Atta
Vehicle	Vehicle ID #	Vehicle. Liability Insurance Policy Number (of policy covering vehicle)	Name, Address and Telephone Number of Vehicle Liability Insurance Carrier (issuing policy covering vehicle)
	Niver and the second se		
• • • • • • • • • • • • • • • • • • • •		and the latest and th	
onnection with the perform	mance of the Work t	hat is the subject of the	nt will be used to house workers Bidder's Bid [If no such housing v
e provided, enter none			

	Total Number of Workers	Total Amount of Wages	Date(s) for Payment of Wages	
6.	Check only one of the follow			
erefore the vailable at and if and we reported	the <u>actual</u> number of worke The actual num e statement of number of we the time of submitting its Bio	ber of workers requivorkers declared the dr. rather than the activers and the other ity Bidder in writing.	ested in Paragraph 5, above, is rein is based on the Bidder's tual number of workers that will information requested above is a	unknown a <u>best estim</u> be employ vailable, it
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and the other information requested above is available, it will be reported to the County of Riverside by Bidder in writing.
I, the undersigned, declare under penalty of perjury that the foregoing statements are within my personal knowledge and are true and correct. Executed on this day of, in the year 20 at, California.
(signature)
Type Name of Signer:
Type Name of Bidder:

SUBSTITUTION REQUEST FORM

ONLY ONE (1) REQUEST FOR SUBSTITUTION FOR EACH PRODUCT WILL BE CONSIDERED. USE A SEPARATE SUBSTITUTION REQUEST FORM FOR EACH PROPOSED SUBSTITUTION.

	COUNTY OF	RIVERSIDE		
PROJECT:	Mecca Sports	Park Project		
PROJECT NO.:	FM081000099	46		
Bidder requests Substit	tution of the followi	ng material, pr	oduct, thing or se	ervice:
Specification Section	May 1		Article No.	
Specified Item			Address	
Manufacturer's Name			Model or Catalo	g Number
Trade Name of Produc	ct		Specified Fabric	ators and Suppliers
For oach present 0				
specified, the item spec and a brief description of	cified in the Specifi of the proposed Su	cations and the	at is proposed to	item to be replaced is currently be replaced by the Substitution
specified, the item spec	cified in the Specifi of the proposed Su	cations and the	at is proposed to	item to be replaced is current be replaced by the Substitutio Proposed Substitution
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specified, the item spec and a brief description of	cified in the Specifi of the proposed Su	cations and the	at is proposed to	be replaced by the Substitutio
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specified, the item spec and a brief description of Specification Ref	cified in the Specific of the proposed Suference	cations and the obstitution: Specifie	at is proposed to	Proposed Substitution
specified, the item speciand a brief description of specification Ref	e following question	cations and the obstitution: Specifie ons, attaching	at is proposed to	Proposed Substitution
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specified, the item spectand a brief description of specification Ref	e following question tured material, pro	cations and the obstitution: Specifie ons, attaching duct or thing,	at is proposed to	be replaced by the Sub Proposed Substit

Are maintenance services available?	☐ Yes	□ No
f so, describe scope and terms, including any limitations on	maintenance se	ervices:
Are replacements materials, products or things, and		
all parts thereof, available?	☐ Yes	□ No
Contractor agrees to provide specified item in the event his Substitution Request is denied?	□ Yes	□ No
Does the Substitution affect dimensions shown On Drawings?	☐ Yes	□ No
f so, clearly describe changes:		
Vill you pay for changes to the building design, including		
architectural, engineering and detailing costs caused by the acceptance of the requested Substitution?	□ Yes	□ No
Vould the Substitution, if used, affect any other trades?	☐ Yes	□ No
f so, describe each affect:		
Would the Substitution, if used, affect your ability to meet The time periods for construction required by the Bidding Documents?	□ Yes	□ No
f so, describe each affect:		
Are there any differences between Substitution and		
specified item?	☐ Yes	□ No
f so, describe each difference:		
Are the manufacturer's guarantees and warranties of the		
Substitution and the specified item the same?	☐ Yes	□ No
f so, describe each difference or attach copy of all written gu Substitution :		varranties provided for the

Contractor	County	
Ву	Reviewed by:	
Date	Date	
Remarks		
Design Consultant		
Reviewed by:		
SPACE RESERVED FOR COUNTY USE ONLY:		
Decision on Substitution Request:	☐ Grant	☐ Deny

SECTION 00 03 00

POST BID INTERVIEW

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

This Section requires the apparent low bidder to attend and participate in a POST BID INTERVIEW with the OWNER and ARCHITECT, prior to award of any contract by the OWNER. The POST BID INTERVIEW will be conducted by the ARCHITECT within fifteen (15) calendar days after the date of bid. The Interview will take place at the Owner's Office.

1.03 PURPOSE

- A. Contractor acknowledgment of a complete and accurate bid.
- B. Contractor submission of a fair and equitable bid.
- C. Fair comparisons of bid.

1.04 REQUIRED ATTENDANCE

- A duly authorized representative of the apparent low bidder is required to attend the POST BID INTERVIEW, in person.
- B. The apparent low bidder's authorized representative must have signatory authority on behalf of the apparent low bidder.
- C. Failure to attend the POST BID INTERVIEW will be considered just cause for the Owner to reject the Bid.

1.05 POST BID INTERVIEW PROCEDURE

- A. The ARCHITECT will review the Bidder's Proposal with the attendees.
- B. The ARCHITECT will review the Contract Documents with the attendees, including but not limited to:
 - 1. Insurance
 - 2. Bonding
 - 3. Addenda
 - 4. Pre-Bid Clarifications
 - 5. Bid / Voluntary Alternates
 - Schedule of Values for all Sub-Contractor Work listed according to the Table of Contents for the Project Manual.
 - 7. Value Engineering
 - 8. The Contract Plans
 - 9. The Contract Specification
 - 10. Critical Materials

Contractor's	Initial	

- 11. General Contract Schedule Requirements
- 12. Prevailing Wage Requirements
- 13. Liquidated Damages
- 14. Required Docs for Contract Administration
- 15. Contract Coordination Requirements

1.06 POST BID INTERVIEW DOCUMENTATION

The ARCHITECT will document the POST BID INTERVIEW on the form attached to this Section. Both the Apparent Low Bidder and the OWNER are required to sign the POST BID INTERVIEW Documentation. The POST BID INTERVIEW Documentation is a Contract Document, and all items recorded in the POST BID INTERVIEW Documentation are part of the Contract and shall be enforced accordingly.

PART 2 -- INFORMATION

2.01	BIDDER INFORMATION:
	A. Name:
	B. Phone:
	C. Fax:
	D. Date:
	E. Time:
2.02	INTRODUCTIONS / SIGN-IN:
	A. Contractor: 1
	2.
	3.
	B. Owner: 1
	2.
	3.
	C. Architect: 1
	2.
	3.

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· ~	ntra	ATA	F' (C)	I IO II	

PART 3 -- INTERVIEW

3.01 PURPOSE OF INTERVIEW IS TO ASSURE:

- A. Contractor acknowledgment of a complete and accurate bid.
- B. Contractor submission of a fair and equitable bid.
- C. Fair comparisons of bid.

3.02 CONTRACTUAL REQUIREMENTS:

Α.	Can you meet all specified bonding requirements?		Yes	No
В.	Can you meet all specified insurance requirements?		Yes	No
C.	Acknowledge that you are required to comply with the prevailing wage Requirements?		Yes	No
D.	Are you prepared to bind every subcontractor, supplier, and vendor, to the terms of the contract as far such terms are applicable to each subcontractors work?		Yes	No
E.	Acknowledge inclusion in the bid of all Addenda?	N/A	Yes	No
F.	Acknowledged Receipt of Pre-Bid Clarifications (RFI) Submitted?	N/A	Yes	No
G.	Acknowledge inclusion in the Bid of all Allowances?	N/A	Yes	No
	1.			
	2.			
	3.			
	4.			
Н.	Acknowledge inclusion in the Bid of all Alternates?	N/A	Yes	No
	1.			
	2.			
	3.			
	4.			
l.	Acknowledge that you are required to comply with the SWPPP.		Yes	No
J.	Acknowledge that you are required to comply with the PM-10		Yes	No

3.03 SCOPE OF WORK:

Contractor's	Initial	

A.	Are the plans and specifications clear and understandable?		Yes	No
В.	Are there any items that need to be identified or require clarification?		Yes	No
	If yes, please identify item.			
	1.			
	2.			
	3.			
	4.	in.		
	5.			
	6.			
C.	Is (are) the cost(s) for the above items (as applicable) included in your proposal items?		Yes	No
D.	Review bid alternatives (if applicable)	N/A	Yes	No
	1.			
	2.			
	3.			
E.	Are you proposing any substitutions?	N/A	Yes	No
	If yes, please identify item.			
	1.			
	2.	27.4		
	3.			
	4.			
	5.			
	6.			
	7.			
	8.			
	9.			

Are you proposing any VALUE ENGINEERING? (describe) 3.04

Contractor's Initial
SECTION 01030 - POST-BID INTERVIEW

	1.	Add / Deduct	
	2.	Add / Deduct	
	3.	Add / Deduct	
	4.	Add / Deduct	
	5.	Add / Deduct	
	6.	Add / Deduct	
	7.	Add / Deduct	
	8.	Add / Deduct	
	9.	Add / Deduct	
	10.	Add / Deduct	
	11.	Add / Deduct	
	12.	Add / Deduct	
	13.	Add / Deduct	
VALUE ENGINEERING TOTAL		ENGINEERING TOTAL	\$
BA	SE E	BID	\$
PR	OPC	OSED REVISED TOTAL	\$

SCHEDULE:

٨			
۹.	Can you meet the construction duration stipulated in the Contract?	Yes	No
В.	Can you meet Submittal Schedule Deadlines?	Yes	No
C.	Will you provide Cost and Manpower loading for your construction schedule within the required seven (7) calendar days, per the Contract?	dule activitie	es to
	(Section 01320 – Project Construction Schedule)	Yes	No
D.	It is understood the Project schedule is critical. Can you accelerate any	and all sch	edule
	activities if the requirement occurs?	Yes	No
Ε.	If not, what must change and why?		
F.	Identify critical materials, deliveries and dependencies (long lead), includitems that could affect the completion of your work. 1	ding Owner	Furnish
	2.		- 3
	34		
			T HE
	5		_
	6		
	6.		
G.	6.	lete this Pro	ject with tors WII

Contractor's Initial ____

our signature acknowledges your agreement to perform all work discussed herein, and the
EMENT: contractor agrees that the information contained herein is part of your contractual obligation our signature acknowledges your agreement to perform all work discussed herein, and the losts for all work are included in your proposal. The foregoing information is true as courate, and I am authorized to sign as an officer of the company I am representing. company Name: gnature: ame: tte: ste: ESS: where
EMENT: contractor agrees that the information contained herein is part of your contractual obligation our signature acknowledges your agreement to perform all work discussed herein, and the lasts for all work are included in your proposal. The foregoing information is true as courate, and I am authorized to sign as an officer of the company I am representing. company Name: gnature: ame: ttle: ate: ESS: wner
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SECTION 01030 - POST-BID INTERVIEW 7 OF 8

Contractor's Initial ___

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STANDARD FORM OF CONSTRUCTION CONTRACT BETWEEN COUNTY AND CONTRACTOR

by and between

CONTRACTOR'S NAME

(the "Contractor")

And

THE COUNTY OF RIVERSIDE

(the "County")

FOR:

PROJECT NAME

PROJECT ADDRESS

STANDARD FORM OF CONSTRUCTION CONTRACT BETWEEN COUNTY AND CONTRACTOR

THIS STANDARD FORM OF CONSTRUCTION CONTRACT BETWEEN COUNTY AND CONTRACTOR ("Agreement") is entered into as of the date of the last signature on the signature page of this contract by and between THE COUNTY OF RIVERSIDE, a political subdivision of the State of California ("County") and text, a text ("Contractor") whose principal place of business is located at text, text.

ARTICLE 1 DEFINITIONS

Capitalized terms used in the Contract Documents shall have the meanings assigned to them in the General Conditions. If not defined in the General Conditions, they shall have the meanings assigned to them elsewhere in the Contract Documents. If not defined in the General Conditions or elsewhere, they shall have the meanings reasonably understood to apply to them by the context in which they are used.

ARTICLE 2 PERFORMANCE OF WORK

2.1 SCOPE OF WORK

Contractor shall execute the entire Work called for by the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

2.2 STANDARD OF PERFORMANCE

In addition to and without limiting Contractor's other obligations under the Contract Documents, Contractor shall at all times in its performance of its obligations under the Contract Documents conform to the following general standards of performance:

- 2.2.1 the requirements of the Contract Documents;
- 2.2.2 the requirements and conditions of Applicable Laws:
- **2.2.3** the standard of care applicable to those who provide construction of the type called for by this Construction Contract for projects of a scope and complexity comparable to the Project;
- 2.2.4 Contractor shall furnish efficient business administration of the Work, utilizing sufficient senior level management and other qualified personnel to manage the Work; and
- 2.2.5 Contractor shall apply its best and highest skill and attention to completing the Work in an expeditious and economical manner, consistent with the expressed best interests of the County and within the limitations of the Contract Price and Contract Time.

ARTICLE 3 CONTRACT TIME

3.1 CONTRACT TIME

3.1.1 Substantial Completion. Subject to Contract Adjustments permitted by the Contract Documents, Contractor shall achieve Substantial Completion of the entire Work not later than text (xx) Days after the Date of Commencement.

- **3.1.2** Final Completion. Subject to Contract Adjustments permitted by the Contract Documents, Contractor shall achieve Final Completion of the Work not later than text (xx) Days after the actual occurrence of Substantial Completion.
- **3.1.3 Contract Adjustments.** The Contract Time shall be extended or shortened only in accordance with the provisions of the Contract Documents governing Contract Adjustments to the Contract Time.

3.2 LIQUIDATED DAMAGES TO COUNTY

- **3.2.1** County's Right. County and Contractor acknowledge that if Contractor fails to Substantially Complete the Work within the Contract Time for Substantial Completion, County will suffer substantial Losses, which would be both extremely difficult and impracticable to ascertain. On that basis they agree, as a reasonable estimate of those Losses and not a penalty, to the assessment and recovery by County of liquidated damages under this Section 3.2.
- 3.2.2 Per Diem Rate. If Contractor fails to actually achieve Substantial Completion of the entire Work within the Contract Time for Substantial Completion, Contractor shall pay to County as liquidated damages the amount of text Dollars (\$xx) per Day for each Day occurring after the expiration of the Contract Time for Substantial Completion until Contractor achieves Substantial Completion of the entire Work.
- 3.2.3 Adjustment for Extensions of Time. Subject to the provisions of Paragraph 8.2.8 of the General Conditions dealing with concurrency of Delays, liquidated damages shall not be charged to Contractor for a period of time for which the Contractor is entitled under the Contract Documents to a Contract Adjustment to the Contract Time for Substantial Completion.
- **3.2.4** Partial Completion. The liquidated damages provided for under this Section 3.2 shall not be reduced or apportioned: (1) for Substantial Completion of portions of the Work prior to Substantial Completion of the entirety of the Work; or (2) if portions of the Work are deleted pursuant to (a) the County's right to order Deleted Work; or (b) a termination by County of a portion of the Construction Contract or a deletion of portion of Work for the convenience of the County or due to an Event of Contractor Default.
- 3.2.5 Remedies. County may deduct any liquidated damages payable under this Section 3.2 from money due or to become due to Contractor under the Contract Documents, or pursue any other legal remedy to collect such liquidated damages from Contractor and/or its Surety.
- 3.2.6 Not a Limitation. County's rights under this Section 3.2 shall not be interpreted as precluding or limiting: (1) any right or remedy of County arising from an Event of Contractor Default other than a failure to achieve Substantial Completion of the Work within the Contract Time for Substantial Completion; or (2) County's right to order an acceleration, at Contractor's Own Expense, of performance of the Work to overcome Delay, including, without limitation, a Delay for which County has the right to assess liquidated damages under this Section 3.2.

3.3. LIQUIDATED DAMAGES TO CONTRACTOR

- 3.3.1 Contractor's Right. County and Contractor acknowledge and agree that if Contractor is unable due to Compensable Delay to actually achieve Substantial Completion of the Work within the Contract Time for Substantial Completion, Contractor and its affected Subcontractors will suffer Losses that would be both extremely difficult and impracticable to ascertain. On that basis they agree, as a reasonable estimate of those Losses and not a penalty, to the payment by County to Contractor of liquidated damages under this Section 3.3.
- 3.3.2 Daily Rate. Subject to the provisions of Paragraph 8.2.8 of the General Conditions dealing with concurrency of Delays, the Contract Price shall be increased by Change Order or Unilateral Change Order in the amount of text Dollars (\$xx) per Day as liquidated damages for each Day for which Contractor is entitled under the Contract Documents to a Contract Adjustment extending the Contract Time for Substantial Completion due to Compensable Delay, with no additional amount added thereto or calculated thereon for Allowable Markup or any other markup for overhead or profit to Contractor or any Subcontractor, of any Tier.

- 3.3.3 Payment by County. A Change Order or Unilateral Change Order setting forth a Contract Adjustment to the Contract Price for liquidated damages permitted by this Section 3.3 shall be executed following, and not before, actual Substantial Completion and prior to or contemporaneously with Final Completion. Notwithstanding any other provision of the Contract Documents to the contrary and without limitation to the County's rights of withholding payment to Contractor as permitted elsewhere in the Contract Documents or under Applicable Laws, any amounts due to the Contractor under this Section 3.3 shall be payable as part of, and not prior to the due date for payment of, Final Payment to Contractor.
- 3.3.4 Deleted Work. A Contract Adjustment shall be made pursuant to Subparagraph 8.2.6.2 of the General Conditions reducing the Contract Price and Contract Time in the event that the Contract Time is shortened due to (1) Deleted Work; or (2) a termination by County of a portion of the Construction Contract for convenience or due to an Event of Contractor Default.
- 3.3.5 Termination. County shall have no liability to Contractor to pay any liquidated damages under this Section 3.3, nor shall County have any other liability to Contractor or any Subcontractor for any Loss due to Delay (including, without limitation, Compensable Delay) in the event the Construction Contract is wholly terminated (whether such termination is a termination for cause by County or Contractor or a termination for convenience by County) at any time prior to expiration of the Contract Time for Substantial Completion set forth in Paragraph 3.1.1, above.
- 3.3.6 Exclusive Remedy. Liquidated damages payable by County under this Section 3.3 constitute the Contractor's sole and exclusive right and remedy for recovery from County of Losses to Contractor and its Subcontractors, of every Tier, that are attributable to Compensable Delay, regardless of the cause, duration or timing of the Compensable Delay and no other Contract Adjustment, or other form of compensation or reimbursement, of any kind, shall be made to Contractor or any Subcontractor, of any Tier, for any Loss resulting, directly or indirectly, from, or attributable to, any of the following: (1) Unexcused Delay or acceleration to overcome Unexcused Delay; (2) Excusable Delay or any acceleration not authorized by County in writing to overcome Excusable Delay; or (3) concurrency of a Compensable Delay with any different type or class of Unexcused Delay or Excusable Delay, whether such concurrency is a concurrency in cause or in effect.

3.3.7 WAIVER BY CONTRACTOR.

CONTRACTOR WAIVES THE RIGHT TO FURTHER RECOURSE OR RECOVERY OF COSTS OR DAMAGES BY REASON OF OR RELATED TO ANY DELAY (INCLUDING, WITHOUT LIMITATION, COMPENSABLE DELAY) THAT IS IN EXCESS OF OR NOT RECOVERED BY CONTRACTOR AS PART OF THE LIQUIDATED DAMAGES PAYBLE TO CONTRACTOR UNDER THIS SECTION 3.3.

ARTICLE 4 CONTRACTOR COMPENSATION

4.1 CONTRACT PRICE

- **4.1.1** Contract Price. County shall pay the Contractor in current funds for the Contractor's performance of the Work in accordance with the Contract Documents the Contract Price, exclusive of Contract Adjustments, of text Dollars (\$xx\).
- **4.1.2 Basis**. The Contract Price set forth in Paragraph 4.1.1, above, is based on the Bid submitted by Contractor as adjusted for Alternates accepted by County as set forth in Section 4.2, below.
- **4.1.3 Adjustments**. The Contract Price is only subject to adjustment as permitted by the General Conditions for Contract Adjustments due to Compensable Changes, Deleted Work or Compensable Delay.
- 4.1.4 All-Inclusive Price. The Contract Price as adjusted for Contract Adjustment permitted by the Contract Documents is the total amount payable by County to Contractor for performance of the Work under the Contract Documents and is deemed to cover all Losses, foreseeable or unforeseeable, arising out of or related to past, present or future circumstances within or outside the control of the Contractor or its Subcontractors affecting the time or cost of performing the Work, including, without limitation, the effects of natural elements upon the Work, unforeseen difficulties or obstructions affecting the performance of the Work (including, without limitation, unforeseen conditions at the Site that do not constitute

Differing Site Conditions) and unforeseen fluctuations in market conditions and price escalations (whether occurring locally, nationally or internationally).

4.2 ALTERNATES

The Contract Price includes the following Alternates, which are described in the Contract Documents and are hereby accepted by County:

Number	Description	Dollar Amount

4.3 UNIT PRICES

Unit prices agreed to by County and Contractor are as follows:

Description	Measurement Unit	Dollar Amount

ARTICLE 5 ENUMERATION OF CONTRACT DOCUMENTS

5.1 LIST OF CONTRACT DOCUMENTS

The Contract Documents include, without limitation, the following:

- **5.1.1 Construction Contract**. The Contract Documents include this executed Standard Form of Construction Contract Between County and Contractor.
- **5.1.2** General Conditions. The Contract Documents include the General Conditions of the Standard Form of Construction Contract Between County and Contractor (Long Form) or General Conditions of the Standard Form of Construction Contract Between County and Contractor (Short Form).
 - **5.1.3 Specifications**. The Contract Documents include the following Specifications:

Title	Date	Divisions			
SEE EXHIBIT 'A ' WITH TABLE OF CONTENTS FOR SPECIFICATIONS AS APPROVED BY					
BOARD OF SUPERVISORS ON D	ate AND INCORPORATED HER	REIN.			

5.1.4 Drawings. The Contract Documents include the following Drawings dated text, 20xx, unless a different date is shown below:

Sheet Number	Title	Date	Pages	
SEE EXHIBIT 'B' WITH LIST OF DRAWINGS INCLUDED IN SPECIFICATIONS APPROVED				
BY BOARD OF SUPERVISORS ON Date I AND INCORPORATED HEREIN.				

5.1.5 Addenda. The Contract Documents include the following Addenda:

Addendum Number	Title	Date	Pages

5.1.6 Reference Documents. The Contract Documents include the following Reference Documents:

Title	Author	Date	Pages

5.1.7 List Other Contract Documents, if any

ARTICLE 6 SPECIAL REQUIREMENTS

6.1 LABOR CODE SECTION 1861 CERTIFICATION

By signing below, Contractor certifies that he/she/it is aware of the provisions of Section 3700 of the California 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 the California Labor Code, and that he/she/it will comply with such provisions before commencing the performance of the Work.

CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED WITHIN FOUR YEARS OF THE DATE OF THE ALLEGED VIOLATION. A COMPLAINT REGARDING A LATENT ACT OR OMISSION PERTAINING TO STRUCTURAL DEFECTS MUST BE FILED WITHIN 10 YEARS OF THE DATE OF THE ALLEGED VIOLATION. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA, 95826.

IN WITNESS WHEREOF, the parties hereto have made and executed <u>four (4) originals</u> of this Construction Contract, on <u>[to be filled in by Clerk of the Board]</u>.

[SIGNATURES ON FOLLOWING PAGE (PM'S PLEASE EDIT THE POSITIONING OF THIS STATEMENT ACCORDINGLY AND DELETE THIS NON-BOLDED TEXT AFTERWARD)]

"COUNTY"	"CONTRACTOR"
COUNTY OF RIVERSIDE	
Ву:	
By: Chair, Board of Supervisors	(Sign on line above)
	Bv:
	By:(Type name)
	Title:
	The following information must be provided concerning the Contractor:
ATTEST:	State whether Contractor is corporation, Individual, partnership, joint venture or other:
KECIA R. HARPER Clerk of the Board	If "other", enter legal form of business:
By:(Deputy)	
(Deputy)	Enter address:
	·
(SEAL)	
(OL/IL)	Telephone:
	Facsimile:
	Email:
	Employer State Tax ID #:
	State Contractor License #:
	Department of Industrial Relations
	Registration No:
APPROVED AS TO FORM:	If Contractor is not an individual or corporation, lis
GREGORY P. PRIAMOS	Names of 4 representatives who have authority to
County Counsel	contractually bind Contractor:
Ву:	
Deputy County Counsel	
	If Contractor is a corporation, state:
	Name of President:
	Name of Secretary:
	State of Incorporation:

GENERAL CONDITIONS OF THE STANDARD FORM CONSTRUCTION CONTRACT BETWEEN COUNTY AND CONTRACTOR

(LONG FORM)

TABLE OF CONTENTS

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GENERAL CONDITIONS OF THE STANDARD FORM CONSTRUCTION CONTRACT BETWEEN COUNTY AND CONTRACTOR

(LONG FORM)

ARTICLE 1 GENERAL PROVISIONS

1.1 **DEFINITIONS**

- 1.1.1 **Acceptance.** "Acceptance" means the point that the Project is formally accepted by the Board of Supervisors and a Notice of Completion is recorded by County.
- 1.1.2 **Act of God.** "Act of God" means earthquake, natural flood, tornado or other unusually severe natural or weather phenomenon occurring at the Site and causing Delay to performance of the Work at the Site; provided, however, that precipitation and winds shall not be an Act of God unless it exceeds in any given month the 10-year average of monthly levels as established by the National Oceanic and Atmospheric Administration ("NOAA") according to NOAA's records of measurable precipitation and winds taken at NOAA's recording station located within the Riverside County basin area that is nearest to the Site.
- 1.1.3 **Addendum.** "Addendum" means written or graphic information (including, without limitation, Drawings or Specifications) issued prior to the Bid Closing Deadline, which modifies or interprets the Bidding Documents by additions, clarifications or corrections.
- 1.1.4 Admitted Surety. "Admitted Surety" means a surety insurer that is duly certified pursuant to California Insurance Code §995.120 to transact business as a surety in the State of California.
- 1.1.5 **Allowable Costs.** "Allowable Costs" means those costs listed in <u>Paragraph 7.7.3</u>, below, that are used in calculating Contract Adjustments to the Contract Price.
- 1.1.6 **Allowable Markups**. "Allowable Markups" means those percentage markups listed in <u>Paragraph 7.7.5</u>, below, used in calculating Contract Adjustments to the Contract Price.
- 1.1.7 **Alternate.** "Alternate" means a proposed alternative described in the Bidding Documents adding to, or deleting from, the Bidding Documents a particular material, system, product or method of construction.
- 1.1.8 **Applicable Laws.** "Applicable Laws" means all statutes, ordinances, rules, regulations, policies and guidelines enacted by Governmental Authorities (including, without limitation, Environmental Laws and Disability Laws), codes adopted or promulgated by Governmental Authorities (including, without limitation, building and health and safety codes), lawful orders of Governmental Authorities and common law, including, but not limited to, principles of equity applied by the courts of the State of California, which are in effect at the time the Work is performed.
- 1.1.9 **Application for Payment.** "Application for Payment" means Contractor's itemized application for Progress Payment or Final Payment prepared, submitted and substantiated in accordance with the requirements of the Contract Documents.
- 1.1.10 **Architect**. "Architect" means the design professional retained by County that is primarily responsible for the preparation of the Drawings and Specifications for the Project.
- 1.1.11 **Award.** "Award" means either (1) a minute order duly adopted by the Board of Supervisors approving County's entering into the Construction Contract with Contractor or (2) execution of the Construction Contract by the Clerk of the Board.

- 1.1.12 **Base Bid.** "Base Bid" means the sum of money stated in a Bid for which the Bidder proposes to perform the Work, exclusive of adjustments for Alternates.
- 1.1.13 **Bid.** "Bid" means the completed and signed Bid Form and other Bid Submittals submitted by a Bidder to County in response to the Notice Inviting Bids and in accordance with the Instructions to Bidders.
- 1.1.14 **Bid Amount**. "Bid Amount" means the dollar amount that is used as the basis for determining which Bidder has submitted the lowest Bid price for purposes of Award pursuant to the County's chosen method of Award set forth in <u>Paragraph 4.5.3</u> of the Instructions to Bidders.
- 1.1.15 **Bid Bond.** "Bid Bond" means alternative form of Bid Security submitted by a Bidder that consists of a surety bond issued by a Surety.
- 1.1.16 **Bid Closing Deadline**. "Bid Closing Deadline" means the deadline (date and time) for receipt of Bids by County that is stated in the Bidding Documents, as adjusted by Addendum.
- 1.1.17 **Bid Form.** "Bid Form" means the form prescribed by the Bidding Documents to be completed and signed by a Bidder showing the dollar amount(s) of its Bid.
- 1.1.18 **Bid Security.** "Bid Security" means a deposit of cash, certified or cashier's check or bond submitted by a Bidder in accordance with the Bidding Documents guaranteeing that if Award is made to the Bidder, the Bidder will enter into the Construction Contract and furnish the Performance Bond and Payment Bond and other Post-Award Submittals.
- 1.1.19 **Bid Submittal.** "Bid Submittal" means a document that Bidder is required by the Bidding Documents to submit with or as part of its Bid.
 - 1.1.20 Bidder. "Bidder" means a person or entity submitting a Bid for Award of the Construction Contract.
- 1.1.21 **Bidding Documents**. "Bidding Documents" means the following collection of documents prepared and issued by County relating to the Project:
 - .1 Notice Inviting Bids;
 - .2 Instructions to Bidders:
 - .3 Bid Form;
 - .4 Standard Form of Construction Contract Between County and Contractor (unsigned);
- .5 General Conditions to Standard Form of Construction Contract Between County and Contractor (Long Form);
 - .6 Specifications;
 - .7 Plans and Drawings;
 - .8 Addenda;
 - .9 Reference Documents;
 - .10 Safety Program; and
- .11 those documents, or those portions or provisions of documents, that, although not listed in Subparagraph 1.1.22.2 through Subparagraph 1.1.22.10, above, are expressly cross-referenced therein or attached thereto, including, without limitation, all documents submitted by Contractor as part of its Bid or Post-Award Submittals.

- 1.1.22 **Board of Supervisors.** "Board of Supervisors" means the Board of Supervisors for the County of Riverside.
- 1.1.23 **Change**. "Change" means a modification, change, addition, substitution or deletion in the Work or in Contractor's means, methods, manner, time or sequence of performing the Work arising from any cause or circumstances, including, without limitation, either directly at the request of County or constructively by reason of other circumstances. Use of the term "Change," in any context, in the Contract Documents shall not be interpreted as implying that Contractor is entitled to a Contract Adjustment on any basis other than as permitted by the terms of the Contract Documents for Compensable Change, Deleted Work or Compensable Delay.
- 1.1.24 **Change Order**. "Change Order" means a written instrument, signed in accordance with the requirements of the General Conditions, setting forth the agreement of County and Contractor on the terms of a Contract Adjustment.
- 1.1.25 **Change Order Request.** "Change Order Request" means Contractor's written request for a Contract Adjustment pursuant to <u>Paragraph 7.6.2</u>, below.
- 1.1.26 Claim. "Claim" means a written demand or assertion by Contractor seeking, as a matter of right, an interpretation of contract, payment of money, recovery of damages or other relief. A Claim does not include the following: (1) tort claims for personal injury or death; (2) stop payment notice claims; (3) a determination of the right of County to specific performance or injunctive relief to compel performance; (4) a determination of the right of County to suspend, revoke or limit the Contractor's Prequalification status or rating or to debar Contractor from bidding or contracting with County; or (5) a determination of the right of County under Applicable Laws to terminate the Construction Contract and/or recovery of penalties imposed upon Contractor for violation of statutory obligations under Public Contract Code §4100 et seq.
- 1.1.27 Close-Out Documents. "Close-Out Documents" means all Record Documents, warranties, guarantees, technical information, operations manuals, replacement parts, excess and attic stock and other documents (including, without limitation, electronic versions and hard copies) and things required to be submitted by Contractor under the Contract Documents as a condition of Final Completion or Final Payment.
- 1.1.28 **Compensable Change**. "Compensable Change" means circumstances involving the performance of Extra Work:
 - .1 that are the result of
 - (1) Differing Site Conditions.
- (2) amendments or additions to Applicable Laws, which amendments or additions are enacted after the Bid Closing Deadline,
- (3) a Change requested by County in accordance with the conditions of authorization applicable to Compensable Changes set forth in Article 7, below, or
- other circumstances involving a Change in the Work for which Contractor is given under the Contract Documents a specific and express right to a Contract Adjustment to the Contract Price;
- .2 that are not caused, in whole or in part, by an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, or violation of an Applicable Law, or by a failure of Contractor of a Subcontractor, of any Tier, to comply with the Contract Documents;
- .3 for which a Contract Adjustment is neither prohibited by nor waived under the terms of the Contract Documents; and
- .4 that if performed would require Contractor to incur additional and unforeseeable Allowable Costs that would not have been required to be incurred in the absence of such circumstances.

- 1.1.29 **Compensable Delay.** "Compensable Delay" means a Delay to the critical path of activities affecting Contractor's ability to achieve Substantial Completion of the entirety of the Work within the Contract Time:
 - .1 that is the result of
 - (a) a Compensable Change,
- Contractor,
- (b) the active negligence of County, Architect, a County Consultant or a Separate
- (c) a breach by County of an obligation under the Contract Documents, or
- (d) other circumstances involving Delay for which Contractor is given under the Contract Documents a specific and express right to a Contract Adjustment adjusting the Contract Price;
- .2 that is not caused, in whole or in part, by an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, or a violation of an Applicable Law, or a failure by Contractor or any Subcontractor, of any Tier, to comply with the Contract Documents; and
- .3 for which a Contract Adjustment to the Contract Time is neither prohibited by nor waived under the terms of the Contract Documents.
- 1.1.30 Construction Change Directive. "Construction Change Directive" means a written instrument signed in accordance with the requirements of Article 7, below, that: (1) directs the performance of a Change that does not involve a Contract Adjustment; (2) establishes a mutually agreed basis for compensation to Contractor for a Compensable Change under circumstances where performance of the Compensable Change needs to proceed in advance of the County performing a full evaluation of the Contractor's rights relative to a Contract Adjustment; or (3) directs performance of Work or a Change with respect to which there exists a dispute or question regarding the terms of a Contract Adjustment.
- 1.1.31 **Construction Contract.** "Construction Contract" means the written form of Standard Form of Construction Contract Between County and Contractor included in the Bidding Documents signed by County and Contractor.
- 1.1.32 **Construction Schedule.** "Construction Schedule" means the detailed, critical path schedule prepared by Contractor in accordance with the requirements of the Contract Documents showing Contractor's plan for performance of the Work within the Contract Time.
- 1.1.33 **Contract Adjustment.** "Contract Adjustment" means an adjustment, additive or deductive, to the Contract Price or Contract Time that is permitted by the Contract Documents due to circumstances constituting a Compensable Change, Compensable Delay or Deleted Work.
 - 1.1.34 Contract Documents. "Contract Documents" means the following collection of documents:
 - .1 Construction Contract;
 - .2 Addenda;
 - .3 General Conditions;
 - .4 Specifications;
 - .5 Plans and Drawings;
 - .6 Modifications;

- .7 Reference Documents;
- .8 Change Orders;
- .9 Unilateral Change Orders;
- .10 Construction Change Directives;
- .11 Safety Program;
- .12 other documents that comprise exhibits, attachments or riders to the documents listed in preceding <u>Subparagraph 1.1.35.1</u> through <u>Subparagraph 1.1.35.11</u>, above;
 - .13 executed Declaration of Sufficiency of Funds;
 - .14 executed Non-Collusion Declaration; and
- .15 if the Bidding Documents limit bidding to Prequalified Bidders, those written representations, obligations or responsibilities made, acknowledged or assumed by the Bidder as part of the applicable Prequalification conducted by County, including, without limitation, any continuing obligations assumed by Contractor to disclose false or misleading information, report changes in ownership or management and comply with minimum safety requirements.
- 1.1.35 **Contract Price.** "Contract Price" means the dollar amount set forth in the Construction Contract as the total compensation payable by County to Contractor for complete performance by Contractor in accordance with the Contract Documents of the Work and other obligations assumed by Contractor under the Contract Documents.
- 1.1.36 **Contract Time.** "Contract Time" means the total number of Days set forth in the Construction Contract within which Contractor is obligated to achieve Substantial Completion and/or Final Completion of the Work, as extended or shortened by Contract Adjustments.
- 1.1.37 **Contractor.** "Contractor" means the person or entity identified by County as the Bidder receiving Award of the Construction Contract.
- 1.1.38 **Contractor Amount.** "Contractor Amount" means the component amount calculated on behalf of Contractor pursuant to <u>Paragraph 15.1.5</u>, below, that is used to determine the total net amount payable to Contractor or County in the event of a partial or full termination or discontinuance of the Work.
- 1.1.39 **Contractor's Own Expense.** "Contractor's Own Expense" means that Contractor agrees to assume sole responsibility to pay and be responsible for any resulting or associated Loss and Delay, without any Contract Adjustment and without any other form of compensation or reimbursement, of any kind, by County.
 - 1.1.40 **County.** "County" means the County of Riverside, a political subdivision of the State of California.
- 1.1.41 **County Amount**. "County Amount" means the component amount calculated on behalf of County pursuant to <u>Paragraph 15.1.5</u>, below, that is used to determine the total net amount payable to Contractor or County in the event of a partial or full termination or discontinuance of the Work.
- 1.1.42 **County Consultant.** "County Consultant" means a consultant, other than Architect, engaged by County (or engaged as a subconsultant to the Architect or a County Consultant) to provide professional advice to County with respect to the design, construction or management of the Project.
- 1.1.43 **County Review Date.** "County Review Date" means an end date set forth in the Construction Schedule or Submittal Schedule within which County, Architect or a County Consultant is to provide information, review documents or render decisions, approvals or disapprovals.

- 1.1.44 **County Review Period.** "County Review Period" means a period of time set forth in the Construction Schedule or Submittal Schedule within which County, Architect or a County Consultant is to provide information, review documents or render decisions, approvals or disapprovals.
- 1.1.45 **County Risk Manager.** "County Risk Manager" means the individual employee of the County acting as its risk manager.
- 1.1.46 **County Website.** "County Website" means the website maintained by County at http://www.rivcoeda.org.
- 1.1.47 **Date of Commencement.** "Date of Commencement" means the starting date used for calculation of the Contract Time, and is the date, no earlier than the first working day following issuance of the Notice to Proceed, that is fixed in the Notice to Proceed issued by the County or, if no Notice to Proceed is issued, the Day that the Contractor actually commences Work at the Site in accordance with <u>Paragraph 8.1.1</u>, below.
- 1.1.48 **Day.** "Day", whether capitalized or not, and unless otherwise specifically provided, means calendar day, including weekends and Holidays.
- 1.1.49 **Declaration of Sufficiency of Funds.** "Declaration of Sufficiency of Funds" means the declaration, in the form included in the Bidding Documents, required to be submitted by Contractor under circumstances where Contractor has not executed a collective bargaining agreement covering the workers who will be employed to perform the Work.
- 1.1.50 **Defective Work**. "Defective Work" means materials, equipment, labor, workmanship, construction services or other construction work comprising the Work by Contractor or a Subcontractor that (1) is faulty, omitted, incomplete, or deficient, or (2) does not conform to Applicable Laws, the Contract Documents, or the requirements of any inspection, reference standard, test, code or approval specified in the Contract Documents.
 - 1.1.51 **Delay.** "Delay" means any circumstances involving delay, disruption, hindrance or interference.
- 1.1.52 **Deleted Work**. "Deleted Work" means Work that is eliminated or its scope or cost reduced pursuant to a Change Order or Unilateral Change Order.
- 1.1.53 **Department of Industrial Relations.** "Department of Industrial Relations" means The Department of Industrial Relations of the State of California.
- 1.1.54 **Design Discrepancy.** "Design Discrepancy" means an error, omission, conflict, ambiguity, lack of coordination or noncompliance with Applicable Laws contained in the Bidding Documents, Contract Documents, Reference Documents or other information made available by County to Contractor prior to or after the Bid Closing Deadline.
- 1.1.55 **Design Documents.** "Design Documents" means all originals, copies and drafts of plans, drawings, tracings, specifications, programs, reports, calculations, presentation materials, models, building information models and other writings or materials containing designs, specifications or engineering information related to the Work or Project prepared by Architect, County Consultants, Contractor, Separate Contractors or Subcontractors including, without limitation, computer aided design materials, electronic data files and paper copies. The term "Design Documents" includes both the written documents and all building and other designs depicted therein.
- 1.1.56 **Design Intent.** "Design Intent" means the general intended design objectives of the Design Documents prepared by Architect and County Consultants, as described in <u>Paragraph 1.2.1</u>, below.
- 1.1.57 **Designation of Subcontractors.** "Designation of Subcontractors" means the list of proposed Subcontractors prepared by the Bidder pursuant to California Public Contract Code §§4100 et seq.
- 1.1.58 **Differing Site Condition.** "Differing Site Condition" means an unforeseen condition that constitutes a basis for Contract Adjustment pursuant to Paragraph 4.3.8, below.

- 1.1.59 **Director of Facilities Management.** "Director of Facilities Management" means the Director for Facilities Management, or his/her designee.
- 1.1.60 **Disability Laws.** "Disability Laws" means applicable federal, state, local or municipal laws, rules, orders, regulations, statutes, ordinances, codes, decrees, or requirements of any Government Authority, which regulate, relate to or impose liability or standards of conduct with respect to, or accessibility for, persons with disabilities, including, without limitation, the Americans with Disabilities Act (42 USCA §§ 12101 et seq.) and the Fair Housing Amendments Act of 1988 (42 USCA §§ 3604 et seq.).
- 1.1.61 **Discovery Date.** "Discovery Date", generally used in reference to Contractor's obligation to give written notice of certain facts, conditions or circumstances, means the earlier of the dates that Contractor or any Subcontractor either: (1) discovered such facts, conditions or circumstances; or (2) should have discovered such facts, conditions or circumstances in the exercise of the level of care required by the terms of the Standard of Performance.
- 1.1.62 **Drawings.** "Drawings" means graphic and pictorial documents showing the design, location and dimensions of the Project, and generally includes plans, elevations, subparagraphs, details, schedules and diagrams. The term "Drawings" is used interchangeably with "Plans".
- 1.1.63 Environmental Laws. "Environmental Laws" means all applicable federal, state, local or municipal laws, rules, orders, regulations, statutes, ordinances, codes, decrees and permits or other requirements of any Governmental Authority, which regulate, relate to, or impose liability or standards of conduct concerning any Hazardous Substance (including, without limitation, the use, handling, transportation, production, disposal, discharge or storage thereof), occupational or environmental conditions on, under, or about the Site or Existing Improvements (including, without limitation, soil, groundwater, and indoor and ambient air conditions), environmental protection (natural or manmade resources), or occupational health or industrial hygiene (but only to the extent related to Hazardous Substances on, under, or about the Site or Existing Improvements), as now or may at any later time be in effect, including without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 [42 U.S.C.A. §§ 9601 et seq.]; the Resource Conservation and Recovery Act of 1976 [42 U.S.C.A. §§ 6901 et seq.]; the Clean Water Act (also known as the Federal Water Pollution Control Act) [33 U.S.C.A. §§ 1251 et seq.]; the Toxic Substances Control Act [15 U.S.C.A. §§ 2601 et seq.]; the Hazardous Substances Transportation Act [49 U.S.C.A. §§ 1801 et seq.]; the Insecticide, Fungicide, Rodenticide Act [7 U.S.C.A. §§ 136 et seq.]; the Superfund Amendments and Reauthorization Act [42 U.S.C.A. §§ 6901 et seq.]; the Clean Air Act [42 U.S.C.A. §§ 7401 et seq.]; the Safe Drinking Water Act [42 U.S.C.A. §§ 300f et seq.]; the Solid Waste Disposal Act [42 U.S.C.A. §§ 6901 et seq.]; the Surface Mining Control and Reclamation Act [30 U.S.C.A. §§ 1201 et seq.]; the Emergency Planning and Community Right to Know Act [42 U.S.C.A. §§ 11001 et seq.]; the Occupational Safety and Health Act [29 U.S.C.A. §§ 655 and 657]; the Residential Lead-Based Paint Exposure Act (Title X of the Housing and Community Development Act of 1992) [15 U.S.C.A. §§ 2681 et seq.]; the Lead-Based Paint Poisoning Prevention Act [42 U.S.C.A. §§ 4821 et seq.]; the Federal Endangered Species Act, the California Endangered Species Act, the Migratory Bird Treaty Act, the National Environmental Policy Act, the California Environmental Quality Act, Porter Cologne Water Quality Act (California Water Code §§ 13000 et seq), and all similar federal, state or local laws, rules, orders, regulations, statutes, ordinances, codes, decrees, or requirements.
- 1.1.64 **Escrow Agent.** "Escrow Agent" means an entity serving as escrow agent pursuant to California Public Contract Code §22300 in connection with the deposit of securities or retention.
- 1.1.65 **Escrow Bid Documents.** "Escrow Bid Documents" means all written documentation and electronic files reflecting the basis for and calculation of a Bid, including, without limitation, estimates, quantity take-offs, price quotations, product data, pricing data, memoranda, narratives, add/deduct sheets and reports (including, without limitation, reports on conditions at, under, or in the vicinity of the Site). The term "Escrow Bid Documents" does not include copies of Bidding Documents if they are not needed to comply with the requirements of the Bidding Documents applicable to submission of Escrow Bid Documents.
- 1.1.66 **Event of Contractor Default**. "Event of Contractor Default" means any of the events constituting default by Contractor as set forth in Paragraph 15.1.1, below.
- 1.1.67 **Evidence of Insurance**. "Evidence of Insurance" means the statement, completed by Bidder in the form included in the Bidding Documents, evidencing the Bidder's compliance with the insurance requirements of the Bidding Documents.

- 1.1.68 Excusable Delay. "Excusable Delay" means a Delay, other than a Compensable Delay, to Contractor's ability to achieve Substantial Completion or Final Completion of the Work within the Contract Time that is: (1) not caused, in whole or in part, by an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, a violation of an Applicable Law or a failure by Contractor or any Subcontractor, of any Tier, to comply with the Contract Documents; (2) unforeseeable, unavoidable and beyond the control of Contractor and the Subcontractors, of every Tier; and (3) the result of a Force Majeure Event. Without limitation to the foregoing, neither the bankruptcy, insolvency nor financial inability of Contractor or a Subcontractor, of any Tier, nor any failure by a Subcontractor, of any Tier, to perform any obligation imposed by contract or Applicable Laws shall constitute a ground for Excusable Delay.
- 1.1.69 **Existing Improvements.** "Existing Improvements" means all improvements located on the Site as of the Bid Closing Deadline, whether above or below the surface of the ground, including, but not limited to, existing buildings, utilities, infrastructure improvements and other facilities.
- 1.1.70 **Extra Work.** "Extra Work" means labor, materials, equipment, services or other work, not reasonably inferable by Contractor or its Subcontractors from the design and other information set forth in the Bidding Documents, the performance of which requires the expenditure by Contractor of additional and unforeseen Allowable Costs. References to Extra Work shall not be interpreted to mean or imply that Contractor is entitled to a Contract Adjustment unless such Extra Work constitutes a Compensable Change.
- 1.1.71 **Final Completion, Finally Complete.** "Final Completion" and "Finally Complete" mean the point at which the following conditions have occurred with respect to the entire Work:
 - .1 the Work is fully completed, including all minor corrective, or "punch list," items;
- all permits, approvals and certificates by Governmental Authorities, such as, but not necessarily limited to, a permanent or temporary certificate of occupancy required to occupy and use the Work have been issued free of any conditions that are the result of an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, a violation of an Applicable Law or a failure by Contractor or any Subcontractor, of any Tier, to comply with the Contract Documents;
- debris and cleaned in accordance with the requirements of the Contract Documents, including, but not necessarily limited to where applicable, the following: removal of temporary protections; removal of marks, stains, fingerprints and other soil and dirt from painted, decorated and natural-finished woodwork and other Work; removal of spots, plaster, soil and paint from ceramic tile, marble and other finished materials; all surfaces, fixtures, cabinet work and equipment are wiped and washed clean and in an undamaged, new condition; all aluminum and other metal surfaces are cleaned in accordance with recommendations of the manufacturer; and all stone, tile and resilient floors are cleaned thoroughly in accordance with the manufacturer's recommendations and buff dried by machine to bring the surfaces to sheen;
- .4 all conditions set forth in the Contract Documents for Substantial Completion of the Work have been, and continue to be, fully satisfied;
- .5 all conditions pertaining to the Work and required for the release of County's obligations (including, but not limited to, release of County's bond obligations) to Governmental Authorities (including, but not limited to, matters involving grading, flood control, public works, transportation and traffic) have been satisfied; and
 - .6 Contractor has delivered to County all Close-Out Documents.
- 1.1.72 **Final Completion Punch List.** "Final Completion Punch List" means the list of minor items of Work to be completed or corrected by Contractor for Final Completion.
- 1.1.73 **Final Payment**. "Final Payment" means payment by County to Contractor of the entire unpaid balance of the Contract Price due to Contractor following Final Completion.
 - 1.1.74 FM. "FM" means Facilities Management for the County of Riverside.

- 1.1.75 Force Majeure Event. "Force Majeure Event" means, and is restricted to, any the following: (1) Acts of God occurring at the Site; (2) terrorism or other acts of a public enemy; (3) orders of Governmental Authorities (including, without limitation, unreasonable and unforeseeable Delay in the issuance of permits or approvals by Governmental Authorities that are required for the Work); (4) epidemics or quarantine restrictions; (5) strikes and other organized labor action occurring at the Site and the effects thereof on the Work to the extent such strikes and other organized labor action are beyond the control of Contractor and its Subcontractors, of every Tier, and to the extent the effects thereof cannot be avoided by use of replacement workers or implementation of a dual gate system of entry to the Site; or (6) unusual shortages in materials that are supported by documented proof that (a) Contractor made every effort to obtain such materials from all available sources, (b) such shortage is due to the fact that such materials are not physically available from single or multiple sources or could have been obtained only at exorbitant prices entirely inconsistent with current rates taking into account the quantities involved and the usual industry practices in obtaining such quantities, and (c) such shortages and the difficulties in obtaining alternate sources of materials could not have been known or anticipated as of the Bid Closing Deadline.
- 1.1.76 **Fragnet.** "Fragnet" means a contemporaneous, fragmentary scheduling network, which graphically identifies the sequencing of all critical and non-critical new activities and/or activity revisions affected by a Compensable Delay or Excusable Delay with logic ties to all affected existing activities noted on the Construction Schedule, that isolates and quantifies a time impact of a specific issue, determines and demonstrates any such specific Delay in relation to past and/or other current Delays and provides a method for incorporating all Contract Adjustments to the Contract Time into an update of the approved Construction Schedule.
- 1.1.77 **General Conditions**. "General Conditions" means the herein set forth general terms and conditions governing performance of the Work.
- 1.1.78 **General Requirements.** "General Requirements" means the portion of the Specifications so titled setting forth additional requirements for administration of the Work.
- 1.1.79 **Good Faith Determination**. "Good Faith Determination" means a determination made by the Director of Facilities Management or other authorized representative of County, which he/she believes in good faith to be a proper exercise of County's rights and to have a reasonable basis in fact, whether or not such determination is in fact proper, reasonable or correct or adjudged to be so.
- 1.1.80 **Governmental Authority.** "Governmental Authority" means the United States, the State of California, the County of Riverside (acting in its regulatory, rather than proprietary, capacity), the City in which the Project is located, any other local, regional, state or federal political subdivision, authority, agency, department, commission, board, bureau, court, judicial or quasi-judicial body, and any legislative or quasi-legislative body, or instrumentality of any of them, which exercises jurisdiction over the Project, Work, Site, Contractor or County, including, without limitation, any Governmental Authority having jurisdiction to review and approve or reject the Contract Documents or the Work based on compliance or non-compliance with Applicable Laws.
- 1.1.81 **Governmental Authority Review Period.** "Governmental Authority Review Period" means a period of time set forth in the Construction Schedule or Submittal Schedule for Governmental Authority review, and/or approval, of the Work.
- 1.1.82 **Guarantee To Repair Period**. "Guarantee To Repair Period" means the period of time set forth in Section 13.3, below, for repair or replacement of Defective Work.
- 1.1.83 **Hazardous Substance**. "Hazardous Substance" means either of the following: (1) any chemical, material or other substance defined as or included within the definition of "hazardous substances," "hazardous wastes," "extremely hazardous substances," "toxic substances," "toxic material," "restricted hazardous waste," "special waste," "contamination" or words of similar import under any Environmental Law, including, without limitation, the following: petroleum (including crude oil or any fraction thereof), asbestos, asbestos-containing materials, polychlorinated biphenyls ("PCBs") and PCB-containing materials, whether or not occurring naturally; or (2) any substance that because of its quantity, concentration or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment, and which has been determined by any Governmental Authority to be a hazardous waste or hazardous substance.

- 1.1.84 **Holiday**. "Holiday" means a Day recognized by County as being a legal holiday for its staff and employees.
- 1.1.85 **Indemnitees.** "Indemnitees" means those persons or entities listed in <u>Paragraph 3.18.1</u>, below, as the "Indemnitees".
- 1.1.86 **Inspector of Record.** "Inspector of Record" means a person designated by the County to perform inspections on behalf of the County, who may be an employee or an independent consultant to County.
- 1.1.87 **Installation Subcontractor.** "Installation Subcontractor" means a Subcontractor who performs a portion of the Work that includes providing substantial, rather than minor and incidental, services for the installation of temporary or permanent materials, equipment or facilities at the Site.
- 1.1.88 **Instructions to Bidders.** "Instructions to Bidders" means the portion of the Bidding Documents setting forth the requirements to be followed by Bidders in preparing and submitting Bids.
- 1.1.89 **Intellectual Property Rights.** "Intellectual Property Rights" means all intellectual property rights, including, without limitation, patent, trademark, trade dress, copyright, industrial design rights, priority rights and trade secrets.
- 1.1.90 **Key Personnel, Key Persons.** "Key Personnel" and "Key Persons" mean those individuals employed by Contractor as described in <u>Paragraph 3.8.1</u>, below, and any replacements thereto approved by County, whose personal performance is deemed of the essence to the Construction Contract.
- 1.1.91 **Loss, Losses.** "Loss" and "Losses" mean any and all economic and non-economic losses, costs, liabilities, claims, damages, cost escalations, actions, judgments, settlements, expenses, fines, penalties and punitive damages including, without limitation, actual attorney's fees, expert and non-expert witness fees, arbitrator and arbitration fees, court costs (statutory and non-statutory), and mediation and mediator fees.
- 1.1.92 **Modification.** "Modification" means a document, other than a Change Order or Construction Change Directive, approved and signed by County and Contractor after execution of the Construction Contract, agreeing to alter, amend or modify the Contract Documents.
- 1.1.93 **Mold.** "Mold" means mold, mildew, spores or other microorganisms of any type, nature or description, or any by-product thereof, the presence of which poses an actual or potential threat to human health, including, without limitation, any species of organisms of the kingdoms of fungi or mycota, including yeasts, smuts, ruts, mildews, mold and mushrooms, or any microbial contamination, either airborne or surface, which arises out of or is related to the presence of fungi or spores (including, without limitation, aspergilius, cladosporium, penicillium and stachybortrys chartarum).
- 1.1.94 **Non-Collusion Declaration.** "Non-Collusion Declaration" means the form, so titled, required by California Public Contract Code §7106 and the Bidding Documents to be submitted by Bidder with its Bid.
- 1.1.95 **Notice Inviting Bids.** "Notice Inviting Bids" means the notice issued by or on behalf of County inviting submission of Bids for the Project.
- 1.1.96 **Notice Inviting Prequalification Statements**. "Notice Inviting Prequalification Statements" means the formal notice issued by County inviting contractors to participate in County's process for Prequalification of Bidders.
- 1.1.97 **Notice of Change**. "Notice of Change" means a formal written notice required to be submitted by Contractor pursuant to <u>Paragraph 7.6.1</u>, below, notifying County of circumstances that Contractor believes may give rise to a Contract Adjustment.
- 1.1.98 **Notice of Completion**. "Notice of Completion" means a "notice of completion" as defined in California Civil Code §9204.

- 1.1.99 **Notice of Delay**. "Notice of Delay" means a formal written notice prepared and submitted by Contractor pursuant to <u>Paragraph 8.2.2</u>, below, notifying County of circumstances that Contractor believes may give rise to a Contract Adjustment to the Contract Time for Excusable Delay or Compensable Delay or a Contract Adjustment to the Contract Price for Compensable Delay.
- 1.1.100 **Notice of Final Completion.** "Notice of Final Completion" means the written notice by County confirming the date of actual Final Completion.
- 1.1.101 **Notice of Intent to Award**. "Notice of Intent to Award" means the written notice by or on behalf of County stating County's intent to Award the Construction Contract.
- 1.1.102 **Notice of Substantial Completion**. "Notice of Substantial Completion" means the written notice by County confirming the date of actual Substantial Completion.
- 1.1.103 **Notice to Proceed.** "Notice to Proceed" means the written notice issued by County to Contractor to begin the Work.
- 1.1.104 **Payment Bond, Performance Bond.** "Payment Bond" and "Performance Bond" mean the surety bonds required to be provided by Contractor pursuant to <u>Article 12</u>, below.
- 1.1.105 **Plans.** "Plans" means the graphic and pictorial portions of the Contract Documents prepared by Architect or its Subconsultants showing the design, location and dimensions of the Work, including, without limitation, plans, elevations, details, schedules and diagrams. The term "Plans" is used interchangeably with "Drawings".
- 1.1.106 **Post-Award Submittals.** "Post-Award Submittals" means the documents described in the Bidding Documents that the apparent successful Bidder is required to submit after opening of Bids as a condition of Award.
- 1.1.107 **Pre-Bid Conference.** "Pre-Bid Conference" means the conference, specified in the Notice Inviting Bids as either mandatory or optional, held prior to the Bid Closing Deadline for the purpose of, without limitation, introducing the Bidders to the Project, and which conference may, or may not, include a review of the Site.
- 1.1.108 **Prequalification.** "Prequalification" means a process for Prequalification of contractors for bidding that is conducted by County pursuant to California Public Contract Code §20101 or as otherwise permitted by Applicable Laws.
- 1.1.109 **Prequalification Documents**. "Prequalification Documents" means the collection of documents issued to and submitted by individuals or entities pursuant to a Prequalification conducted by County.
- 1.1.110 **Prequalified Bidder.** "Prequalified Bidder" means a contractor that is prequalified as part of a Prequalification conducted by County pursuant to Public Contract Code §20101.
- 1.1.111 **Product Data**. "Product Data" means illustrations, standard schedules, charts, instructional brochures, diagrams and other information furnished by Contractor to illustrate a material, product or system for the Work.
- 1.1.112 **Progress Payment**. "Progress Payment" means a monthly payment of a portion of the Contract Price prior to Final Completion based on Contractor's progressed performance of the Work.
- 1.1.113 **Project**. "Project" means the improvements comprising, or necessary or appurtenant to the use of, the work of improvements described generally in the Bidding Documents, of which the Work may be the entirety of such improvements or only a part.
- 1.1.114 **Project Documents**. "Project Documents" means all writings (hard copy and electronic) in the possession of Contractor at the Site or elsewhere that relate in any way to the Project or Work.
- 1.1.115 **Project Team.** "Project Team" means County, Architect, County Consultants, Contractor, the Subcontractors, the Separate Contractors, Inspectors of Record and other firms or individuals retained by County, or

retained by others with County's approval, participating in the planning, programming, design, construction or inspection of the Work.

- 1.1.116 Reasonable Order of Magnitude Estimate. "Reasonable Order of Magnitude Estimate" means a general estimate prepared by Contractor, or jointly by Contractor and County, without the benefit of complete or definitive pricing by Subcontractors, of the projected additional cost and time associated with Contractor's performance of a particular item or items of Extra Work or Deleted Work described in a Construction Change Directive. Unless otherwise agreed to in writing between County and Contractor, a Reasonable Order of Magnitude Estimate does not constitute either an authorization or agreement by County to any Contract Adjustment or a guarantee or promise by Contractor with respect to the amount of any Contract Adjustment that may be associated with a Compensable Change or Deleted Work.
- 1.1.117 **Record Documents.** "Record Documents" means the collection of documents assembled and prepared by Contractor (including, without limitation, the Record Drawings and Specifications) showing the condition of the Work as actually built.
- 1.1.118 **Record Drawings, Record Specifications.** "Record Drawings" and "Record Specifications" mean the Drawings and Specifications marked by Contractor to show the condition, location and placement of the Work as actually built, including, without limitation, the locations of mechanical, electrical, plumbing or similar portions of the Work that are depicted diagrammatically in the Drawings.
- 1.1.119 **Reference Documents.** "Reference Documents" means reports, studies, surveys and other information provided by County for Contractor's review and consideration in preparing its Bid, including, without limitation, information describing the Site (including surface or subsurface conditions), Existing Improvements or Hazardous Substances at the Site.
- 1.1.120 **Request for Extension**. "Request for Extension" means a formal written request submitted by Contractor pursuant to <u>Paragraph 8.2.3</u>, below, setting forth the justification and support for Contractor's request for a Contract Adjustment to the Contract Time.
- 1.1.121 **Request for Information.** "Request for Information" means a written request by Contractor for clarification of what it perceives to be a discrepancy in the Contract Documents (including, without limitation, information in the Contract Documents constituting a Design Discrepancy or a variance between the information in the Bidding Documents or Contract Documents and conditions at the Site or in Existing Improvements).
- 1.1.122 **Safety Program.** "Safety Program" means the formal, written program prepared by Contractor setting forth detailed procedures and precautionary measures for protecting persons and property from injury or damage.
- 1.1.123 **Samples.** "Samples" means physical examples that, when approved by County and Architect, illustrate materials, equipment or workmanship by which the Work is to be evaluated and judged as part of the Submittal process.
- 1.1.124 **Schedule of Values.** "Schedule of Values" means a detailed, itemized breakdown of the Contract Price, which provides for an allocation of the dollar values to each of the various parts of the Work.
- 1.1.125 **Self-Performed Work.** "Self-Performed Work" means Work related to a Compensable Change or Deleted Work that is performed or to be performed by Contractor's own laborers who are employed by Contractor, rather than by the employees of a Subcontractor, using materials and equipment purchased by Contractor directly from a supplier or manufacturer.
- 1.1.126 **Separate Contractor**. "Separate Contractor" means a contractor, subcontractor, supplier or vendor under contract directly to County to provide services, materials, labor, equipment or other work to the Project.
- 1.1.127 **Shop Drawing.** "Shop Drawing" means a drawing, diagram, schedule and other data specially prepared for the Work by Contractor or a Subcontractor to illustrate some portion of the Work.

- 1.1.128 **Site.** "Site" means: (1) the parcel of land owned by County on which the Project is to be constructed and such additional parcels as may be purchased by County for such construction; (2) all areas adjacent to such parcels that may be used by Contractor or the Subcontractors for staging, storage, parking or temporary offices; and (3) all land areas, both private and public, adjacent to such parcels on which Work is required to be performed under the Contract Documents, Applicable Laws or permits relating to the Project.
- 1.1.129 **Specifications**. "Specifications" means the portion of the Contract Documents consisting of the written requirements for materials, equipment, standards and workmanship for the Work and performance of related services.
- 1.1.130 **Standard of Performance.** "Standard of Performance" means the general standard governing Contractor's performance of its obligations under the Construction Contract and General Conditions as set forth in <u>Section 2.2</u> of the Construction Contract.
- 1.1.131 **State Water Resources Control Board.** "State Water Resources Control Board" means the State Water Resources Control Board of the State of California.
- 1.1.132 **Storm Water Permit**. "Storm Water Permit" means any applicable storm water, urban runoff or statewide general NPDES permit issued by the State of California or the United States pursuant to the provisions of the Clean Water Act (Title 33U.S.C.§§1251 et seq.) and/or Porter Cologne Water Quality Control Act (California Water Code §§13000 et seq.) and including any related regulations issued by the State of California or the United States.
- 1.1.133 **Sub-Bidder**. "Sub-Bidder" means a person or entity that submits a bid to a Bidder for some portion of the Work that is to be performed by that person or entity acting as a first-Tier Subcontractor.
- 1.1.134 **Subcontractor**. "Subcontractor" means a person or entity that has a contract to perform a portion of the Work, including without limitation, subcontractors, sub-subcontractors, suppliers, equipment operators, manufacturers and vendors, of any and every Tier.
- 1.1.135 **Submittal.** "Submittal" means a Shop Drawing, Product Data, Sample, detailed design, exemplar, fabrication and installation drawing, list, graph, operating instruction or other document required to be submitted by Contractor under the Contract Documents.
- 1.1.136 **Submittal Schedule**. "Submittal Schedule" means the schedule prepared by Contractor showing the timing for submission and review of Submittals during construction.
- 1.1.137 **Substantial Completion, Substantially Complete.** "Substantial Completion" and "Substantially Complete" mean the point at which the following conditions have occurred with respect to the entire Work or a portion of the Work designated by County in writing to be Substantially Completed prior to Substantial Completion of the entire Work:
- .1 such Work is sufficiently and entirely complete in accordance with Contract Documents so that such Work can be fully enjoyed and beneficially occupied and utilized by County for its intended purpose (except for minor items which do not impair County's ability to so occupy and use such Work);
- .2 all permits, approvals and certificates by Governmental Authorities, such as, but not necessarily limited to, a permanent or temporary certificate of occupancy required to occupy and use such Work have been issued free of any conditions that are the result of an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, a violation of an Applicable Law or a failure by Contractor or any Subcontractor, of any Tier, to comply with the Contract Documents; and
- .3 all building systems included in such Work are operational as specified, all designated or required inspections and certifications by Governmental Authorities have been made and posted and instruction of County's personnel in the operation of the systems has been completed.
- 1.1.138 **Substantial Completion Punch List.** "Substantial Completion Punch List" means the list of items of Work to be completed or corrected by Contractor for Substantial Completion.

- 1.1.139 **Substitution**. "Substitution" means a material, product or item of material or equipment proposed by the Bidder or Contractor in place of that specified in the Bidding Documents or Contract Documents.
- 1.1.140 **Substitution Request Form**. "Substitution Request Form" means the form, so titled, that is included in the Bidding Documents for use by the Bidders when requesting a Substitution.
- 1.1.141 **Supplementary Conditions**. "Supplementary Conditions" means those portions of the Specifications that supplement, by addition, modification or deletion, a specific portion of the General Conditions.
- 1.1.142 **Surety**. "Surety" means Contractor's surety(ties) issuing the Bid Bond, Performance Bond or Payment Bond.
- 1.1.143 **Tier.** "Tier" means the contractual level of a Subcontractor with respect to Contractor. For example, a "first-tier" Subcontractor is under contract with Contractor. A sub-subcontractor under contract with a first-tier Subcontractor is in the "second tier," and so on. Use of the phrase "of every Tier", or similar phraseology, in the Contract Documents shall not be interpreted as implying that other provisions of the Contract Documents, where such phrase is not used, are intended to be limited in application to only the first Tier or to only certain other Tiers of Subcontractors.
- 1.1.144 **Time Impact Analysis.** "Time Impact Analysis" means a written report evaluating the impact of an Excusable or Compensable Delay, which shall include, at a minimum, the following: (1) a narrative description of the Delay and its impact on the critical path to achievement of a Substantial Completion or Final Completion of the Work or a portion of the Work designated by County within the Contract Time; (2) a Fragnet; (3) the number of Days of extension sought by Contractor as a Contract Adjustment to the Contract Time; (4) a computation of the Days of Compensable Delay multiplied times the liquidated damages payable to Contractor pursuant to <u>Section 3.3</u> of the Construction Contract, if any, sought by Contractor; (5) a statement that Contractor has complied with the requirements of the General Conditions for written notice of Delays, along with the dates and copies of such notices; (6) the measures taken by Contractor and Subcontractors to prevent or minimize the Delay; and (7) Contractor's recommendations for reordering or re-sequencing the Work to avoid or minimize further Delay.
- 1.1.145 **Unexcused Delay**. "Unexcused Delay" means any Delay that is not a Compensable Delay or Excusable Delay or that constitutes a Compensable Delay or Excusable Delay for which Contractor is not entitled to a Contract Adjustment to the Contract Time, including, without limitation, the following: (1) Delay caused by an act or omission of Contractor or a Subcontractor, of any Tier, constituting negligence, willful misconduct, a violation of an Applicable Law or a failure by Contractor or any Subcontractor, of any Tier, to comply with the Contract Documents; (2) Delay for which Contractor has failed to provide a timely and complete Notice of Delay or Request for Extension; or (3) Delay associated with any circumstances where the costs or risk associated with such circumstances are designated in the Contract Documents as being at Contractor's risk or Contractor's Own Expense.
- 1.1.146 **Unilateral Change Order**. "Unilateral Change Order" means a writing signed by County in accordance with <u>Article 7</u>, below, in which County unilaterally sets forth its Good Faith Determination of the undisputed portion of an otherwise disputed Contract Adjustment.
- 1.1.147 **Work**. "Work" means all labor, materials, equipment, services, permits, licenses, taxes and other things necessary for Contractor to perform its obligations under the Contract Documents, including, without limitation, any Changes requested by County, in accordance with the Contract Documents and all Applicable Laws. The Work may constitute the whole or a part of the Project.
- 1.1.148 Worker's Compensation Certificate. "Worker's Compensation Certificate" means the statement, completed by Bidder in the form included in the Instruction to Bidders, evidencing the Bidder's compliance with the worker's compensation insurance requirements of the Bidding Documents and Applicable Laws.

1.2 CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS

1.2.1 **Design Intent.** The intent of the Contract Documents is for Contractor to provide all items necessary to produce a work of improvement that is complete as a whole and that is, in all of its parts, suitable for use and occupancy for its intended purpose, including, without limitation, all equipment, casework, mechanical, electrical and similar devices of whatever nature, completely installed, hooked-up and made fully operational and functional.

- 1.2.2 **Complementary.** Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. Any Work called for on the Drawings and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both.
- 1.2.3 **Technical Words.** 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 non-technical words and abbreviations are used in accordance with their commonly understood meanings.
- 1.2.4 **Trade Names.** It is not the intention of the Contract Documents to go into detailed descriptions of any materials or methods commonly known to the trade under a "trade name" or "trade term." The mere mention or notation of such "trade name" or "trade term" shall be considered a sufficient notice to the Contractor that it will be required to complete the Work so named with all its appurtenances according to first-class practices of the trade.
- 1.2.5 **Incidental Items.** The naming of any material or equipment shall mean furnishing and installing of same, including all incidental and accessory items thereto and labor therefor, in accordance with first-class practices of the trade involved, unless specifically noted otherwise.
- 1.2.6 **Drawing Dimensions.** Figured, derived or numerical dimensions on scale Drawings shall govern over Drawings without figured dimensions. The Drawings shall not be scaled to determine dimensions, and (except in the case of diagrammatic Drawings) dimensions shall be calculated from figures shown on the Drawings. Obvious discrepancies between scale and figured dimensions, not marked "not to scale," must be brought to the Architect's attention before proceeding with the Work affected by the discrepancy. Contractor shall carefully check and compare all portions of the Drawings and Specifications so as to correctly interpolate the intended dimensions for any portion of the Work that is not explicitly dimensioned in the Contract Documents.
- 1.2.7 **Drawings, Specifications.** In general, the Drawings will show dimensions, positions, and kind of construction and the Specifications will define materials, quality and standards. Work not particularly shown, detailed, marked or specified shall be the same as similar parts that are shown, detailed, marked or specified.
- 1.2.8 **Typical Work**. Work not particularly shown, detailed, marked or specified shall be the same as similar parts that are shown, detailed, marked or specified.
- 1.2.9 **Divisions of the Work**. All the Work mentioned or indicated in the Contract Documents shall be performed by Contractor as part of the Work unless specifically indicated in the Contract Documents to be done by others. The organization of the Specifications into divisions, sections and articles and the arrangement of the Drawings shall not control Contractor in dividing the Work among the Subcontractors or in establishing the extent of the Work to be performed by the Subcontractors.
 - 1.2.10 Applicable Laws. Compliance with Applicable Laws shall be considered as a part of the Work.
- 1.2.11 Interpretations of Laws. In the event of a conflict between or among Applicable Laws governing performance of the Work, the more stringent shall govern. Contractor assumes, at Contractor's Own Expense, sole responsibility for, and the risk associated with, interpretations of Applicable Laws made by Contractor not predicated on written orders issued by Governmental Authorities that by their terms are applicable to the Project, including, without limitation, interpretations or assumptions made by Contractor based on decisions, orders or approvals (written or unwritten) issued by or on behalf of Governmental Authorities in connection with work on other projects or properties near or in the general vicinity of the Site.
- 1.2.12 **Modifiers**. The Contract Documents may omit modifying words such as "all" and "any," and articles such as "the" and "an." If a modifier or an article is not included in one statement and appears in another, it 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 non-limiting 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 fall within the broadest possible scope of such general statement.

- 1.2.13 **Singular, Gender, Captions.** When appropriate to the context, 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.
- 1.2.14 **Cross-References**. Any cross-references indicated between various paragraphs or other portions of the Specifications, Drawings or other Contract Documents are provided for the convenience of Contractor and shall not be deemed to be all-inclusive.
- 1.2.15 **Diagrammatic Design.** Drawings and diagrams for mechanical, plumbing, electrical, fire sprinkler, fire alarm and low voltage Work shall be considered as diagrammatic only and shall not be used for any structural guidance or physical layout. Because such Drawings are diagrammatic, Contractor shall be responsible to provide any and all numbers and lengths of fittings, wire, conduit, connections, attachments or similar materials or devices needed to complete the Work, without Contract Adjustment, whether or not they exceed the numbers of pieces or the lengths indicated by such Drawings. Contractor is solely responsible to carefully plan and coordinate in advance, by means of coordination drawings prepared by Contractor or a Subcontractor, the installation of any Work shown diagrammatically and shall do so in such a manner as to make maximum use of the space available and anticipate and avoid wherever possible conflict and interferences among such portions of the Work and with other portions of the Work, including structural members.
- 1.2.16 **Demolition.** Existing Improvements at the Site of which no specific description is made in the Contract Documents, but which could be reasonably assumed to interfere with the satisfactory completion of the Work, shall be removed and disposed of by Contractor without Contract Adjustment. If Contractor is unsure whether a specific Existing Improvement at the Site which is not specifically described in the Contract Documents should be removed and disposed of, Contractor shall promptly ask the County whether such Existing Improvement is to be removed or remain in place, and shall comply with any directive given in response.
- 1.2.17 **Omissions.** Items missing from the Contract Documents shall nevertheless be provided by the Contractor, without Contract Adjustment, to the extent reasonably inferable from the Contract Documents as being necessary to satisfy the Design Intent.
- 1.2.18 **Conflicts**. Notwithstanding the provisions of <u>Paragraph 1.2.19</u>, below, in the event of conflict between any of the Contract Documents, the provision placing a more stringent requirement or greater burden on the Contractor or requiring the greater quantity or higher quality material or workmanship shall prevail, unless otherwise directed by the County in writing.
- 1.2.19 **Order of Precedence.** Conflicts that cannot be resolved in accordance with the rules of interpretation set forth elsewhere in this <u>Section 1.2</u>, shall be interpreted in accordance with the following order of precedence (the first being the highest order of precedence):
- .1 Applicable Laws (provided, however, and notwithstanding <u>Subparagraph 1.2.19.10</u>, below, where the Contract Documents or manufacturer's recommendations or specifications require standards higher than those of Applicable Laws, the Contract Documents or manufacturer's recommendations or specifications shall control);
 - .2 Change Orders, Unilateral Change Orders and Construction Change Directives;
 - .3 Addenda;
 - .4 Construction Contract:
 - .5 Supplementary Conditions;
 - .6 General Conditions;

- .7 General Requirements;
- .8 Specifications;
- .9 Drawings, subject to the following: (1) large scale plans and details take precedence over small scale Drawings in all cases; (2) full scale Drawings have precedence over both large and small scale Drawings in all cases; (3) detailed Plans and/or Drawings shall have precedence over general Plans and/or Drawings; (4) architectural and structural Drawings take precedence over electrical and mechanical Drawings in regard to location and arrangement of fixtures, outlets, and equipment; and (5) electrical and mechanical Drawings take precedence in describing and specifying equipment and in describing the diagrammatic requirements;
- .10 standard and reference specifications which include industry norms, such as, but not limited to, ANSI and ASTM; and
 - .11 Reference Documents.
- 1.2.20 **Conditions Precedent.** Wording used in the Contract Documents indicating that a right of the Contractor or an obligation of the County is subject to or conditioned upon the occurrence of a condition or event, whether or not such condition or event is within the control of Contractor, County or others and whether or not such condition or event is expressly stated to be a "condition precedent", shall be understood and interpreted to mean that the stated condition or event is a condition precedent to the existence, arising, performance and exercise of such right or obligation.

1.3 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

- 1.3.1 **Property of County.** Subject to the provisions of <u>Paragraph 2.4.4</u>, below, all Design Documents, Contract Documents and Project Documents that are prepared by Contractor or a Subcontractor, of any Tier, for use in connection with the Project, including any designs, building designs or other depictions underlying or shown in them, and the Intellectual Property Rights thereto, shall be deemed the sole and exclusive property of County and ownership thereof is irrevocably vested in County, whether the Project is executed or not.
 - 1.3.2 Assignment of Rights. Contractor shall, without further consideration, obtain any and all Intellectual Property Rights in the Project Documents and Design Documents prepared by Contractor or any Subcontractor, of any Tier, for use in connection with the Project, including any designs, building designs or other depictions underlying or shown in them, free and clear of any liens or other encumbrances, claims or rights of third parties, transfer such rights, if necessary in writing, to County and cooperate with County in securing and registering such rights, such that County shall own all Intellectual Property Rights and any other tangible and/or intangible property rights associated therewith. Such transfer and assignment will be effective for the entire duration of the copyrights and include, but are not be limited to, all rights in related plans, specifications, documentation, derivative works and moral rights.
- 1.3.3 **Contractor's Warranty**. Contractor represents and warrants that the Project Documents and Design Documents prepared by Contractor or any Subcontractor for use on the Project, and the use of such Project Documents in the ordinary course, are free of any claim of infringement or any other violation of any Intellectual Property Right or other right of any third party.
 - 1.3.4 **Non-Exclusive License**. Without derogation of County's rights under this <u>Section 1.3</u>, Contractor and Subcontractors, of every Tier, are granted a limited, non-exclusive license, revocable at will of County, to use and reproduce applicable portions of the Design Documents, Contract Documents and Project Documents as appropriate to and for use in the execution of the Work and for no other purpose.
 - 1.3.5 **Reproduction.** Contractor shall do all reproduction and distribution of such reproducible prints of Contract Documents and Design Documents as are necessary for the complete pricing and performance of the Work, including, without limitation, all Changes. The costs of such reproduction shall be at Contractor's Own Expense.

- 1.3.6 **Delivery to County.** All Design Documents and Contract Documents (including originals and copies), and one (1) copy of all other Project Documents, in the possession of Contractor or Subcontractors shall be delivered to County upon the earlier of Final Completion of the Work or termination of the Construction Contract; provided, however, that Contractor shall have the right to retain one (1) copy of the Contract Documents and Submittals as a permanent record.
- 1.3.7 **Subcontractors.** Contractor shall take all necessary steps to ensure that a provision is included in all contracts with Subcontractors, of every Tier, who perform Work on the Project protecting and preserving County's rights as set forth in this <u>Section 1.3</u>.

ARTICLE 2 COUNTY RIGHTS AND OBLIGATIONS

2.1 INFORMATION, APPROVALS AND SERVICES REQUIRED OF COUNTY

passed; and

- 2.1.1 **Legal Descriptions.** County shall furnish, within a reasonable time after written request by Contractor, a legal description of the Site and information describing legal limitations affecting the Site that are recorded with applicable Governmental Authorities, such as, but not limited to, easements.
- 2.1.2 **Permits and Fees.** County shall secure and pay for only those permits and fees which are expressly stated to be the responsibility of County under the Contract Documents. County shall pay for all hook-up fees (not including "tap fees", which are the responsibility of Contractor pursuant to <u>Paragraph 3.14.3</u>, below) in order to establish a new account with a utility provider.
- 2.1.3 **County Approvals.** Information, approvals and decisions required of County or a County Consultant for which a County Review Period or County Review Date is included in the Construction Schedule that is approved by County shall be provided in accordance with the Construction Schedule. If a County Review Period or County Review Date is not set forth in the Construction Schedule approved by County, then such information, approvals and decisions shall be provided upon written request by Contractor without unreasonable Delay. Notwithstanding the foregoing, failure by County, Architect or a County Consultant to provide any information, approvals or decisions shall not be considered as a basis for Contract Adjustment to the Contract Time unless and until, and in calculating a Contract Adjustment any Delay or extension of the Contract Time resulting from a late-issuance of such information, approval or decision shall not commence until after:
- .1 in the case of information, approval or decision for which there is a County-approved County Review Period or County Review Date in the County-approved Construction Schedule, seven (7) Days have passed since the County and the individual from whom such information, approval or decision is sought have received from Contractor a written notice containing all the following:
 - (1) a detailed description of the information, approval or decision required;
 - (2) a statement that the County Review Period or County Review Date has expired or

(3) a statement, prominently displayed, that: "PURSUANT TO <u>PARAGRAPH 2.1.3</u> OF THE GENERAL CONDITIONS, THE FAILURE TO PROVIDE THE REQUESTED INFORMATION, APPROVAL OR DECISION WITHIN 7 CALENDAR DAYS FROM THIS NOTICE MAY RESULT IN A REQUEST FOR A CONTRACT ADJUSTMENT": or

in the case of information, approval or decision for which there is no County Review Period or County Review Date set forth in the County-approved Construction Schedule, thirty (30) Days have passed since the County and the individual from whom such information, approval or decision is sought have received from Contractor a written notice that includes the statements set forth Clauses (1) and (2) of Subparagraph 2.1.3.1, above, and that includes a statement, prominently displayed, that: "PURSUANT TO PARAGRAPH 2.1.3 OF THE GENERAL CONDITIONS, THE FAILURE TO PROVIDE THE REQUESTED INFORMATION, APPROVAL OR DECISION WITHIN 30 CALENDAR DAYS FROM THIS NOTICE MAY RESULT IN A REQUEST FOR A CONTRACT ADJUSTMENT".

- 2.1.4 **Approvals.** Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of County, Architect or any other Project Team member, or by tests, inspections or approvals required or performed by persons other than the Contractor.
 - 2.1.5 **Non-Specified Items.** County reserves the right to approve materials and sources of supply of materials that are not specified in the Contract Documents and that are used for the performance of the Work.

2.2 COUNTY'S RIGHT TO STOP THE WORK

If Contractor fails to correct Defective Work as required by <u>Section 13.2</u> of these General Conditions, fails to perform the Work in accordance with the Contract Documents or violates any Applicable Law, County may immediately order Contractor to stop the Work, or any portion thereof, until the cause for such direction has been eliminated by Contractor. Contractor shall immediately comply with such notice at Contractor's Own Expense. Nothing stated herein or elsewhere in the Contract Documents shall be interpreted as placing upon County a duty or responsibility to Contractor or any other party to exercise its right to stop the Work.

2.3 COUNTY'S RIGHT TO CARRY OUT THE WORK

If Contractor fails to carry out the Work in accordance with the Contract Documents, fails to provide sufficient labor, materials, equipment, tools and services to maintain the Construction Schedule, or otherwise fails to comply with any requirement of the Contract Documents, and fails to cure such failure in the manner required by <u>Subparagraph 15.1.1.4</u>, below, County may correct such failure. In such case, County shall be entitled to recover from Contractor or deduct from payments then or thereafter due Contractor for any Loss resulting from such failure, including compensation for the additional services and expenses of County, County Consultants and others whose services are reasonably required and made necessary thereby. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall promptly pay the amount of the shortfall to County.

2.4 ACCOUNTING, RECORDS AND AUDIT

- 2.4.1 **Accounting System.** Contractor shall exercise such controls as may be necessary for proper financial management of the Work. Such accounting and control systems shall comply with prevailing custom and practice for similar projects, be satisfactory to County and shall include preservation of the books and records described in <u>Paragraph 2.4.2</u>, below, subject to Contractor's obligations under <u>Paragraph 1.3.6</u>, above, for a period of ten (10) years after Final Completion of the Work, or for such longer period as may be required by Applicable Laws.
- 2.4.2 **Books and Records.** Contractor shall keep, and shall require provisions to be included in all contracts entered into by Subcontractors, of every Tier, requiring the Subcontractors, of every Tier, to keep, full and detailed books, records, information, materials and data, of every kind and character (hard copy, as well as computer readable data if it exists) that have any bearing on or pertain to any matters, rights, duties or obligations relating to the Project, Work or Construction Contract, including, without limitation, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, change orders, change order requests, estimates, field orders, construction change directives, schedules, requests for information, diaries, logs, reports, shop drawings, samples, exemplars, drawings, specifications, invoices, delivery tickets, receipts, vouchers, cancelled checks, memoranda, accounting records; job cost reports, job cost files (including complete documentation of negotiated settlements), backcharges, general ledgers; documentation of cash and trade discounts earned, insurance rebates and dividends, and other documents relating in any way to any claims, charges or time extensions asserted by Contractor or any of the Subcontractors, of any Tier, or relating to any credits, rebates or discounts owing to County.
- 2.4.3 **Inspection and Copying.** Contractor shall allow, and shall require provisions to be included in all contracts entered into by Subcontractors, of every Tier, allowing, County and the auditor for the State of California (and the authorized representative(s), auditors, attorneys and accountants of each) upon twenty-four (24) hours notice to Contractor, full access to inspect and copy all its aforestated books and records at a location within the Southern California area. Such right of audit may be exercised by either County or the auditory for the State of California as often as reasonably necessary to verify Contractor's continuing compliance with the Contract Documents.
- 2.4.4 **Confidential Information.** Nothing stated in this <u>Section 2.4</u> or elsewhere in the Contract Documents shall be interpreted as a waiver by Contractor or any Subcontractor of any rights of privilege or confidentiality that are

provided for by Applicable Law nor as authorizing the inspection of books and records that contain information concerning estimating means or methods that is not, in whole or part, relevant to a charge or demand being asserted by Contractor or a Subcontractor involving Extra Work, Deleted Work, Delay or a Claim.

- 2.4.5 **Withholding of Payment.** In addition to and without limitation upon County's other rights and remedies for breach, including any rights of County to withhold payment that are set forth elsewhere in the Contract Documents, County shall have the right, exercised in its sole discretion, to withhold from any payment due to Contractor under an Application for Payment a sum of up to ten percent (10%) of the total amount set forth in such Application for Payment until Contractor and the Subcontractors have complied with any outstanding and unsatisfied obligation under this <u>Section 2.4</u>. Upon compliance with this <u>Section 2.4</u>, any such monies withheld shall be released to Contractor.
- 2.4.6 **Specific Performance.** Contractor agrees that any failure to provide access to books and records as required by this <u>Section 2.4</u> will result in irreparable harm and prejudice to County and shall, without the necessity of posting of any bond or undertaking, be specifically enforceable by means of a mandatory injunctive order (temporary, preliminary, provisional or otherwise) issued by a court of competent jurisdiction, which order the County and Contractor hereby consent to being issued based upon affidavits and without the necessity of oral testimony.

2.5 COUNTY FURNISHED MATERIALS

- 2.5.1 **Supply by County**. County shall have the right to furnish materials, products or equipment directly for processing and incorporation by Contractor in lieu of Contractor providing materials, products or equipment specified in the Contract Documents to be provided by Contractor as part of the Work.
- 2.5.2 **Deleted Work.** If the materials, products or equipment provided by County pursuant to <u>Paragraph 2.5.1</u>, above, then a Change Order shall be executed deleting such materials, products or equipment from the Work along with a Contract Adjustment reducing the Contract Price in the manner provided for in <u>Article 7</u>, below, applicable to Contract Adjustments for Deleted Work.
- 2.5.3 **Delivery Deadlines.** Without limitation to Contractor's obligations under <u>Article 8</u>, below, upon receipt of written instruction by County of its intent to provide materials, products or equipment pursuant to this <u>Section 2.6</u>, Contractor shall notify County promptly in writing of any deadlines within which such materials, products or equipment must be received at the Site in order to avoid Delay.
- 2.5.4 **Delivery to Site.** Contractor shall, upon their delivery to the Site, properly receive and unload materials, products or equipment furnished by County pursuant to this Section 2.5.
- 2.5.5 **Care, Custody and Control.** Contractor assumes full and unconditional responsibility for care, custody and control of the materials, products or equipment that are furnished by County pursuant to this <u>Section 2.5</u>, whether or not they have been accepted by County, and assumes sole responsibility for any subsequent loss, injury or damage thereto occurring prior to Final Completion.
- 2.5.6 **Notice of Deficiencies.** Contractor shall carefully inspect any materials, products or equipment furnished by County pursuant to this <u>Section 2.5</u> and immediately notify County of any defect or deficiency in such materials, products or equipment or any nonconformity in such materials, products or equipment with the requirements of the Contract Documents or with the requirements of the other documentation provided to Contractor setting forth the conditions of County's purchase. Contractor shall not accept any materials, products or equipment furnished by County with respect to which Contractor has provided such notice of defect, deficiency or non-conformity unless and until instructed to do so in writing by County.
- 2.5.7 **Incorporation in Work.** Contractor shall, as part of the Work and without Contract Adjustment, provide any and all processing, fabrication, cutting, shaping, fitting, assembly and installation of materials, products or equipment furnished by County pursuant to this <u>Section 2.5</u> in full compliance with the requirements of the Contract Documents and the manufacturer's instructions and recommendations.

2.6 COUNTY INSTALLED ITEMS

Contractor shall notify County, a reasonable time in advance, of the Contractor's scheduled dates for installation of items that are specified in the Contract Documents to be placed on, attached to or incorporated into the Work by County or Separate Contractors. In the event that Contractor fails to do so or if due to Unexcused Delay the County is unable after such notice by Contractor to so place, affix or incorporate such items, then Contractor shall be responsible, in addition to any amounts due to County for liquidated damages, to reimburse County for costs of storage or rental of temporary replacement items until such time as the Work is in a condition suitable for such items to be placed, affixed or incorporated.

2.7 COUNTY'S ADDITIONAL RIGHTS

The rights stated in this <u>Article 2</u> are in addition to and not in limitation of any other rights of County granted elsewhere in the Contract Documents or under Applicable Laws.

ARTICLE 3 CONTRACTOR PERFORMANCE

3.1 CONTRACTOR STATUS

- 3.1.1 **Independent Contractor.** Contractor is, and shall at all times be deemed to be, an independent contractor and is wholly responsible for the performance of the obligations required of it by the terms of the Contract Documents.
- 3.1.2 Agents, Employees. Contractor wholly assumes responsibility for the acts and omissions of its agents and employees and the agents and employees of each Subcontractor, of every Tier, as they relate to the Work. Contractor, its agents and employees, shall not be entitled to any rights or privileges of County's employees and nothing contained in the Contract Documents and no course of conduct shall be construed as creating the relationship of employer and employee, or principal and agent, between County and any agent or employee of Contractor or any Subcontractor. County shall have the right, but not the obligation, to monitor the employment and other activities of Contractor and the Subcontractors to determine compliance with the terms of the Contract Documents.
- 3.1.3 **Licenses.** Contractor and the Subcontractors, of every Tier, shall maintain, such contracting, professional and business licenses as may be required by Applicable Laws for the duration of time that Contractor is performing the Work under the Contract Documents, including the period of any warranty provided covering all or any portion of the Work.
- 3.1.4 **Subcontractors.** Contractor is responsible to County for acts and omissions of the Subcontractors and their agents and employees and other persons performing portions of the Work under a contract with a Subcontractor, of any Tier.
- 3.1.5 **Design Services.** Contractor shall provide professional services if such services are expressly, or by reasonable implication, required by the Contract Documents for a portion of the Work or are required in order for Contractor to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Professional design services or certifications so required of Contractor shall be furnished by design professionals exercising the highest standard of care and utilizing designs and engineering that comply with all systems, materials or equipment, performance and design criteria set forth in the Contract Documents. Certification by a properly licensed design professional, including such professional's signature and seal, shall appear on all drawings, calculations, specifications, certifications and other documents prepared by such professional. Submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted. County, Architect and County Consultants shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals.

3.2 REVIEW OF DOCUMENTS, SITE AND EXISTING IMPROVEMENTS

- 3.2.1 **Contractor's Duty of Review.** Contractor's submission of its Bid and execution of the Construction Contract constitutes its representation, acknowledgement and agreement that it had sufficient time, access and opportunity prior to the Bid Closing Deadline to conduct a careful and thorough examination, to its satisfaction, of:
- .1 the Bidding Documents, Contract Documents, Reference Documents and other information provided by County to Contractor prior to the Bid Closing Deadline concerning the Project, Site or Existing Improvements;
- .2 the visible conditions at the Site and its surroundings, visible conditions of Existing Improvements and their existing uses by County or the public, routes of ingress and egress, and local conditions in the vicinity of the Site (including, without limitation, sources and availability of labor, materials and equipment);
 - .3 the status of any construction at the Site concurrently under construction; and
- .4 all information concerning visible and concealed conditions above and below the surface of the ground at the Site and in Existing Improvements (including, without limitation, surveys, reports, data, as-built drawings of Existing Improvements and utility sources, capacities and locations) that was either (1) provided by County to Contractor or other Bidders (including, but not limited to, the Bidding Documents and Reference Documents) or (2) reasonably available to Contractor for review in the public records of the County of Riverside or the City in which the Project is located.

3.2.2 Contract Adjustments.

- .1 Differing Site Conditions. Except as otherwise provided in Subparagraph 3.2.3, below, the Contractor's right to a Contract Adjustment in the event Contractor encounters conditions at the Site or in Existing Improvements that vary from those indicated by the Contract Documents or other information that was either reviewed by Contractor or that Contractor was given the opportunity to review prior to the Bid Closing Deadline shall be governed exclusively by Paragraph 4.3.8, below, pertaining to Differing Site Conditions.
- .2 Design Discrepancies. Except as otherwise provided in <u>Subparagraph 3.2.3</u>, below, and subject to the Contractor's compliance with the other provisions of the Contract Documents governing the Contractor's right to a Contract Adjustment (including, without limitation, <u>Article 7</u> and <u>Article 8</u>, below), Contractor shall be entitled to a Contract Adjustment due to Design Discrepancies, subject to the following conditions and limitations:
- (1) Compensable Change. There shall be no Contract Adjustment to the Contract Price for Extra Work that the Contractor is required to perform as a result of a Design Discrepancy unless all of the following conditions have been met prior to Contractor or any Subcontractor performing any portion of the Work involving or affected by such Design Discrepancy:
- (a) the circumstances giving rise to such Extra Work conform to all of the requirements of <u>Subparagraph 1.1.29.2</u> through <u>Subparagraph 1.1.29.4</u>, above, applicable to Compensable Changes;
- (b) Contractor has submitted to County and Architect a Request for Information in compliance with Paragraph 3.2.5, below, seeking clarification of such Design Discrepancy;
- (c) Contractor has submitted to County a timely and complete Notice of Change in accordance with Article 7, below, describing such Extra Work in detail;
- (d) Contractor has received a Construction Change Directive signed by County in accordance with <u>Article 7</u>, below, directing that Contractor perform the portion of the Work in question; and
- (e) unless otherwise provided in such Construction Change Directive, Contractor has submitted to County a Change Order Request in accordance with the requirements of <u>Article 7</u>, below, setting forth the particulars of its request for Contract Adjustment on account of such Extra Work.

- (2) Compensable Delay. There shall be no Contract Adjustment to the Contract Price or Contract Time for Delay as a result of a Design Discrepancy unless all of the following conditions have been met prior to Contractor or any Subcontractor performing any portion of the Work involving or affected by such Design Discrepancy:
- (a) if the Delay is the result, in whole or in part, of Extra Work, all of the requirements of <u>Subparagraph 3.2.2.2 (1)</u>, (a) through (e), above, have been met;
- (b) the circumstances giving rise to such Delay conform to all of the requirements of <u>Subparagraph 1.1.30.2</u> and <u>Subparagraph 1.1.30.3</u>, above, applicable to Compensable Delay; and
- (c) Contractor has submitted to County a timely and complete Notice of Delay and a timely and complete Request for Extension in accordance with <u>Article 8</u>, below, setting forth the particulars of its request for Contract Adjustment on account of such Compensable Delay.
- Of variances between (a) the Contract Documents or other documents or information described in Paragraph 3.2.1, above, that, prior to the Bid Closing Deadline was either reviewed by Contractor or was available to Contractor for review prior to the Bid Closing Deadline and (b) conditions at the Site or in Existing Improvements shall, notwithstanding the fact that the circumstances asserted by Contractor as a basis for such Contract Adjustment may involve, relate to or arise out of a Design Discrepancy, be governed by the provisions of the Contract Documents setting forth the Contractor's right to Contract Adjustments on the grounds of Differing Site Conditions.

3.2.3 WAIVER BY CONTRACTOR.

CONTRACTOR AGREES THAT IT SHALL NOT BE ENTITLED TO, AND HEREBY CONCLUSIVELY WAIVES, ANY RIGHT TO CONTRACT ADJUSTMENT, AS WELL AS THE RIGHT TO ANY OTHER OR FURTHER RECOURSE OR RIGHT OF RECOVERY FROM COUNTY, ON ACCOUNT OF LOSSES OR DELAYS THAT ARE A RESULT OF EITHER A DIFFERING SITE CONDITION OR A DESIGN DISCREPANCY, IF PRIOR TO THE BID CLOSING DEADLINE SUCH DIFFERING SITE CONDITION OR DESIGN DISCREPANCY WAS:

- (1) DISCOVERED BY CONTRACTOR AND CONTRACTOR, NOTWITHSTANDING SUCH DISCOVERY, FAILED TO REPORT SUCH DIFFERING SITE CONDITION OR DESIGN DISCREPANCY TO COUNTY IN WRITING PRIOR TO THE BID CLOSING DEADLINE;
- (2) ALTHOUGH NOT ACTUALLY DISCOVERED BY CONTRACTOR PRIOR TO THE BID CLOSING DEADLINE WAS REASONABLY DISCOVERABLE BY CONTRACTOR UNDER THE STANDARD OF PERFORMANCE SPECIFIED IN THE CONSTRUCTION CONTRACT, INCLUDING, WITHOUT LIMITATION, A DIFFERING SITE CONDITION OR DESIGN DISCREPANCY THAT WAS OVERLOOKED BY CONTRACTOR DUE TO A FAILURE BY CONTRACTOR TO FULLY FAMILIARIZE ITSELF PRIOR TO THE BID CLOSING DEADLINE WITH ANY OF THE DOCUMENTS, INFORMATION OR CONDITIONS REFERRED TO IN PARAGRAPH 3.2.1, ABOVE.
- 3.2.4 **Continuing Obligation.** In addition and without limitation to Contractor's obligations under <u>Paragraph 3.2.1</u>, above, or elsewhere in the Contract Documents, Contractor shall have the continuing obligation until Final Completion to promptly report to County, by means of submission by Contractor of a Request for Information that complies with the requirements of <u>Paragraph 3.2.5</u>, below, any and all of the following:
- information contained in the Bidding Documents, Contract Documents, Reference Documents or other documentation that was either reviewed by Contractor or that Contractor was given the opportunity to review prior to the Bid Closing Deadline, as well as any visible conditions at the Site, in Existing Improvements or in the vicinity of the Project, that Contractor knows, or in the exercise by Contractor of its duties under the Standard of Performance should have known, may render a portion of the Work in any respect, wholly or partially, unsuitable or incomplete to meet the requirements of the Contract Documents, the Design Intent or Applicable Laws, and
- .2 conditions in the Work that constitute Defective Work or that cause or are likely to cause any other portion of the Work to be Defective Work.

Without limitation to County's other rights under the Contract Documents, any portion of the Work, Existing Improvements or the work of Separate Contractors or County's own forces requiring replacement, repair or correction due to a failure by Contractor or any Subcontractor, of any Tier, to comply with its continuing obligation under this Paragraph 3.2.4 shall be promptly replaced, repaired or corrected to County's satisfaction, at Contractor's Own Expense.

3.2.5 Requests for Information.

- .1 Time for Submittal. Requests for Information shall be submitted no later than three (3) Days after the date Contractor learns of the circumstances giving rise to the question contained in the Request for Information. Requests for Information shall be submitted by or through the Contractor and not directly by Subcontractors.
- .2 Content. Each Request for Information shall, in addition to the Contractor's specific question or request, include the following:
- (1) a detailed description of the circumstances giving rise to the Contractor's request or question, including, without limitation, any related Design Discrepancy;
- (2) Contractor's request for clarification, including, without limitation, any request for further detailing or correction of the Contract Documents; and
- (3) a statement of whether Contractor believes it is entitled to a Contract Adjustment by reason of the circumstances described.
- .3 Form. Contractor shall submit Requests for Information using forms provided or approved by County.
- .4 Unnecessary, Multiple Requests. Contractor shall carefully review, coordinate and consolidate (where appropriate to prevent piecemeal submission) Requests for Information (whether originating with Contractor or the Subcontractors) prior to submitting them in order to eliminate unnecessary or duplicative requests.
- Responses. Responses to Requests for Information shall be furnished with reasonable promptness so as to not unreasonably Delay progress of the Work; provided, however, that the timing of a response by the Architect, County or a County Consultant to a Request for Information shall not constitute grounds for a Contract Adjustment unless Contractor has complied with the requirements set forth in this Paragraph 3.2.5 and, if applicable, Paragraph 2.1.3, above.
- .6 Back Charges by County. County shall have the right to deduct from payments due to Contractor sums expended by County for the services of the Architect, Inspectors of Record or County Consultants due to a failure by Contractor to comply with this Paragraph 3.2.5.

.7 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO SUBMIT A REQUEST FOR INFORMATION IN ACCORDANCE WITH AND UNDER CIRCUMSTANCES IN WHICH A REQUEST FOR INFORMATION WAS REQUIRED BY THIS <u>PARAGRAPH 3.2.5</u> SHALL RESULT IN CONTRACTOR WAIVING ITS RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF ANY LOSS OR DELAY THAT COULD HAVE BEEN AVOIDED IF SUCH REQUEST FOR INFORMATION HAD BEEN PROPERLY PREPARED AND TIMELY SUBMITTED.

3.2.6 **Correction of Work.** Contractor shall, at Contractor's Own Expense, correct or replace in accordance with the direction of County any portion of the Work that is performed by Contractor or a Subcontractor knowing that it involves, or that Contractor or Subcontractor in the exercise of reasonable care and diligence should have known involves, a portion of the Contract Documents that contains an error, omission, conflict, ambiguity, lack of coordination or noncompliance with Applicable Laws, without first notifying and obtaining the written approval of County and Architect.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

- 3.3.1 **General Obligation.** Contractor shall provide competent, fully qualified personnel to supervise, administer, manage and direct the Work, competently and efficiently, at all times devoting their best skill and attention to perform the Work in accordance with the Contract Documents.
- 3.3.2 **Supervisory Staff.** Contractor shall employ a competent project manager, superintendent, scheduler, forepersons and necessary assistants during performance of the Work. Contractor's superintendent and forepersons shall be present at the Site at all times that the Work is in progress and at any time that any employee of Contractor or a Subcontractor is present at the Site. Contractor's project manager and superintendent shall, unless excused from attendance by the County, attend all job meetings. Contractor's project manager and superintendent must be able to fluently read and write in English. Contractor's superintendent shall not perform the Work of any trade, pick up materials, or perform any Work not directly related to the supervision of the Work and shall be available twenty-four (24) hours a Day, seven (7) Days a week, to respond to emergencies.
- 3.3.3 **County Supplementary Personnel.** Without limitation upon any of the rights or remedies of the County under the Contract Documents or under Applicable Laws, in the event that Contractor fails to have personnel on Site to supervise the Work, the County shall have the right, but not the obligation, upon twenty-four (24) hours' telephonic or email notice by the County to Contractor, to provide such supervision on a temporary basis and to deduct from the sums owing to Contractor the actual costs of such temporary supervision. Contractor shall, notwithstanding the County's providing such temporary supervision, remain solely responsible for all actions and omissions of its personnel and of the Subcontractors.
- 3.3.4 **Means, Methods, Procedures.** Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and coordinating all portions of the Work, unless the Contract Documents specify other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, Contractor shall nonetheless be fully and solely responsible for the adequacy and safe implementation of such means, methods, techniques, sequences or procedures. If Contractor believes that such specified means, methods, techniques, sequences or procedures may not be safe or adequate, Contractor shall give written notice to County and Architect and shall not proceed with that portion of the Work without further written instruction from County or Architect. In response to such notice, County may order Contractor to improve the character or increase the efficiency of the means, methods, techniques, sequences or procedures employed, and Contractor shall conform to such order; but the failure of County to order such improvement or increase of efficiency will neither relieve Contractor from its sole responsibility for safety at the Site nor relieve Contractor from its obligation to perform the Work in accordance with the Contract Documents and Applicable Laws.

3.4 LABOR, MATERIALS AND EQUIPMENT

- 3.4.1 **Costs of Work.** Contractor shall provide and pay for labor, materials, tools, equipment, machinery, water, heat, utilities, transportation, facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether incorporated or to be incorporated into the Work.
- 3.4.2 **Coordination.** Contractor shall provide supervision sufficient to ensure proper coordination for the timely and efficient performance and completion of the Work.
- 3.4.3 **Field Conditions.** Before commencing the Work or any activities on the Site, Contractor shall take field measurements and verify field conditions and carefully compare such field measurements and conditions with the information in the Contract Documents and other information obtained by or available to Contractor.
- 3.4.4 **Layout.** Contractor is solely responsible for (1) the accurate layout of all portions of the Work, (2) the accuracy of the Project lines and levels, (3) erection of the Work square, plumb, level, true to line and grade, in the exact plane, and to the correct elevation and (4) sloping of surfaces to drain as indicated by the Contract Documents, or, if not indicated, as needed to provide for adequate drainage.

3.4.5 Materials, Equipment

- .1 Delivery, Storage, Inventory. Materials and equipment shall be: (1) furnished in ample quantities and at such times as to ensure uninterrupted progress of the Work; and (2) if located on the Site, properly stored and protected as reasonable and necessary, or as directed by County, to prevent Loss from any foreseeable cause, including, without limitation, theft. In the event that County gives direction as to the location for storage or protection of materials or equipment on the Site, Contractor shall nonetheless remain solely responsible for its safe and secure storage and protection. No part of any such stored materials and equipment shall be removed from its place of storage except for immediate installation in the Work. Contractor shall keep an accurate inventory of all such stored materials and/or equipment in a manner satisfactory to County.
- **Purchases.** Contractor shall place orders for materials and/or equipment as specified so that delivery of same may be made without Delay to the Work. Contractor shall, upon request from County, furnish to County documentary evidence showing that orders have been placed. County reserves the right in the event Contractor fails, within three (3) Days after receipt of written notice by County to Contractor to comply with the requirements of this Subparagraph 3.4.5.2, to comply with the requirements of this Subparagraph 3.4.5.2, to deduct the costs paid or payable by County associated with such purchases from payments otherwise owing to Contractor. Contractor shall, if requested by County, accept assignment of any such contracts entered into by County without a Contract Adjustment.
- Title. No material, supplies or equipment for the Work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies and equipment installed or incorporated in the Work and agrees upon Final Completion to deliver the Work, including the premises, land, improvements and appurtenances on or to which the Work is placed, located or affixed, to County free from any claims, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any of the Work shall have any right of lien upon the Site, or any Existing Improvement or appurtenance thereon, except that (1) nothing stated in this Subparagraph 3.4.5.3 shall be interpreted as a waiver by Contractor or any Subcontractor of its right under Applicable Laws to serve a stop payment notice for Work that is not paid for by County as required under the terms of the Contract Documents; and (2) Contractor may install metering devices or other equipment of utility companies or political subdivisions, title to which may be retained by such utility company or political subdivision, provided that in the event of installation of any such metering device or utility equipment, Contractor shall advise County as to the owner, and the precise location, thereof.
- **Substitutions.** No substitution of materials, equipment, articles, processes or other items of the Work required under the Contract Documents will be made without written approval of County, which approval may be granted or denied in the sole and absolute discretion of County. With respect to any such substitution made or requested by Contractor, neither the occurrence of a substitution made or requested by Contractor nor the approval or disapproval by County of a substitution that is made in accordance with this <u>Subparagraph 3.4.5.4</u> shall give rise to any right of Contractor to a Contract Adjustment. Contractor shall, notwithstanding County's or Architect's approval, remain solely responsible for the sufficiency and suitability of all substitutions requested by Contractor and approved, or otherwise made, by Contractor.
- .5 Parts List. Contractor will provide a printed parts list for all items which might be subject to replacement and for which parts lists are either expressly required by the Contract Documents or customarily provided according to usual commercial practices.
- .6 Manuals. As part of its obligation for submission of Record Documents, four (4) hard copies and one (1) electronic version of operations and maintenance manuals shall be prepared and transmitted by Contractor to County prior to and as a condition of Final Completion. Final Payment will not be due until County has received all such manuals and all other manuals covering the Work that are either required to be provided by the terms of the Contract Documents or if not required are customarily provided according to usual commercial practices applicable to the portion of Work involved. Operating instructions will be included within the equipment manuals and will state all information necessary for County to operate, use, maintain and service the equipment fully and efficiently.
- .7 Start Up. Contractor will be responsible for start-up of all systems and equipment purchased as part of the Work and has included sufficient amounts in its Bid to cover contingencies arising out of the start-up of such systems and equipment. Contractor will comply fully with each manufacturer's specifications and instructions. Systems and equipment specified to be furnished with manufacturer's supervision of start-up will be placed in operation only under such supervision.

3.5 CONTRACTOR'S WARRANTY

- 3.5.1 **General Warranty.** In addition to other warranties and guarantees required by the Contract Documents, Contractor shall, and hereby does, warrant and guarantee that: (1) the Work will conform to the requirements of Contract Documents, including, without limitation, any performance standards that are part thereof; (2) all Work for which there is not a specific requirement, criteria, specification or standard set forth in the Contract Documents will conform to the Standard of Performance; (3) all labor, equipment, materials and other items of Work will be when installed new and free of liens, claims and security interests; (4) without limitation to the other requirements of this warranty, all labor, installation and workmanship will be performed in a good and workmanlike manner; and (5) all labor, materials, equipment, services and work shall be free of defects for a period of one (1) year after Final Completion. If required by County, Contractor shall furnish satisfactory evidence as to the kind and quality of services, labor, installation, materials and equipment used. Manufactured items installed in the Work, unless otherwise specifically stated in the Contract Documents, are to be installed in strict accordance with manufacturer's current printed instructions.
- 3.5.2 **Repair, Replacement.** Without limitation upon the County's other rights or remedies under the Contract Documents or Applicable Laws, any and all Work that, for reasons other than (1) ordinary wear and tear or (2) abuse or neglect by persons or entities other than the Contractor or the Subcontractors, is not in conformance with the warranties or guarantees required by the Contract Documents or Applicable Laws shall be repaired or replaced, together with the repair or replacement of any other Work, Existing Improvements or the work of the Separate Contractors, the County's own forces or others, which may be removed, displaced or damaged in so doing. The Contractor shall notify the County in writing upon completion of such repair or replacement. In the event of failure by the Contractor to commence and pursue with diligence said replacement or repair within ten (10) Days after being notified by the County, the County is hereby authorized to proceed with such replacement and repair as the County deems necessary and expedient and to charge such costs to Contractor at Contractor's Own Expense.
- 3.5.3 **Not a Limitation.** The warranties stated in this <u>Section 3.5</u> are in addition to any other warranties or guarantees that are required under any other provision of the Contract Documents or Applicable Laws. Nothing stated in this <u>Section 3.5</u> shall be interpreted as a limitation upon the County's rights under any warranties or guarantees provided for under any other provision of the Contract Documents or under Applicable Laws that afford the County greater rights than the rights afforded to County under this Section 3.5.
- 3.5.4 **Assignment.** Contractor does hereby unconditionally and irrevocably assign to County all warranties and guarantees issued or made by any Subcontractor, of any Tier (including, without limitation, any manufacturer, supplier and distributor) in connection with the Work. Such assignment shall not relieve Contractor of, or otherwise limit, any of its obligations contained in the Contract Documents, including, without limitation, the general responsibility and liability of Contractor for a breach by a Subcontractor (including, without limitation, any manufacturer, supplier and distributor, of any Tier) of a warranty or guarantee given by such Subcontractor in connection with the Work.
- 3.5.5 **Close-Out.** Unless sooner requested by County, Contractor shall furnish to County, as part of the Close-Out Documents and as a condition to Final Payment, all written guarantees or warranties that are required by the terms of the Contract Documents. All such guarantees and warranties shall be: (1) in writing; (2) indexed and bound; (3) accompanied by such certifications and instruction materials as may be required by the Contract Documents; and (4) issued to County or assignable by their terms, and in fact assigned, to County.

3.6 TAXES

3.6.1 **Payment by Contractor.** Contractor shall pay, at Contractor's Own Expense, all local, state and federal taxes, including, without limitation, all sales, consumer, business license, use and similar taxes on materials, labor or other items furnished for the Work or portions thereof provided by Contractor or the Subcontractors, of all Tier, all taxes arising out of its operations under the Contract Documents and all benefits, insurance, taxes and contributions for social security and unemployment insurance which are measured by wages, salaries or other remuneration paid to Contractor's employees. If under federal excise tax law any transaction hereunder constitutes a sale on which a federal excise tax is imposed, and the sale is exempt from such excise tax because it is a sale to a state or local government, then County, upon request, will execute documents necessary to show: (1) that County is a political subdivision of the State for the purposes of such exemption; and (2) that the sale is for the exclusive use of County. No excise tax for

such materials shall be included in any price (including, without limitation, the Bid) submitted by Contractor for the Work or for Changes in the Work.

- 3.6.2 **Tax Exempt Projects.** If applicable to the Project, Contractor shall comply with Applicable Laws concerning tax-exempt construction projects.
- 3.6.3 **Records of Taxes.** Contractor and the Subcontractors shall keep sufficient records to verify the amount of sales and use taxes paid. Copies shall be submitted with each monthly Application for Payment. Failure to keep or submit such records, resulting in the inability of County to claim a refund for taxes for such materials, shall render Contractor liable to County for the amount of such tax refund.

3.7 PERMITS, FEES AND LEGAL NOTICES

- 3.7.1 **Permits.** Contractor shall obtain and pay for all permits and approvals that are not stated in the Contract Documents to be the responsibility of the County. Such permits and approvals that are the responsibility of the Contractor may include local building or land use permits, California Department of Fish and Game Streambed Alteration Agreements (Section 1600 et seq.), California Department of Fish and Game collection permits, U.S. Army Corps of Engineers 404 fill and dredge authorization, Clean Water Act Section 401 authorization (managed by the local California Regional Water Quality Control Boards) land owner agreements, or other regulatory permits or approvals required for the implementation of the Project. All permits, licenses and certificates obtained by Contractor shall be delivered to County prior and as a condition to Final Completion and Contractor's right to Final Payment.
- 3.7.2 **Applicable Laws, Notices.** Contractor shall comply with, and give notices required by, Applicable Laws bearing on performance of the Work.
- 3.7.3 **Bonds, Undertakings.** Contractor shall, without Contract Adjustment, procure and obtain all bonds required of the County or the Contractor by the municipality in which the Project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary back-up material and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay, without Contract Adjustment, all charges for all approvals for street closings, parking meter removal and other similar matters as may be necessary or appropriate from time to time for the performance of the Work.
- 3.7.4 **Notice of Violations.** Contractor shall immediately notify County in writing of any instruction received from County, or any other Project Team member that, if implemented, would cause a violation of any Applicable Law.
- 3.7.5 **Governmental Authority Approvals.** Where the Contract Documents state, or Applicable Laws require, that materials, processes or procedures must be approved by a Governmental Authority, Contractor shall be responsible for satisfying the requirements and obtaining the approval of such Governmental Authority.

3.8 CONTRACTOR'S PERSONNEL

- 3.8.1 **Key Persons.** Contractor's employees acting as project manager, scheduler and superintendent constitute Key Persons. Individuals acting as Key Persons who are not already identified in Contractor's Post-Award Submittals shall be identified in writing to County prior to commencement of the Work.
- 3.8.2 **Background Check.** Contractor shall perform, prior to commencing Work on the Site, a thorough background check of each of the Key Persons and shall not, without prior written approval of County, employ any person to act as a Key Person if such background check, or other information known to Contractor, discloses a felony conviction or other matter which casts any reasonable doubt on the competency, reliability or honesty of such person.
- 3.8.3 **Project Manager.** The Key Person acting as project manager shall be deemed to have full authority to contractually bind Contractor, including, without limitation, the authority to bind Contractor to the terms of Contract Adjustments.

- 3.8.4 **Transfer**. Contractor's Key Personnel are deemed of essence to the Construction Contract. No Key Person shall, for so long as he/she is employed by Contractor, be transferred to any other project nor any of his/her responsibilities reassigned at any time during performance of the Work without the prior written approval of County, which approval may be granted or withheld in County's sole and absolute discretion.
- 3.8.5 **Removal.** County shall have the right, at any time, to direct the removal and replacement of any Key Person if his/her performance is determined by County, in its sole and absolute discretion, to be unsatisfactory.
- 3.8.6 **Replacement**. Any individual proposed by Contractor as a replacement for a Key Person must be approved in advance by County, such approval not to be unreasonably withheld, after submission by Contractor to County of complete information concerning such individual's experience and qualifications.
- 3.8.7 **Communications**. Important communications by Key Persons shall be confirmed in writing by Contractor. Other communications by Key Persons shall be confirmed on written request in each case.
- 3.8.8 **Contact Information.** Contractor shall provide to County, prior to the start of the Work, telephone numbers where Key Persons can be reached 24-hours a day, 7 Days a week.
- 3.8.9 **Signatures.** Prior to commencing the Work, Contractor shall submit to County a facsimile of the signatures of the Key Person acting as project manager, as well as any other representatives of Contractor with authority to sign on behalf of and contractually bind Contractor.
- 3.8.10 Exclusion from Site. Contractor shall at all times maintain good discipline and order at the Site among its employees and the employees of the Subcontractors. Any person in the employ of Contractor or any of the Subcontractors, of any Tier, whom County deems, in its sole and absolute discretion, incompetent, unfit, intemperate, troublesome or otherwise undesirable shall be excluded from the Site and shall not again be employed on the Site except with written approval of County.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULE

- 3.9.1 **Preparation.** Within twenty-one (21) Days after issuance by County of the Notice of Intent to Award, the Contractor shall prepare and submit a Construction Schedule for the Work, both in hard copy and electronically, for the County's approval. The Construction Schedule shall in all respects conform to and be consistent with the time requirements for the Project set forth in the Construction Contract.
- 3.9.2 **Format.** The Construction Schedule shall be in the form of a critical path progress schedule that shows, in graphic form, a plan for performance of the Work within the Contract Time. It shall be prepared, using Primavera P3, as a time-scaled bar chart showing: (1) continuous flow from left to right and activities and milestones that are critical to Substantial Completion and Final Completion of the Work; (2) identification of "float"; and (3) a clearly highlighted critical path. Durations and specific calendar days shall be clearly and legibly shown for the early and late start and finish of each activity. With the exception of County Review Periods and Governmental Authority Review Periods, any activity with more than fifteen (15) Days in duration will be segmented into fifteen (15) Day increments. No more than ten percent (10%) of the activities shall be shown as critical. Techniques or methods designed to suppress depiction of available float are strictly prohibited.
- 3.9.3 **Detail.** Activities shown in the Construction Schedule shall be in sufficient detail to demonstrate a practical plan to complete the design, engineering, fabrication and construction within the Contract Time and shall, at a minimum, include the following:
 - .1 the start and finish date of each activity;
 - .2 the anticipated percent of completion at the end of each month;
- the weighted labor value expressed as a percentage of the total labor cost of the Work for each

activity;

- .4 the final manpower curves by trade;
- .5 the anticipated purchase and delivery of major materials and equipment;
- .6 the County's occupancy requirements;
- .7 receipt and incorporation of materials, products or equipment to be furnished by County (if any);
- .8 County Review Periods and County Review Dates that are acceptable to and approved by

County;

- .9 Governmental Authority Review Periods; and
- .10 the activities identified as being on the critical path to Substantial Completion and Final Completion of the Work.
- 3.9.4 **Updates**. Throughout the performance of the Work, weekly updates shall be delivered, in hard copy and, if required by County, in an electronic form satisfactory to County. In addition, Contractor shall regularly prepare and submit to County short term, three (3) week "look-ahead" schedules generated from the Construction Schedule approved by County. Except to the extent permitted by Contract Adjustment to the Contract Time approved by County in a duly executed Change Order or Unilateral Change Order, in no event shall the Contractor's updates or "look ahead" schedules alter the dates for Substantial Completion or Final Completion set forth in the Construction Schedule approved by County.
- 3.9.5 **Governing Schedule.** The governing schedule for the Work shall be the updated Construction Schedule approved by the County. Unless otherwise directed in a writing signed by County, no other schedule shall be used or relied upon by the Contractor or its Subcontractors in planning or performing the Work or in connection with any request for a Contract Adjustment to the Contract Time.
- 3.9.6 **Submittal Schedule.** Within twenty-one (21) Days after the receipt by the Contractor of the Notice of Intent to Award, the Contractor shall prepare and submit, in accordance with the Contract Documents, a Submittal Schedule for the County's approval. The Submittal Schedule shall be coordinated with the Construction Schedule and allow time for review of the Submittals as may be required by the Contract Documents, or if none is required, a reasonable time for such review. Contractor shall keep the Submittal Schedule current and updated in the same manner as required for updating of the Construction Schedule.
- 3.9.7 **Schedule Responsibility.** Contractor is and shall remain solely responsible, notwithstanding the County's review or approval thereof, for the accuracy, suitability and feasibility of all schedules it prepares for the Project, including, without limitation, the Construction Schedule, Submittal Schedule, "look ahead" schedules, recovery schedules and any updates thereof.
- 3.9.8 **Condition of Payment.** Compliance by Contractor with the requirements of this <u>Section 3.9</u> and the other provisions of the Contract Documents pertaining to preparing, submitting, revising and updating the Construction Schedule and Submittal Schedule is a condition to County's obligation to make payment to Contractor. Recognizing that scheduling is a continuing, cumulative and recurring obligation, failure by County or to assert a right to withhold payment under this <u>Paragraph 3.9.8</u> due to a noncompliance by Contractor with its schedule obligations shall not waive or diminish the County's right to withhold or disapprove of future payments on account of such prior, or any other past or future, noncompliance of the same or similar nature.
- 3.9.9 **Scheduling by County.** Without limitation to County's other rights under the Contract Documents, if Contractor fails after written notice by County to perform any part of its obligations relating to scheduling, County shall have the right, but not the obligation, to retain one or more schedule consultants to perform, in whole or in part, the Contractor's obligations or supplement the scheduling services provided by Contractor and to reimburse County for the costs of such consultant services by withholding such costs from payments to Contractor.

3.10 DOCUMENTS AT SITE, REPORTING, MEETINGS

3.10.1 Documents at Site

- .1 Contract Documents, Submittals. Contractor shall at all times while performing Work at the Site maintain, in good order, at the Site: (1) one legible set of the permitted Contract Documents; (2) one legible copy of the current version of the other Contract Documents; (3) one legible and current version of approved Shop Drawings, Product Data, Samples and other Submittals; (4) one approved Storm Water Pollution Prevention Plan (SWPPP); and (5) one copy of all reports prepared pursuant to the Mitigation, Monitoring, and Reporting Program (MMRP) requirements of the California Environmental Quality Act.
- Record Documents. Contractor shall maintain Record Drawings and Specifications in a satisfactory record condition by posting, on a weekly basis (or, in the case of building or site mechanical, electrical, plumbing or fire sprinkler systems, as soon thereafter as is reasonable and practical), thoroughly and neatly, on the Drawings and Specifications all Changes to the Work and the location of the Work, including, without limitation, the location of portions of the Work shown diagrammatically, as occurs in the actual construction of the Work. The Record Drawings and Specifications and other Record Documents shall be prepared or converted, if requested by County, to electronic form (such as, AutoCAD, Adobe Acrobat or other software satisfactory to County). All Record Drawings and Specifications and other Record Documents shall be deemed the sole property of County and, at the earlier of Final Completion or termination of the Construction Contract, shall be turned over to County. At the time they are so turned over to County, they shall be manually signed by Contractor's superintendent certifying that, to the best of his/her knowledge, they are true and accurate and that the indications thereon represent the actual condition of the Work.
- .3 Availability for Review. Copies or originals of all documents required to be maintained by Contractor at the Site or required to be submitted to County or the Architect shall be available at all times at the Site while Work is being performed for review by County, Inspector of Record, Architect and Governmental Authorities.
- .4 Condition of Payment. Compliance by Contractor with the requirements of this <u>Paragraph</u> 3.10.1 shall be deemed a condition to Contractor's right to payment upon its Applications for Payment.

3.10.2 Daily Reports.

- **Delivery.** At the end of each Day that Contractor performs the Work on the Site, Contractor shall submit a daily report to County (on the form provided or approved by County) together with applicable delivery tickets for all labor, materials and equipment furnished that Day. If requested by County, daily reports shall be delivered electronically.
 - .2 Content. Daily Reports shall include the following information:
- (1) Labor The names of the workers, and for each such worker his/her classification and hours worked.
- (2) Material A list of the different materials used and for each different material the quantity used.
- (3) Equipment The type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable.
- (4) Inspection and Testing Activities A list of inspections performed by name of inspector and testing company and the type of inspection, items of the Work involved and a description of the outcome of such inspection or test.
- (5) Visitors, Guests, Dignitaries A list of visitors and guests by name, title, company and purpose of visit.

- (6) Areas of the Work A statement of the areas of the Site on which the Work was performed and a detailed description of the stage, status and progress of the Work in each such area at the beginning and end of the Day.
- (7) Accidents, Delays, Defective Work A description in detail of any injuries to the workers, accidents or delays that occurred or Defective Work that was encountered.
- (8) Other Services and Expenditures A description of other services and expenditures in such detail as County may require.
- .3 Payment. Timely and complete submission of daily reports by Contractor shall be a condition to Contractor's right to payment under the Construction Contract.
- 3.10.3 **Progress Meetings.** Contractor shall attend all progress meetings at the Site, at which meetings progress of the Work shall be reported in detail with reference to the then-current updated Construction Schedule approved by the County. Progress meetings shall be held weekly, or at such other time or frequency as County, in its sole and absolute discretion, deems necessary. A representative of each Subcontractor then actively performing Work, or immediately scheduled to become active, shall have a competent and knowledgeable representative present at such progress meeting to report on the condition of the Work of such Subcontractor and to receive relevant information. Meeting notes shall be taken by the County or Architect and distributed to all meeting attendees and all other affected parties.
- 3.10.4 **Notice Requirements.** Under no circumstances shall information contained in Contractor's daily job reports, monthly reports or job meeting minutes relieve Contractor of its obligations to comply with, serve as a substitute for, nor constitute a waiver by County of its right to insist upon, Contractor's compliance with the provisions of the Contract Documents relative to timely and complete notice to County of Changes, Delays, Claims or other matters for which written notice is required by the Contract Documents.
- 3.10.5 **Availability for Review.** Copies or originals of all Record Documents, daily reports, job meeting minutes and other documents required to be maintained or actually maintained by Contractor at the Site or required to be submitted to County or Architect shall be available at the Site for review by County, Architect, Inspectors of Record, County Consultants and Governmental Authorities.

3.11 **SUBMITTALS**

- 3.11.1 **Not Contract Documents.** Shop Drawings, Product Data, Samples and other Submittals are not Contract Documents. Their purpose is to demonstrate for those portions of the Work for which Submittals are required the way Contractor proposes to conform the Work to the designs and other information in the Contract Documents.
- 3.11.2 **Coordination with Others.** Contractor shall cooperate in the coordination of Contractor's Shop Drawings, Product Data, Samples and other Submittals with related documents submitted by the Separate Contractors.

3.11.3 Submission by Contractor.

- Submission. All Shop Drawings, Product Data, Samples and other Submittals required by the Contract Documents shall be submitted to Architect for its review and approval, with a copy to County and to such of County's Consultants or Separate Contractors as County may direct in writing. Informational submittals (i.e., Submittals upon which no responsive action is expected) shall be limited to those Submittals so identified in the Contract Documents. Submittals made by Contractor which are not required by the Contract Documents may be returned without action.
- .2 Contractor Approval. The Contractor shall review, stamp "approved" and submit Contractor's Shop Drawings, Product Data, Samples and other Submittals to the Architect, in accordance with the latest Submittal Schedule approved by the County. The Contractor's approval and submission of Submittals constitutes a representation that the Contractor has determined or verified materials and field measurements and conditions related thereto, and that it has checked and coordinated the information contained within such Submittals with the requirements of the Contract Documents and with the Submittals for related Work. Submittals without evidence thereon of the

Contractor's approval shall be returned, without further consideration, for resubmission in accordance with these requirements.

- Transmittal. All Submittals shall be accompanied by an accurately completed transmittal in the form required by County. With respect to Submittals of documents, the transmittal shall give a list of the numbers of the sheets submitted. All sheets shall be marked with the name of the Project and the name of Contractor shall be numbered consecutively and referenced to the sheets or paragraphs of the Drawings and Specifications affected. A separate transmittal form shall be used for each specific item or class of material or equipment for which a Submittal is required. Transmission of Submittals of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency dictates review of the group or package as a whole. Any Submittal not accompanied by such transmittal form, or where all applicable items on the form are not completed, may be returned for re-submittal without review.
- .4 Timing. Submittals shall be provided within the time frame specified in the Contract Documents, in accordance with the Construction Schedule and Submittal Schedule and at a time sufficiently early to allow review of the same by the Architect without causing Delay to construction progress. Contractor will be responsible to pay, at Contractor's Own Expense, additional services fees and costs incurred by County to the Architect, Inspectors of Record and County Consultants in order to expedite review of Submittals which are not submitted in a timely fashion.
- .5 Content. Submittals shall consist of the appropriate combination of catalog sheets, material lists, manufacturer's brochures, technical bulletins, specifications, diagrams and product samples, necessary to describe a system, product or item. Submittals shall show in detail the size, sections and dimensions of all members, the arrangement and construction of all connections, joints and other pertinent details, and all holes, straps and other fittings for attaching the Work. When required by the Architect or the Contract Documents, engineering computations shall be submitted.
- .6 Professional Certifications. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.
- .7 **Multiple Submittals**. Except where the preparation of a Submittal is dependent upon the approval of a prior Submittal, all Submittals pertaining to the same class or portion of the Work shall be submitted simultaneously.
- .8 Notation of Revisions. Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or other Submittals, to revisions other than those requested and approved by Architect on previous Submittals.
- .9 **Duplicates.** Contractor shall be responsible for delivering duplicates of Submittals to all other persons whose work or services are dependent thereon.
- 3.11.4 **Review of Submittals.** Review of Submittals by Architect, County or County Consultants is subject to the limitations of <u>Paragraph 4.2.6</u>, below. Contractor shall, notwithstanding any review or approval thereof by County, Architect or a County Consultant, be solely responsible for the content of all Submittals. Without limitation to the foregoing, deviations in Submittals from requirements of the Contract Documents shall remain the sole responsibility of Contractor unless Contractor has specifically informed Architect in writing of such deviation at the time of submission of the Submittal and Architect has given specific written approval thereof.
- 3.11.5 **Contract Adjustments.** Subject to Contractor's rights and obligations under <u>Article 7</u>, below, revisions indicated on Shop Drawings, Product Data, Samples or other Submittals shall not be considered as a basis for Contract Adjustments.
- 3.11.6 **Compliance with Contract**. Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or other Submittals until the respective Submittal has been returned by the Architect with an indication that it has been reviewed and that the Work addressed by the Submittal may proceed. Such Work shall be in accordance with such Submittals, unless such Submittal indicates that there are corrections to

be made. If corrections are indicated to be made then the Work shall be in accordance with the re-submitted and corrected Submittal that is reviewed and returned to the Contractor by the Architect.

3.12 USE OF SITE

- 3.12.1 **Staging Area.** Contractor will be assigned staging space on or adjacent to the Site, and all field offices, materials and equipment shall be kept within this area. Unless otherwise required by the Contract Documents, Contractor shall be responsible for restoring such areas and surrounding areas to the condition they were in prior to Contractor's commencement of the Work.
- 3.12.2 **Existing Improvements.** During the installation of the Work, Contractor shall ensure that Existing Improvements are adequately protected. Upon Final Completion of the Work, all Existing Improvements not required by the Contract Documents to be demolished as part of the Work that have been damaged by the actions or inactions of Contractor or its Subcontractors shall be restored to the condition they were in prior to Contractor's commencement of the Work.
- 3.12.3 Operations at Site. Contractor shall confine its activity, access and parking at the Site to areas permitted by Applicable Laws and County and shall not unreasonably encumber the Site with materials or equipment. Contractor acknowledges that it is experienced in performing construction within limited and confined areas and spaces such as those that are anticipated to exist on this Project and agrees to assume responsibility, without a Contract Adjustment, to take all special measures (including, without limitation, those related to protection, storage, staging and deliveries) as may be necessary to adapt its performance to the constraints of the Site.
- 3.12.4 **Coordination**. Contractor shall coordinate Contractor's operations with, and secure the approval of, County before using any portion of the Site.
- 3.12.5 **Unauthorized Use.** Personnel of Contractor and the Subcontractors shall not occupy, live upon or otherwise make use of the Site during any time that the Work is not being performed at the Site, except as otherwise approved by County.
- 3.12.6 **Site Security.** Contractor is responsible for the security of the Site and all of the Work, as well as the work of the Separate Contractors or County's own forces that occurs on the Site. Fences, barricades and other perimeter security shall be maintained in good condition and secured with locking devices. Damage to fences, barricades or other perimeter security, regardless of the cause, shall be repaired immediately at Contractor's Own Expense. Graffiti and unauthorized postings shall be removed or painted over so as to maintain a clean and neat appearance. Mobile equipment and operable machinery shall be kept locked or otherwise made inoperable whenever left unattended.
- 3.12.7 **Persons on Site.** Contractor shall not allow any person, other than the workers on the Project, authorized representatives of a union, or other individuals authorized by County, to come upon any portion of the Site where the Work is being performed. Only authorized personnel will be permitted on the Site. Contractor shall at all times maintain good discipline and order among its employees and the employees of the Subcontractors. Any person in the employ of Contractor or of any Subcontractors whom County may deem, in its sole and absolute discretion, incompetent, unfit, intemperate, troublesome or otherwise undesirable shall be excluded from the Site and shall not again be employed on the Site except with written approval of County and all Losses to Contractor or County associated therewith shall be borne by Contractor at Contractor's Own Expense.
- 3.12.8 **County Uses and Activities.** Contractor shall, prior to performing the Work at an operating or occupied County facility, become informed and take into specific account the uses by County and others of the Site and Existing Improvements, including, without limitation, business operations, public uses, employee uses, visitor uses, planned functions and ceremonies, and coordinate its planning, staging, scheduling, barricading and other performance of the Work so as to cause the minimum amount of interference or disturbance, whether before or after operating hours.
- 3.12.9 **Dust, Fumes, Noise.** Contractor shall take preventive measures to minimize, and eliminate wherever reasonably possible, generation of dust, fumes and noise.

- 3.12.10 **Confinement of Operations.** Contractor shall confine apparatus, the storage of materials and the operations of the workers to limits indicated by Contract Documents or as otherwise directed by County in writing.
- 3.12.11 **Prohibited Substances.** Contractor shall not permit (1) the possession or use of alcohol or controlled substances on the Site or (2) smoking in other than designated smoking areas approved by County.
- 3.12.12 **Survey Markers**. Contractor shall not disturb or cover any survey markers, monuments or other devices marking property boundaries or corners. If such markers are covered they shall be uncovered and if disturbed they shall be replaced by Contractor by means of the services of a licensed land surveyor. The costs of such uncovering and replacement shall be at Contractor's Own Expense.
- 3.12.13 **Drainage**, **Erosion**. Contractor is responsible for and shall make corrections to changes in patterns of surface water drainage resulting from, and related erosion control made necessary by, the performance of the Work.
- 3.12.14 **Trenches.** As required by California Labor Code §6705, if the Contract Price exceeds Twenty-Five Thousand Dollars (\$25,000) and involves the excavation of any trench or trenches five (5) feet or more in depth, Contractor shall, in advance of commencing excavation, submit to County a detailed 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 trench or trenches. If such plan varies from the Shoring Systems Standards established by the Construction Safety Orders of the California Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer, employed by Contractor at Contractor's Own Expense. Nothing in this <u>Paragraph 3.12.14</u> shall be deemed to allow the use of a system less effective than that required by such Construction Safety Orders. No excavation of such trench or trenches shall be commenced until such plan has been approved by County and Architect. Nothing in this <u>Paragraph 3.12.14</u> shall be construed to impose any liability, including, without limitation, any tort liability, upon the County or upon any of its officers, agents, representatives or employees.

3.13 CUTTING AND PATCHING

Contractor shall be responsible for all cutting, fitting or patching required to complete the Work and to make its parts fit together properly both among themselves and with any Existing Improvements and the work of the Separate Contractors and of County's own forces. In all cases, cutting shall be performed under the supervision of competent mechanics skilled in the applicable trade and openings shall be cut as small as possible to prevent unnecessary damage. Contractor shall not damage or endanger a portion of the Work, Existing Improvements or fully or partially completed construction of County's own forces or of the Separate Contractors by cutting, patching, excavating or otherwise altering such construction. Contractor shall not cut or otherwise alter such Existing Improvements or construction by Separate Contractors or by County's own forces except with the written consent of such Separate Contractors or County, which consent shall not be unreasonably withheld, delayed or conditioned. When asked, Contractor shall not unreasonably withhold from the Separate Contractors or County the Contractor's consent to Separate Contractors' or County's own forces' cutting or other alteration of the Work as required to complete the work of the Separate Contractors or County's own forces.

3.14 UTILITIES AND SANITARY FACILITIES

3.14.1 Contractor Responsibility. Except as otherwise required by California Government Code §4215, Contractor shall contact all relevant utility providers and arrange for obtaining all available information, concerning location of subsurface utility lines. Prior to commencement of any digging, Contractor shall make its own investigation, including exploratory excavations, to determine the locations and type of Work which could result in damage to such utilities. In accordance with California Government Code §§4216 et seq., except in an emergency, Contractor shall contact the appropriate regional notification center at least two (2) the working days, but not more than fourteen (14) Days, prior to commencing any excavation, if the excavation will be conducted in an area which is known, or reasonably should be known, to contain sub-service installations, and shall obtain an inquiry identification number from the regional notification center. Contractor shall not assume, unless actual observed surface conditions at the Site indicate otherwise, that utilities are located in the same location as indicated on the as-built records or other information obtained by Contractor. Contractor shall conduct potholing in advance of digging in any areas where there are not apparent surface conditions at the Site indicating the actual location of underground utilities and be at all times vigilant in watching for any conditions encountered, above or below the surface of the ground, that might indicate that underground utilities are at locations other than those indicated by the as-built records or other information obtained by Contractor.

Contractor shall perform its digging operations in a slow and meticulous manner so as to avoid wherever reasonably possible damaging existing underground utilities. Contractor shall, at Contractor's Own Expense, make good any Loss to County or others as a result of Contractor's failure to perform any of its obligations under this Paragraph 3.14.1. Nothing stated in this Paragraph 3.14.1 shall be interpreted as requiring Contractor to do subsurface exploration or potholing for the purpose of locating subsurface utilities at the Site prior to the Bid Closing Deadline or as precluding the Contractor from receiving a Contract Adjustment for unknown subsurface utilities constituting Differing Site Conditions that are encountered in the course of performing the Site investigation or potholing required by this Paragraph 3.14.1.

- 3.14.2 **County Responsibility.** If and to the extent required by California Government Code §4215, County assumes the responsibility for removal, relocation, and protection of those existing main or trunkline utility facilities located at the Site at the time of commencement of the Work that are not identified in the Contract Documents. Provided that Contractor has exercised the Standard of Care in performing the Work in accordance with the Contract Documents, Contractor shall be entitled to a Contract Adjustment for, relocating, repairing or removing any utility facilities not indicated in the Contract Documents with reasonable accuracy, including, without limitation, equipment on the Site necessarily idled thereby. Delays caused by County's or a utility owner's failure to provide for the removal or relocation of such utility facilities shall constitute a Compensable Delay. Nothing herein shall be deemed to require County to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Site can be inferred from the presence of other visible facilities, such as buildings or meter junction boxes located on or adjacent to the Site.
- 3.14.3 **Temporary Utilities.** All utilities, including but not limited to electricity, water, gas and telephone, used in performance of the Work (including, without limitation, meters and temporary distribution systems from distribution points to points on Site where a utility is needed and "tap fees") shall be furnished and paid for by Contractor or, if furnished by County, shall be paid for by Contractor at Contractor's Own Expense. Upon Final Completion of the Work, Contractor shall remove all temporary distribution systems. If the Work involves an addition to an existing facility, Contractor may, with written permission of County, granted or withheld in County's sole and absolute discretion, use County's existing utilities by making prearranged payments to County for utilities used by Contractor. When it is necessary to interrupt any existing utility service to make connections, a minimum of two (2) working days' advance notice shall be given to County. Interruptions shall be of the shortest possible duration and shall be scheduled during a time of Day that minimizes its impact on the operations of the existing facility. Any Loss to County or Contractor associated with interruption of a utility service as a result of Contractor's breach of, or failure to fully comply with, its obligations under this Paragraph shall be paid for by Contractor at Contractor's Own Expense.
- 3.14.4 **Sanitary Facilities.** Contractor shall provide sanitary temporary toilet facilities, for the use of all the workers, in no fewer numbers than required by Applicable Laws, plus such additional facilities as may be directed by County. Such facilities shall be maintained in a sanitary condition at all times. Use of existing or permanent toilet facilities shall not be permitted except by written consent of County.

3.15 CLEANING UP

- 3.15.1 Contractor Responsibility. Contractor at all times shall keep the Site free from debris such as waste, rubbish and excess materials and equipment caused by the performance of the Work. At the end of each Day that Work is performed, Contractor shall not leave debris under, in or about the Site but shall promptly dispose of or remove same from the Site. Without limitation to the other clean up requirements of the Contract Documents, upon Final Completion, Contractor shall: (1) clean the interior and exterior of the buildings, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections and any areas where debris has collected so surfaces are free from foreign material or discoloration; (2) clean and polish all glass, plumbing fixtures, finish hardware and similar finish surfaces and equipment; and (3) remove temporary fencing, barricades, planking, sanitary facilities and similar temporary facilities from the Site.
- 3.15.2 **Cleanup by County.** If Contractor fails upon 24 hours' notice by County to perform its obligation to clean up, County may arrange to do so, and the cost thereof shall be borne by Contractor at Contractor's Own Expense.

3.16 ACCESS TO THE WORK

- 3.16.1 **County.** County, Inspectors of Record, Architect and County Consultants, and their representatives, and such other persons as authorized by County, shall at all times have access to the Work, either in preparation or in progress. Contractor shall provide safe and proper facilities for such access so that they and their representatives may perform their functions safely.
- 3.16.2 **Separate Contractors.** County, using its own forces or those of Separate Contractors, may, at any time during the performance of the Work, enter the Site for the purpose of performing construction or for any other purpose. Contractor shall cooperate with County, County's own forces and Separate Contractors and not interfere with other work being done by them or on their behalf.
 - 3.16.3 **Delivery Routes.** Contractor shall arrange for delivery of material over routes designated by County.

3.17 INTELLECTUAL PROPERTY RIGHTS

Contractor shall pay all royalties and license fees relating to use of Intellectual Property Rights pertaining to Work performed. Contractor shall defend suits or claims for infringement of Intellectual Property Rights and shall defend, indemnify and hold harmless the Indemnitees from Loss on account thereof in accordance with the terms of Section 3.18, below, unless the infringement is due to a particular design, process, product or product of a particular manufacturer that is required by the Contract Documents; provided, however, that if Contractor has information leading it to believe that the use of a particular design, process or product required by the Contract Documents would constitute an infringement of an Intellectual Property Right, then Contractor shall nonetheless be responsible to provide such defense, indemnification and hold harmless if such information is not promptly furnished in writing to County.

3.18 INDEMNIFICATION

- 3.18.1 **Contractor's Indemnity Obligation.** To the fullest extent permitted by Applicable Laws, Contractor agrees to indemnify, immediately defend at its own expense and hold harmless, County, Board of Supervisors, and each of their respective members, officers, employees, agents, insurers and volunteers ("Indemnitee(s)"), through legal counsel reasonably acceptable to County, from any and all Losses, whether real or alleged, regardless of whether caused in part by such Indemnitee or its agents, servants or independent contractors who are directly responsible to such Indemnitee, arising out of or relating to any of the following:
 - .1 any act or omission of Contractor or a Subcontractor, of any Tier;
- the activities of Contractor or a Subcontractor, of any Tier, on the Site or on other properties related to performance of the Work or the preparation for performance of the Work;
- the payment or nonpayment of any Subcontractor, of any Tier, for the Work performed, except where such nonpayment is the result of a breach by County of its payment obligations under the Contract Documents;
- .4 the existence or dispersal of any Hazardous Substances or Mold on the Site as a result of the failure of Contractor or a Subcontractor, of any Tier, to comply with its obligations under the Contract Documents;
- .5 the violation by Contractor or a Subcontractor, of any Tier, of an obligation under <u>Section 3.17</u>, above, involving infringement of an Intellectual Property Right; or
- the violation by Contractor or a Subcontractor, of any Tier, of any Applicable Law, including, without limitation, the violation of any requirement of the State of California General Permit for Storm Water Discharges Associated with Construction Activity and subsequent amendments or orders for construction activities as applicable thereto (including, without limitation, the requirements of a Storm Water Pollution Prevention Plan) or the violation of any applicable requirement of any local or regional Air Quality Management District (AQMD) (including, without limitation, a violation of any of the requirements set forth in the County MOU with AQMD dated January 6, 2004 Agenda Item 3.1 (for projects in the Coachella Valley) or AQMD Rule 403 (for projects west of the Coachella Valley));

PROVIDED, HOWEVER, that nothing contained herein shall be construed as obligating Contractor to indemnify an Indemnitee for Losses resulting from the sole negligence, active negligence or willful misconduct of such Indemnitee or its agents, servants or independent contractors who are directly responsible to such Indemnitee or from a defect in design furnished by such Indemnitee, where such sole negligence, active negligence, willful misconduct or design defect has been determined by agreement of Contractor and that Indemnitee or has been adjudged by the final and binding findings of a court or arbitrator of competent jurisdiction. In instances where the active negligence or willful misconduct of an Indemnitee or its agents, servants or independent contractors who are directly responsible to such Indemnitee or a defect in a design furnished by such an Indemnitee accounts for only a portion or percentage of the Loss involved, the obligation of Contractor will be for that portion or percentage of the Loss not due to such active negligence, willful misconduct or design defect.

- 3.18.2 Indemnification of Adjacent Property Owners. In the event Contractor enters into an agreement with the owners of any adjacent property to enter upon such property for the purpose of performing the Work or other activities incidental to the Work, Contractor shall fully indemnify, defend and hold harmless any person or entity which owns or has any interest in such adjacent property against any Loss resulting from the acts or omissions of the Contractor or its Subcontractors. The form and content of such indemnification agreement shall be approved by County prior to commencement of any Work on or around such property.
- 3.18.3 Insurance and Employment Benefits. The indemnification, defense and hold harmless obligations of Contractor under this Section 3.18, as well as any such obligations stated elsewhere in the Contract Documents: (1) shall not be limited by the amounts or types of insurance (or the deductibles or self-insured retention amounts of such insurance) which any Indemnitee, Contractor or any Subcontractor carries or is required to carry under the terms of the Contract Documents; (2) is independent of and in addition to the Indemnitees' rights under the insurance to be provided by an Indemnitee, Contractor or any Subcontractor; and (3) shall not be limited, in the event of a claim against an Indemnitee by an employee of Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, by a limitation on amount or type of damages, compensation or benefits payable by or for Contractor or Subcontractor under any worker's compensation act, disability benefit act or other employee benefit program.
- 3.18.4 **Subcontractor Indemnity Agreements.** Contractor agrees to obtain or cause to be obtained executed defense and indemnity agreements with provisions identical to those set forth in this <u>Section 3.18</u> from each and every Subcontractor, of every Tier.
- 3.18.5 **Implied Indemnity Rights.** Notwithstanding anything stated in this <u>Section 3.18</u> or elsewhere in the Contract Documents to the contrary, an Indemnitee's right to seek equitable indemnity and contribution from Contractor is in no way diminished, limited or precluded by any agreement by Contractor to provide express contractual indemnity to such Indemnitee. Contractor's obligations under this <u>Section 3.18</u> shall be deemed to completely eliminate and preclude any right by Contractor to seek contractual or equitable indemnity or contribution from any Indemnitee for any Loss covered by the Contractor's express indemnification obligations under this <u>Section 3.18</u>.
- 3.18.6 **Obligation to Defend.** The Contractor's obligation to defend under this <u>Section 3.18</u> includes, without limitation, the obligation to immediately reimburse an Indemnitee for any attorney's fees, court costs (statutory and non-statutory), arbitration and mediation expenses, professional, expert and consultant fees, investigative costs, postage costs, document copying costs, telecopy costs and any and all other costs and expenses associated with defense of such Indemnitee as and when incurred by any Indemnitee in defense of a claim by any third person or entity as a result of Contractor's failure or refusal to comply with its immediate defense obligation to such Indemnitee. Nothing stated in this <u>Section 3.18</u> or elsewhere in the Contract Documents shall be interpreted as providing or implying that the obligation of Contractor to defend an Indemnitee against an alleged Loss that is within the scope of the Contractor's indemnification obligation under this <u>Section 3.18</u> or under any other provision of the Contract Documents is to any extent released, excused, limited or relieved by a finding, determination, award or judgment by a court or arbitrator that the alleged Loss was due to circumstances not within the scope of such indemnification obligation.

3.19 LABOR, WAGES, PAYROLL RECORDS

3.19.1 **Public Work.** This Work is a "public work" as defined in Labor Code §1720 and must be performed in accordance with the requirements of Labor Code §§1720 to 1850 and Title 8 California Code of Regulations §§16000 to 17270, which govern the payment of prevailing wage rates on public works projects.

- 3.19.2 **Prevailing Wage Rates.** Pursuant to the provisions of Article 2 (commencing at §1770), Chapter 1, Part 7, Division 2 of the Labor Code of California, the Board of Supervisors has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime Work in the locality in which the Work is to be performed for each craft, classification or type of worker needed to execute the Work from the Director of the Department of Industrial Relations. These rates are on file with County and copies will be made available to any interested party on request. Contractor shall post a copy of such wage rates at the Site. The adoption of such wage rates is not a representation that labor can be obtained at these rates. It is the responsibility of Contractor to inform itself as to the local labor conditions. Holiday and overtime Work, when permitted by Applicable Laws, shall be paid for at a rate of at least one and one-half times the adopted rate of per diem wages, unless otherwise specified. Holidays shall be defined in the collective bargaining agreement applicable to each particular craft, classification or type of worker employed.
- 3.19.3 **Unclassified Workers.** Any worker employed to perform the Work not covered by any classification listed in the general prevailing wage rate of per diem wages determined by the Director of the Department of Industrial Relations shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the Work to be performed by him/her, and such minimum wage rate shall be retroactive to time of initial employment of such person on the Project in such classification.
- 3.19.4 **Per Diem Wages.** Contractor shall pay or shall cause to be paid each worker engaged in the Work not less than the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations, regardless of any contractual relationship which may be alleged to exist between Contractor or any of the Subcontractors and such workers. Pursuant to California Labor Code §1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel time and subsistence pay.
- 3.19.5 **Applicable Laws.** Contractor represents and warrants that the Contractor's Bid and the Contract Price includes funds sufficient to allow Contractor to comply with all Applicable Laws governing the labor or services to be provided. Contractor shall defend and indemnify the Indemnitees in accordance with <u>Section 3.18</u>, above, for any violation of any Applicable Law, including but not limited to California Labor Code §2810, and agrees to pay all assessments, including wages and penalties, made against County in relation to such violations.
- 3.19.6 **Posting at Site.** Contractor shall post at appropriate conspicuous points on the Site the prevailing wage rates of the Department of Industrial Relations in accordance with 8 California Code of Regulations 16100(b).
- 3.19.7 **Worker Hours.** As provided in Article 3 (commencing at §1810), Chapter 1, Part 7, Division 2 of the California Labor Code, eight (8) hours of labor shall constitute a legal day's work. The standard work day of any worker employed at any time by Contractor or any of the Subcontractors performing the Work, or any part of the Work, shall, except as hereinafter provided, be limited and restricted by Contractor to eight (8) hours per day, between the hours of 6:00 A.M. and 6:00 P.M. (unless otherwise required by Applicable Laws), plus one-half hour unpaid lunch approximately midway through the shift, provided that Contractor or any of the Subcontractors may establish a four day/ten-hour schedule consistent with Applicable Laws pertaining to payment of prevailing wages and the provisions any applicable collective bargaining agreement. A regular-work week shall constitute forty (40) hours during any one week. Notwithstanding the provisions hereinabove set forth, the parties hereto may agree to changes in the work day or the work week as permitted by Applicable Laws, and Contractor and all Subcontractors must pay the appropriate prevailing wage rate for those hours and days worked.
- 3.19.8 **Overtime.** Overtime work performed by employees of Contractor or any of the Subcontractors shall be compensated according to the applicable general prevailing rate established by the Department of Industrial Relations for holiday and overtime work for each craft, classification or type of worker in the locality in which the Work is to be performed.
- 3.19.9 Payroll Records. It shall be the sole responsibility of Contractor to ensure compliance with the provisions of Applicable Laws and the Contract Documents relating to maintenance and submission of payroll records. Pursuant to the provisions of California Labor Code §1776, Contractor shall keep, and shall cause each Subcontractor performing any portion of the Work to keep, accurate certified payroll records, showing the name, address, social security number, worker classification and straight-time and overtime hours worked each Day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by Contractor in connection with the Work. Certified payroll records must be in the payroll reporting format prescribed by the Division of Labor Standards Enforcement. If there is no work by Contractor or a Subcontractor in a given week, Contractor must keep

and submit a certified "Nonperformance" payroll record, indicating "no work" for that week. Contractor shall submit all certified payroll records to County in complete, unredacted form with an original signature on the Statement of Compliance, along with, and as a condition to, its Applications for Payment. Additionally, payroll records shall be available for inspection at all reasonable hours at the principal office of Contractor on the following basis:

- .1 a certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his or her authorized representative on request;
- .2 a certified copy of all such payroll records shall be made available for inspection or furnished upon request to County, the Division of Labor Standards Enforcement and/or the Division of Apprenticeship Standards of the Department of Industrial Relations or such other person or entity as designated by County;
- .3 a certified copy of all such payroll records shall be made available upon request by the public for inspection or the copying thereof, provided that (1) such request is made by the public through either County, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement of the Department of Industrial Relations, (2) such requested payroll records have not previously been provided pursuant to Subparagraph 3.19.9.2, above, then the requesting individual or entity shall, prior to being provided the records, reimburse the costs of preparation by Contractor, the Subcontractors and the entity through which the request was made, and (3) the public shall not be given access to records at the principal office of Contractor;
- .4 Contractor and each Subcontractor shall within ten (10) Days after receipt of a written request file a certified copy of such payroll records with the person or entity that requested the records;
- .5 Contractor shall provide, and shall cause each Subcontractor to provide, payroll records as defined in Title 8 California Code of Regulations §16000 to County within ten (10) Days after receipt of written request, at no cost to County;
- .6 any copy of such payroll records made available for inspection by, and copies furnished to. the public shall be redacted in a manner so as to prevent disclosure of an individual's name, address, and social security number, except that any copy made available for inspection by, and copies furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Section 175a) shall be marked or redacted only to prevent disclosure of an individual's name and social security number, and in either event, the name and address of Contractor or the Subcontractor performing the Work shall not be so obliterated; and
- .7 any copy made available to an agency included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonr copies of certified payroll records;
- .8 Contractor shall inform County concurrently with the submission of its initial Application for Payment, of the location of such payroll records, including the street address, city and county, and thereafter shall, within five (5) working days, provide a notice of any change of location and address of such payroll records.
- 3.19.10 **Apprentices.** Contractor acknowledges that, even if performance of the Work involves a dollar amount greater than or a number of working days greater than that specified in California Labor Code §1777.5, it shall be the sole responsibility of Contractor, for all apprentice occupations, to ensure compliance with California Labor Code §1777.5, including, without limitation, the following provisions:
- .1 Apprentices of any crafts or trades may be employed and, when required by California Labor Code §1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the California Labor Code.
- .2 Every such apprentice shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

- .3 Only apprentices, as defined in California Labor Code §3077, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4 (commencing at §3070), Division 3 of the California Labor Code, are eligible to be employed at the apprentice wage rate on Public Works. The employment and training of each apprentice shall be in accordance with either: (1) the apprenticeship standards and apprentice agreements under which he or she is training, or (2) the rules and regulations of the California Apprenticeship Council.
- .4 Contractor and any of the Subcontractors employing workers in any apprenticeable craft or trade in performing any of the Work shall apply to the applicable joint apprenticeship committee for a certificate approving Contractor or the Subcontractor under the applicable apprenticeship standards and fixing the ratio of apprentices to journeymen employed in performing the Work.
- .5 Prior to commencing the Work, Contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the Site of the Work. The information submitted shall include an estimate of journeyman hours to be performed under the Construction Contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to County if requested by County.
- .6 The ratio of the Work performed by apprentices to journeymen employed in a particular craft or trade on the Work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates, where Contractor or the Subcontractor agrees to be bound by those standards, but, except as otherwise provided in this Paragraph, in no case shall the ratio be less than one (1) hour of apprentice work for every five (5) hours of journeyman work. Apprentices may comprise up to thirty percent (30%) of the work force of each particular craft, classification or type of worker employed, unless the applicable joint apprenticeship committee establishes a lower percentage. To the extent possible, fifty percent (50%) of the apprentice work force shall consist of first-year apprentices.
- .7 The interpretation and enforcement of California Labor Code §1777.5 shall be in accordance with the rules and procedures of the California Apprenticeship Council.
- .8 Contractor and all the Subcontractors shall comply with California Labor Code §1777.6, which forbids certain discriminatory practices in the employment of apprentices.
- .9 Contractor shall become fully acquainted with the law regarding apprentices prior to commencement of the Work, paying special attention to California Labor Code §§1777.5, 1777.6, and 1777.7 and Title 8, California Code of Regulations, §§200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California.
- 3.19.11 **Pre-Construction Meetings, Interviews.** Contractor shall attend any pre-construction meetings held by County to discuss labor requirements. Contractor and the Subcontractors shall allow County, County Consultants and the Department of Industrial Relations, and designated representatives of each, to conduct, at their discretion, interviews of workers at the Site during working hours.

3.19.12 Penalties for Violations.

of the Subcontractors shall, as a penalty, pay an amount not to exceed Two Hundred Dollars (\$200) for each Day, or portion thereof, for each worker paid less than the prevailing rates, determined by the Director of the Department of Industrial Relations, for the trade or craft in which such worker is employed by Contractor or, except as provided by said §1775, by any of the Subcontractors, of any Tier, for performance of the Work. The amount of this penalty shall be determined by the Labor Commissioner and shall be based on consideration of both: (1) whether the failure of Contractor or the Subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, whether the error was promptly and voluntarily corrected upon being brought to the attention of Contractor or the Subcontractor; and (2) whether Contractor or the Subcontractor has a prior record of failing to meet its prevailing wage obligations. The difference between the amount owed to each worker pursuant to such prevailing wage rates, and the amount paid to each worker for each Day or portion thereof for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by Contractor.

- .2 Working Hour Violations. Pursuant to Labor Code §1813, Contractor shall pay a penalty of Twenty-Five Dollars (\$25) per worker employed in the performance of the Work by Contractor or by any of the Subcontractors for each Day during which such worker is required or permitted to work more than eight (8) hours in any Day and forty (40) hours in any one calendar week in violation of the provisions of Article 3 (commencing at §1810), Chapter 1, Part 7, Division 2 of the California Labor Code.
- .3 Payroll Record Violations. Pursuant to California Labor Code §1776, Contractor shall in the event of a failure to comply within ten (10) Days with any written notice requesting the records enumerated in subdivision (a) of said §1776, pay a penalty of One Hundred Dollars (\$100) for each Day, or portion thereof, for each worker, until Contractor has strictly complied with such request. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.
- Apprenticeship Violations. Pursuant to California Labor Code §1777.7, if Contractor or the Subcontractor is determined by the Chief of the Division of Apprenticeship Standards (the "Chief") to have knowingly committed a first-time violation of California Labor Code §1777.5, Contractor or the Subcontractor shall pay, as a civil penalty, an amount not exceeding One Hundred Dollars (\$100) for each full Day of noncompliance, provided that the amount of this penalty may be reduced by the Chief if the penalty would be disproportionate to the severity of the violation. In lieu of this penalty, the Chief may, for a first-time violation and with the concurrence of the joint apprenticeship committee, order Contractor or the Subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance. If such violation by Contractor or the Subcontractor is a second or subsequent violation committed within a three (3) year period from a previous violation of §1777.5, Contractor or the Subcontractor shall pay, as a civil penalty, to County the sum of not more than Three Hundred Dollars (\$300) for each full Day of noncompliance. County shall withhold the amount of the civil penalty from contract progress payments then due or to become due. In addition, if Contractor or the Subcontractor is determined to have knowingly committed a serious violation of any provision of §1777.5, the Chief may deny to Contractor or the Subcontractor, and to its responsible officers, the right to bid on or be awarded a contract to perform work as a subcontractor on any subsequent project for County for a period of up to one (1) year for the first violation and for a period of up to three (3) years for a second or subsequent violation.
- 3.19.13 **Subcontractor Provisions**. Contractor shall include, and shall require the Subcontractors to include, contractual provisions in all contracts they enter into for the performance of the Work requiring compliance with the provisions of this <u>Section 3.19</u> at no additional cost.
- 3.19.14 **Condition of Payment.** Compliance by Contractor with the requirements of this <u>Section 3.19</u> and each of its Paragraphs shall be a condition to Contractor's right to payment under its Applications for Payment. Without limitation to the foregoing, payments to Contractor shall not be made when payroll records are delinquent or inadequate.

3.20 LABOR CODE §2810

- 3.20.1 **Application.** The provisions of this <u>Section 3.20</u> apply only if the Contractor has not executed a collective bargaining agreement covering the workers who will be employed to perform the Work.
- 3.20.2 **Declaration by Contractor**. If a Declaration of Sufficiency of Funds has not been submitted by Contractor as a Post-Award Submittal, then it must be submitted prior to Award. In executing the Construction Contract, Contractor warrants and represents that all of the statements contained in its Declaration of Sufficiency of Funds remain true and correct as of the date of execution of the Construction Contract and may be relied upon by County in determining whether there appears to be sufficient funds in the Contractor's Bid to allow the Contractor to comply with all Applicable Laws governing the labor or services to be provided for the performance of the Work. The truth and accuracy of the statements contained in said Declaration and in this Paragraph 3.20.2 constitute a material part of the Contractor's consideration for, and a material inducement to the County's entering into, the Construction Contract.
- 3.20.3 **Continuing Duty**. To the extent that any of the information provided in the Declaration of Sufficiency of Funds submitted by Contractor relating to numbers of workers or independent contractors that will be employed or utilized for performance of the Work was or is based upon a best estimate, rather than actual figures or information, then the Contractor assumes the continuing duty to the County to ascertain the actual figures and information requested in the Declaration of Sufficiency of Funds and to provide such actual figures and information to the County in the form

of a revised and updated Declaration of Sufficiency of Funds once the actual figures and information become known.

3.21 URBAN RUNOFF AND STORM WATER COMPLIANCE

- 3.21.1 Contractor's Responsibility. If and to the extent storm water permitting, control, mitigation or discharge control is required by Applicable Laws, the Contractor shall: (1) prior to starting any Work at the Site, sign and implement the Storm Water Management Plans or Storm Water Pollution Prevention Plans as previously prepared by the County's Consultant for civil engineering or by others; (2) take all necessary steps to monitor, report, enforce and otherwise implement and comply with the requirements of the Storm Water Permit, Storm Water Management Plans and Storm Water Pollution Prevention Plans and all Applicable Laws pertaining to the elimination or mitigation of storm water pollutant discharge to separate storm sewer systems or other watercourses, including without limitation, applicable requirements of the State Water Resources Control Board, Santa Ana, San Diego, and/or Colorado Region Water Quality Control Boards and municipal storm water management programs; (3) adhere to and implement the Special Provisions for Urban Runoff and Water Pollution Control set forth in the Specifications; and (4) ensure that the Work is constructed in conformance with those post-construction best management practices (BMPs) identified within the project-specific Water Quality Management Plan (WQMP).
- 3.21.2 **Inspections, Reports**. Contractor shall immediately notify the person identified to Contractor as the County's "project manager" for the Project of all inspections by Government Authorities (including, but not limited to, any regional board staff) and, if practicable, arrange for participation by such Governmental Authorities in any other pertinent inspections conducted at the Site. Contractor shall provide to County copies of all reports and monitoring information related to the matters covered by this <u>Section 3.21</u>.
- 3.21.3 **Violations.** The Contractor recognizes and understands that failure to comply with the requirements of any applicable storm water-related permit issued by the State of California of the United States pursuant to the Clean Water Act (Title 33 U.S.C.§§ 1251 et seq) and/or the Porter Cologne Water Quality Control Act (California Water Code §§13000 et seq.) is a violation of Applicable Laws. Contractor shall be responsible for all Losses and for any liability (including, without limitation, fines, penalties and other administrative liabilities and costs) imposed by Applicable Laws as a result of the Contractor's failure to comply with Applicable Laws, including, without limitation, the requirements of this Section 3.21.
- 3.21.4 **Condition of Payment.** Compliance by the Contractor with the requirements of this <u>Section 3.21</u> shall be a condition to the Contractor's right to payment under its Applications for Payment.
- 3.21.5 **Costs of Compliance.** The Contractor represents and warrants that it has included in it Bid all costs of compliance with the requirements of this Section 3.21.

3.22 **SOLID WASTE MANAGEMENT**

Contractor shall comply with all provisions of Applicable Laws (including, without limitation, the requirements of the California Public Resources Code, rules and regulations of the California Integrated Waste Management Board and provisions of any Site-specific plans adopted by County) that are applicable to the activities of contractors performing construction or related activities on the Site. Compliance by Contractor with the requirements of this Section 3.22 shall be a condition to Contractor's right to payment under its Applications for Payment.

3.23 CEQA COMPLIANCE

No Work that is subject to California Environmental Quality Act (CEQA) shall proceed by Contractor until Contract Documents satisfying the CEQA process are reviewed and approved by the County. Contractor shall comply with all applicable CEQA requirements. If there is a federal nexus (e.g. a source of federal funding) to the Project, compliance by Contractor with the National Environmental Policy Act (NEPA) will be required in addition to and in conjunction with compliance with requirements of CEQA. The Contractor shall comply with the conditions identified on the Plans and Specifications for compliance with the California Environmental Quality Act, including, without limitation, all requirements pertaining to Mitigation, Monitoring, and Reporting Program (MMRP).

3.24 AQMD COMPLIANCE

Contractor is responsible for full and complete compliance with, as applicable: (1) AQMD Rule 403.1, County Ordinance 742, the County MOU with AQMD dated January 6, 2004 Agenda Item 3.1 (for projects in the Coachella Valley); or (2) AQMD Rule 403 (for projects west of the Coachella Valley). Any fines imposed by AQMD on the County, as well as any other Loss to County, as a result of non-compliance by Contractor with the applicable provisions of the foregoing requirements are the responsibility of Contractor and upon request by County will be paid to County by Contractor or may be withheld by County from amounts due to Contractor under its Applications for Payment.

ARTICLE 4 CONSTRUCTION ADMINISTRATION

4.1 ARCHITECT

- 4.1.1 **Scope of Authority.** The Architect shall have the authority to act on behalf of County only as expressly provided in the Contract Documents and subject to such limitations on authority as set forth in Paragraph 4.1.2, below. As clarification of the foregoing, if the Contract Documents provide that the Architect has the right to approve of, consent to or direct that Contractor take or forbear from taking an action, such authority shall be limited to issuing such approval, consent or direction and shall not include, or be interpreted to include, authority to bind County with respect to any of the matters set forth in Paragraph 4.1.2, below. If Contractor's compliance with such approval, consent or direction of the Architect would involve or require authorization by County within the scope of the matters set forth in Paragraph 4.1.2, below, Contractor has the obligation, in addition to complying with the Architect's approval, consent or direction, to take steps in accordance with the Contract Documents to obtain such authorization of County as may be required and failing to do so shall not have any right to recourse or recovery from County on account of Contractor's action taken or Work performed in response to such approval, consent or direction by Architect.
- 4.1.2 **Limitations on Authority.** Without limitation to the other limitations on the Architect's authority expressed or implied under Paragraph 4.1.1, above, and notwithstanding anything else set forth in the Contract Documents to the contrary, Architect does not have authority to: (1) obligate or commit County to any payment of money; (2) obligate County to any adjustment to the Contract Price or Contract Time; (3) relieve Contractor of any of its obligations under the Contract Documents; (4) approve or order any Work involving Delay or Extra Work; or (5) perform any act, make any decision or give any direction or approval that is described in these General Conditions as an act, decision, direction or approval that is to be performed, made or given by any person or entity other than Architect.
- 4.1.3 **Work Stoppage.** Architect's authority includes, without limitation, the authority to stop the Work whenever such stoppage may be necessary, in Architect's opinion, for the proper execution of the Work. Any Work that is stopped or disapproved by order of Architect shall be resumed if and when County so directs in writing, with or without the concurrence of the Architect.
- 4.1.4 **Replacement.** County may, in its sole discretion, substitute another person or entity, or add persons or entities, to perform the functions of Architect or to exercise some or all of the authority of Architect provided for in the Contract Documents.
- 4.1.5 **County Rights.** All rights and authority conferred upon Architect under the Contract Documents constitute rights that County may, in its sole and absolute discretion, exercise in writing on its own behalf, irrespective of whether the County has ordered the removal, replacement or a change in the authority of the Architect.

4.2 ADMINISTRATION OF THE CONSTRUCTION CONTRACT

- 4.2.1 **Observations of the Work.** Architect will visit the Site as appropriate to the stage of the Work to observe the Work in progress. Observations shall be for the purpose of ascertaining the progress of the Work and that the character, scope, quality and detail of construction (including workmanship and materials) comply with the Contract Documents, the Architect's directives, approved Submittals and clarifications issued by Architect. Observations shall be separate from any inspections which may be provided by others.
- 4.2.2 **Means, Methods.** Construction means, methods, techniques, sequences, procedures and safety precautions and programs in connection with the Work are solely the responsibility of Contractor. Neither County nor

- Architect: (1) has control over or charge of, nor are they responsible for, Contractors or any Subcontractor's construction means, methods, techniques, sequences, procedures, safety precautions or programs in connection with the Work, all of which are, as between Contractor and County, solely Contractor's responsibility; (2) is responsible for Contractor's failure to carry out the Work in accordance with the Contract Documents; or (3) has control over, charge of, or responsibility for acts or omissions of Contractor, the Subcontractors or their agents or employees, or of any other persons performing portions of the Work.
- 4.2.3 **Communications by Contractor.** County shall be provided by Contractor with copies of all communications from Contractor or the Subcontractors to Separate Contractors or the Architect. Contractor shall not rely on oral or other non-written communications.
- 4.2.4 **Review of Applications for Payment.** If requested by County, Architect will review and certify all Applications for Payment by Contractor, including Applications for Payment requesting Progress Payments and Final Payment. In such cases, if the Architect and County do not concur in respect to the amount to be paid to Contractor, County's determination of the amount due will prevail.
- 4.2.5 Rejection of the Work. Architect will have authority to reject Work that does not conform to the Contract Documents and to require additional inspection or testing, in accordance with Article 10, below, whether or not such Work is fabricated, installed or completed. Whenever Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, Architect will have authority to require additional inspection or testing of the Work in accordance with Article 10, below, whether or not such Work is fabricated, installed or completed. Neither Architect's authority to act under this Paragraph 4.2.5 nor a decision made in good faith either to exercise or not to exercise such authority, shall give rise to a duty or responsibility of Architect to Contractor, the Subcontractors, their agents or employees, or other persons performing any of the Work. County shall have the right, notwithstanding a recommendation by the Architect pursuant to this Paragraph 4.2.5 to reject a portion of the Work, to elect to accept the Work rejected by Architect and to direct in writing the manner in which the Work is to be performed and Contractor shall comply therewith.
- Review of Submittals. Architect and such other County Consultants as Architect or County determines appropriate will review, approve or take other appropriate action upon the Contractor's Submittals. Such review, approval and other action taken in regard to a Submittal is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents and is not conducted for the purpose of determining the technical accuracy and completeness of the Submittal, checking details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the sole responsibility of Contractor. Actions by Architect and County Consultants in connection with review of a Submittal by Contractor will be taken with such promptness as to cause no unreasonable Delay in the Work of Contractor or in the activities of the Separate Contractors or County, while allowing sufficient time in their judgments to permit adequate review. Whether or not County has identified a particular Submittal for review by Architect or a County Consultant, Contractor shall in all cases submit Submittals sufficiently in advance to allow time to permit adequate review by Architect and other County Consultants. Neither Architect's nor any County Consultant's review of a Submittal shall: (1) relieve Contractor of its obligations under Section 3.11, above; (2) constitute approval of safety precautions or, unless otherwise specifically stated in writing by the Architect or County Consultant at the time such Submittal is returned to Contractor; (3) be construed as an approval of any construction means, methods, techniques, sequences or procedures; and (4) if it involves review or approval of a specific item, be construed as indicating approval of an assembly of which such item is a component.
- 4.2.7 **Changes.** After consultation with the Architect, County will prepare the Change Orders, Unilateral Change Orders and Construction Change Directives for execution and take appropriate action thereon in accordance with <u>Article 7</u>, below.

4.3 CLAIMS

- 4.3.1 **Submission of Claims.** All Claims by Contractor shall be submitted in accordance with the procedures set forth in this <u>Section 4.3</u>.
 - 4.3.2 Arising of Claim.

- .1 Changes. A Claim by Contractor involving a Contract Adjustment due to a Compensable Change or Deleted Work arises upon issuance of a decision denying, in whole or in part, Contractor's Change Order Request. Such Claim shall be prepared and submitted in accordance with the requirements of this <u>Section 4.3</u>, including, without limitation, <u>Paragraphs 4.3.3</u> through 4.3.5, below.
- .2 Other Claims. Claims by Contractor other than those described in <u>Subparagraph 4.3.2.1</u>, above, arise at the time that County receives written notice by Contractor of Contractor's intent to file the Claim. Such notice of intent shall be given no later than five (5) Days after the Discovery Date relative to such circumstances (even if Contractor has not yet experienced a Loss or Delay due to such circumstances) and shall state the event or condition giving rise to the Claim and its probable effect, if any, upon the Contract Price and Contract Time. FAILURE BY CONTRACTOR TO SUBMIT A NOTICE OF INTENT TO FILE CLAIM IN ACCORDANCE WITH THIS <u>SUBPARAGRAPH 4.3.2.2</u> SHALL, IN ACCORDANCE WITH THE PROVISIONS OF <u>SECTION 4.6</u> OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO FURTHER RECOURSE OR RECOVERY UPON SUCH CLAIM.
 - 4.3.3 Content of Claims. A Claim must include the following:
 - .1 a statement that it is a Claim and a request for a decision on the Claim;
- .2 a detailed description of the act, error, omission, unforeseen condition, event or other circumstance giving rise to the Claim;
- 3 supporting documentation as follows: (1) if the Claim involves a Contract Adjustment due to Compensable Change or Deleted Work, documentation demonstrating that a complete Notice of Change and Change Order Request were timely and properly submitted as required by Article 7, below; (2) if the Claim involves an adjustment to the Contract Time, documentation demonstrating that a complete Notice of Delay and Request for Extension were timely and properly submitted as required by Article 7, and Article 8, below; and (3) if the Claim does not involve a Contract Adjustment on the basis of Compensable Change or Deleted Work, documentation demonstrating that a notice of intent to file the Claim was timely and properly submitted as required by Subparagraph 4.3.2.2, above;
- .4 a detailed justification for any remedy or relief sought by the Claim, including, without limitation, all of the following: (1) a detailed cost breakdown in the form required for submittal of Change Order Requests, which complies with the prohibition on "total cost" calculations set forth in Paragraph 7.7.15, below; and (2) job cost records substantiating the actual costs that have been incurred; and
- .5 a written certification, signed by a responsible managing officer or principal of Contractor's organization who has the authority to sign contracts on behalf of Contractor and who has personally investigated the matters alleged in the Claim, in the following form:
 - "I hereby certify under penalty of perjury that I am a managing officer or principal of (Contractor) and that I have reviewed the Claim presented herewith on Contractor's behalf and/or on behalf of (Subcontractor(s)) and that the following statements are, to the best of my knowledge after diligent inquiry into the circumstances of such Claim, true and correct:
 - (i) the facts alleged in or that form the basis for the Claim are true and accurate;
 - (ii) I do not know of any facts or circumstances, not alleged in the Claim, that by reason of their not being alleged render any fact or statement alleged in the Claim materially misleading;
 - (iii) I have, with respect to any request for money or damages alleged in or that forms the basis for the Claim, reviewed the job cost records (including those maintained by Contractor and by any Subcontractor, of any Tier, that is asserting all or any portion of the Claim) and confirmed with reasonable certainty that the losses or damages alleged to have been

suffered by Contractor and/or such Subcontractor were in fact suffered in the amounts and for the reasons alleged in the Claim;

- (iv) I have, with respect to any request for extension of time or claim of delay, disruption, hindrance or interference alleged in or that forms the basis for the Claim, reviewed the job schedules (including those maintained by Contractor and by any Subcontractor, of any Tier, that is asserting all or any portion of the Claim) and confirmed that the delays or disruption alleged to have been suffered by Contractor and/or such Subcontractor were in fact experienced for the durations, in the manner, and with the consequent effects on the time and/or sequence of performance of the Work, as alleged in the Claim; and,
- (v) Contractor has not received payment from County for, nor has Contractor previously released County from, any portion of the Claim.

Signature:	
Name:	
Title:	
Company:	
Date:	

4.3.4 **Noncompliance.** Failure by Contractor to comply with <u>Paragraph 4.3.3</u>, above, shall give County the right, without obligation, to deny the Claim or return the Claim without any response.

4.3.5 Submission of Claims.

- .1 Time for Filing. All Claims and supporting documentation and certifications required to be submitted by Contractor must be submitted to the County within thirty (30) Days after the Claim arises (as "arises" is defined in Paragraph 4.3.2, above). No Claims by Contractor are permitted after Final Payment.
- .2 Manner of Filing. A Claim shall be submitted by registered or certified mail, return receipt requested.
- .3 Condition Precedent. Contractor's strict compliance with the requirements of this <u>Section 4.3</u> as to a Claim shall be considered a condition precedent to Contractor's right to initiate or seek determination of its rights in any legal proceedings with respect to such Claim.

4.3.6 Response to Claims by Contractor.

- Claims Response. County shall provide a reasonable review and issue a written Good Faith Determination within forty-five (45) Days of receipt of the Claim, unless County and Contractor have by mutual agreement extended the time period. The written Good Faith Determination shall identify which portion of the Claim is disputed by County and which portion is undisputed.
- Meeting with Board. If County should need to submit and gain approval of the Board of Supervisors prior to providing the Contractor the written statement identifying the undisputed and disputed portions of the Claim, and the governing body does not meet within the forty-five (45) days or within the mutually agreed time extension, County shall have three (3) days following the next duly publicly noticed meeting of the Board of Supervisors after the forty-five (45) day period, or agreed extension, to provide Contractor a written statement identifying the disputed portion and undisputed portion of the Claim.

- .3 Payments on Undisputed Portion(s). Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after County issues its written statement. Amounts not paid in a timely manner shall bear interest at 7 percent per annum.
- .4 Failure of County to Respond. If County should fail to respond to a Claim from Contractor within the time periods set forth in this 4.3.6 or otherwise meet the time requirements, the Claim shall be deemed rejected in its entirety. A Claim that is denied by reasons of County's failure to have responded to the Claim, or its failure to otherwise meet the requirements of Public Contract Code §9204, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

4.3.7 Meet and Confer.

- Dispute by Contractor. If Contractor disputes County's Good Faith Determination and written response of a Claim by Contractor, or if County fails to respond within the prescribed time set forth herein, the Contractor may demand, in writing sent by registered or certified mail return receipt requested, an informal conference to meet and confer for settlement of the issues still in dispute. Upon receipt of such demand, County shall schedule a meet and confer conference within thirty (30) Days.
- **Conclusion of Meet and Confer.** Within ten (10) business days following conclusion of the meet and confer conference, if the Claim or any portion thereof remains in dispute, County shall provide the Contractor with a written statement identifying the portion of the Claim still in dispute and the portion that is undisputed. Any payment due on the undisputed portion shall be processed and made within sixty (60) days after such written statement is issued. Amounts not paid in a timely manner shall bear interest at 7 percent per annum.
- .3 Mediation. Any disputed portion of the Claim as identified by the Contractor in writing, shall be submitted to non-binding mediation with the County and Contractor sharing the associated costs equally. The County and Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall selected a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. Mediation includes any non-binding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assist the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
- .4 If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures outside this section.

4.3.8 Subcontractor Claims.

- County, the Contractor may present to the County a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a claim for work which was performed by the subcontractor or a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the County shall furnish reasonable documentation to support the claim.
- .2 Contractor Response. Within forty five (45) days of receipt of the written request by the subcontractor, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the claim to the County and, if the Contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

4.3.9 Claims Based on Differing Site Conditions.

.1 Contractor Responsibility. Save and except as hereinafter provided in this Paragraph 4.3.9 for Contract Adjustments due to Differing Site Conditions, Contractor agrees at Contractor's Own Expense to assume the risk and costs of Extra Work and Delay due to concealed or unknown conditions, surface or subsurface, at the Site or in Existing Improvements.

- Existing Improvements and not otherwise reasonably ascertainable by Contractor in the performance of its obligations under the Contract Documents (including, without limitation, conditions not reasonably ascertainable by Contractor from documents or information described in Paragraph 3.2.1, above, that were provided or available to Contractor from documents or information described in Paragraph 3.2.1, above, that were provided or available to Contractor for its review prior to the Bid Closing Deadline) that constitute: (1) hazardous materials that constitute hazardous waste, as defined in California Health and Safety Code §25117, that is required to be removed to a Class II, or Class III disposal site in accordance with provisions of Applicable Laws; (2) subsurface or concealed conditions at the Site or concealed conditions in Existing Improvements which differ materially from those indicated by the Contract Documents or other information that was either reviewed by Contractor or that Contractor was given the opportunity to review prior to the Bid Closing Deadline; or (3) unknown physical conditions at the Site or concealed conditions in Existing Improvements of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- .3 Notice of Change. If Contractor encounters conditions it believes constitute Differing Site Conditions, then Contractor shall, before such conditions are disturbed, give Notice of Change as required by <u>Paragraph 7.6.1</u>, below, stating, without limitation, a detailed description and precise location of the conditions encountered.
- .4 Investigation by County. Upon receipt of notice from Contractor as required by Subparagraph 4.3.9.3, above, County shall promptly investigate Contractor's report of Differing Site Conditions.
- .5 Change Order Request. If Contractor intends to seek a Contract Adjustment based upon Differing Site Conditions, it shall submit a complete and timely Change Order Request in accordance with Paragraph 7.6.2, below, setting forth its request for a Contract Adjustment.
- **Contract Adjustments.** If, following Contractor's compliance with its obligations under this Paragraph 4.3.9, County finds that Differing Site Conditions exist, then, unless the Contractor's right to Contract Adjustment has been waived as pursuant to Paragraph 3.2.3, above, a Contract Adjustment shall be made for the resulting Compensable Change and Compensable Delay, in such amount and duration as County determines by issuance of a Good Faith Determination are reasonable and permitted by these General Conditions.

.7 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO STRICTLY COMPLY WITH THE REQUIREMENTS OF THIS <u>PARAGRAPH 4.3.9</u> PERTAINING TO CONTRACT ADJUSTMENT BASED ON A CLAIM FOR DIFFERING SITE CONDITIONS SHALL, IN ACCORDANCE WITH THE PROVISIONS OF <u>SECTION 4.6</u> OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO FURTHER RECOURSE OR RECOVERY UPON SUCH CLAIM.

- .8 Final Completion. No claim by Contractor for additional compensation for Differing Site Conditions shall be allowed if asserted after Final Payment.
- 4.3.10 **Continuous Work.** Contractor shall, notwithstanding the existence of a Claim by Contractor that is disputed by County, maintain continuous performance, without interruption, suspension or slowing, of the Work and its other obligations (1) pending issuance by County of a Good Faith Determination of the Claim and (2) thereafter in compliance with the terms of such Good Faith Determination.

4.4 NOTICE OF THIRD-PARTY CLAIMS

County shall provide notification to Contractor within a reasonable time after receipt of any third-party claim relating to the Construction Contract. County shall be entitled to recover from Contractor its reasonable costs of providing such notification.

4.5 WAIVERS OF RIGHTS BY CONTRACTOR

COUNTY AND CONTRACTOR ACKNOWLEDGE THAT IT IS IN THE INTERESTS OF BOTH PARTIES THAT CHANGES, DELAYS AND CLAIMS BE IDENTIFIED, QUANTIFIED, EVALUATED AND FINALLY RESOLVED PROMPTLY, CONTEMPORANEOUSLY WITH THE CIRCUMSTANCES FROM WHICH THEY ARISE, AND THAT THERE BE CERTAINTY WITH RESPECT TO THE FINALITY OF ANY RESOLUTION OF RELATED DISPUTES. ON

THOSE PREMISES, AND IN FURTHER RECOGNITION OF THE FACT THAT IT WOULD BE EXREMEMLY DIFFICULT OR IMPOSSIBLE TO QUANTIFY, DEMONSTRATE OR PROVE THE HARM TO COUNTY IF ANY OF THE FOREGOING PREMISES IS NOT ACHIEVED DUE TO A FAILURE BY CONTRACTOR TO COMPLY WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS CONCERNING TIMELY NOTICE OR SUBMISSIONS OF NOTICES AND CLAIMS RELATING TO CHANGES, DELAY AND CONTRACT ADJUSTMENTS, COUNTY AND CONTRACTOR AGREE THAT FAILURE BY CONTRACTOR TO CONFORM TO SUCH REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL IN AND OF ITSELF CONSTITUTE SUFFICIENT CAUSE AND GROUNDS, WITHOUT THE NECESSITY OF COUNTY DEMONSTRATING ANY ACTUAL HARM OR PREJUDICE, FOR IMPOSING UPON CONTRACTOR A FULL AND UNCONDITIONAL WAIVER BY CONTRACTOR OF ITS RIGHT TO A CONTRACT ADJUSTMENT AND OF ITS RIGHTS AND RECOURSE FOR RECOVERY OF ANY RELATED LOSS BY ANY LEGAL PROCESS OTHERWISE PROVIDED FOR UNDER APPLICABLE LAWS.

4.6 GOOD FAITH DETERMINATIONS

Wherever in the Contract Documents it is provided that the County may or shall make a determination or decision in the exercise of good faith (including, without limitation, provisions for a Good Faith Determination by County), any such determination or decision that the person exercising such right on behalf of County believes in good faith to be a proper exercise of County's rights and to have a reasonable basis in fact, whether or not such determination is in fact proper, reasonable or correct or adjudged to be so, shall be complied with by Contractor without Delay to Contractor's performance of the Work. However, unless the Contract Documents expressly provides otherwise, neither such good faith determination or decision nor Contractor's compliance therewith shall be interpreted as precluding the Contractor from exercising its rights to seek adjudication of its rights in the manner permitted by these General Conditions or Applicable Laws.

4.7 ESCROW BID DOCUMENTS

If the Bidding Documents obligate Contractor to submit Escrow Bid Documents, then submission by Contractor of its Escrow Bid Documents shall constitute a warranty and representation by Contractor that it has no other written documents or electronic files containing any information that Contractor was required to include, but failed to include, as part of its performing such obligation and Contractor agrees it shall have no right to submit for consideration by County, or offer into evidence in legal proceedings, in support of a request for Contract Adjustment or a Claim any such documentation or electronic files that Contractor so failed to include in its Escrow Bid Documents.

ARTICLE 5 SUBCONTRACTORS

5.1 **SUBSTITUTION**

- 5.1.1 **Substitutions Allowed.** There shall be no substitution of or addition to the Subcontractors except as permitted by Chapter 4 (commencing at §4100), Division 2, Part 1 of the California Public Contract Code (the "Act").
- 5.1.2 **Contractor's Own Expense**. Any increase in the cost or time of performance of the Work resulting from the replacement, substitution or addition of a Subcontractor shall be borne solely by Contractor at Contractor's Own Expense.
- 5.1.3 **Substantiation of Compliance**. At any time during performance of the Work it shall be the responsibility and burden of Contractor, if requested by County, to present clear and convincing evidence that Contractor is, and all times during the bidding and Award of the Construction Contract was, in full compliance with all of the applicable provisions of the Act. Failure by Contractor to present such evidence when requested shall be deemed a breach of this <u>Section 5.1</u> and of the Act, thereby entitling County to exercise any or all of its rights and remedies under the Contract Document or Applicable Laws, including, without limitation, the right to cancel the Construction Contract or assess any penalties provided for by the Act.
- 5.1.4 **Splitting Prohibited.** Any attempt by Contractor to avoid compliance with the Act, such as, but not limited to, by splitting the work of subcontracts with Subcontractors into separate contracts or changes orders so as to not exceed the monetary threshold of the Act applicable to listing of Subcontractors, is strictly prohibited.

5.2 SUBCONTRACTUAL RELATIONS

- 5.2.1 Written Agreements. Contractor shall, by written agreement entered into between the Contractor and Subcontractors no later than twenty (20) Days after Award, require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to Contractor by terms of the Contract Documents and to assume toward Contractor all the obligations and responsibilities which Contractor, by the Contract Documents, assumes toward County and the Architect. Each subcontract agreement shall preserve and protect the rights of County and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against Contractor that Contractor, by the Contract Documents, has against County. Contractor shall require each first-Tier Subcontractor to enter into similar agreements with their sub-subcontractors. Copies of applicable portions of the Contract Documents shall be made available by Contractor to the first-Tier Subcontractors and each Subcontractor shall similarly make copies of such Contract Documents available to each Subcontractor of a lower-Tier with which it contracts. Without limitation to the foregoing, each contract that is entered into by a Subcontractor, of any Tier, shall, without limitation, require the Subcontractor:
 - .1 to perform the Work in accordance with the terms of the Contract Documents;
- .2 to assume toward Contractor all the obligations and responsibilities which Contractor assumes toward County by the Contract Documents;
- .3 to preserve and protect the rights of County under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights;
- .4 to waive all rights (including, without limitation, rights of subrogation) that the Subcontractor or its insurers may have against County and others required by the Contract Documents to be named as additional insureds, for Losses covered by insurance carried by Contractor or County, except for such rights as the Subcontractor may have to the proceeds of such insurance held by County or such other additional insured;
- .5 to afford County and entities and agencies designated by County the same rights and remedies afforded to them under the Contract Documents with respect to access to, and the right to audit and copy at County's cost, all of the Subcontractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, memoranda and other records and documents relating to the Work and requiring the Subcontractor to preserve all such records and other items for a period of ten (10) years after Final Completion;
- to recognize the rights of the County under <u>Section 5.3</u>, below, including, without limitation, the County's right to (1) accept assignment of the Subcontractor's agreement, (2) accept assignment of Contractor's rights as obligee under a performance bond furnished by a first-Tier Subcontractor, (3) to retain the Subcontractor pursuant to the terms of its agreement with Contractor to complete the unperformed obligations under its agreement, and, (4) if requested by the County, to require that the Subcontractor execute a written agreement on terms acceptable to the County confirming that the Subcontractor is bound to the County under the terms of its agreement with Contractor;
- .7 to submit applications for payment, requests for change orders and extensions of time and claims, and to comply with all other notice and submission requirements of the Contract Documents, sufficiently in advance to allow Contractor time to comply with its obligations under the Contract Documents;
- .8 to purchase and maintain insurance in accordance with the requirements of the Contract Documents;
- .9 to defend and indemnify the Indemnitees on the same terms as provided in <u>Section 3.18</u>, above;
- .10 to comply with the nondiscrimination (<u>Article 16</u>, below) and prevailing wage (<u>Section 3.19</u>, above) provisions of these General Conditions;

- .11 limiting the Subcontractor's right to additional compensation or extension of time due to Differing Site Conditions and Design Discrepancies in accordance with the provisions of Section 3.2, above;
- .12 to provide for a right of termination for convenience by Contractor that limits the Subcontractor's right to compensation to an allocable share of the subcontract price that corresponds to the percentage of the Work properly performed by the Subcontractor, with no additional sum payable for any other Losses, including, without limitation, prospective damages, lost profits or consequential damages, of any kind; and
 - .13 to provide that time is of the essence to each of the Subcontractor's obligations.
- 5.2.2 **Copies.** Contractor shall, upon request by County made at any time, furnish to County true, complete, and executed copies of all contracts with the Subcontractors and amendments, modifications and change orders thereto. Progress payments shall not be made for items of the Work for which County has not received such documents following request therefor by County.
- 5.2.3 **No Brokering.** Contractor shall not permit any portion of the Work to be contracted to a firm acting as a broker, factor or other entity not actually performing a substantial portion of the Work with its own forces; provided, however, that nothing herein shall be interpreted as precluding the right of a Subcontractor who has agreed to provide all of the materials and labor for a trade to subcontract the labor portion only to a sub-subcontractor.
- 5.2.4 **Third-Party Rights.** Contractor acknowledges that County is an intended third-party beneficiary to all contracts between Contractor and its first-Tier Subcontractors. Notwithstanding the foregoing or anything else to the contrary in the Contract Documents, there is no intent on the part of County or Contractor to create any rights (including, without limitation, third-party beneficiary rights) in favor of any Subcontractor, of any Tier, against County and nothing contained in the Contract Documents and no course of conduct, act or omission on the part of County shall be construed as creating a direct or indirect contractual right in favor of any Subcontractor, of any Tier, and against County.
- 5.2.5 **All Subcontractor Tiers.** It is the Contractor's obligation to see to it that all obligations of the Contractor are assumed by (or, "flow down") to the Subcontractors, of every Tier, by the inclusion of contractual provisions requiring each of the Subcontractors, of every Tier, to bind not only themselves but their lower-Tier Subcontractors to the obligations assumed by Contractor under the Contract Documents.

5.3 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

- 5.3.1 **Contingent Assignment.** Contractor hereby contingently assigns to County, or to such person or entity as County, in its sole and absolute discretion, designates, all of its interest in subcontracts entered into by Contractor with its first-Tier Subcontractors. If a first-Tier Subcontractor has provided a performance bond, then Contractor's rights under such performance bond are likewise hereby deemed contingently assigned to County or its designee and provision shall be made in the performance bond for surety's consent to such contingent assignment.
- 5.3.2 Acceptance by County. The contingent assignments provided for by this <u>Section 5.3</u> will be effective only as to those subcontracts and performance bonds which County or its designee accepts in writing. Said acceptance is the sole condition upon which the effectiveness of such assignments are contingent. County or its designee may accept any such assignment at any time during the course of the Work and prior to Final Completion. Such contingent assignments are part of the consideration to County for entering into the Construction Contract with Contractor and may not be withdrawn prior to Final Completion.
- 5.3.3 **County Obligation.** County's or its designee's sole obligation in the event it accepts a contingent assignment of a subcontract under this <u>Section 5.3</u> shall be to pay in accordance with the terms of such subcontract for Work performed after written notice of acceptance of such assignment. In the event County directs that such assignment be made to County's designee, then such designee only, and not County, shall be solely liable under such assignment for Work performed after written notice of acceptance of such assignment.

5.4 COMMUNICATIONS BY COUNTY

County shall have the right to communicate, orally or in writing, with the Subcontractors with respect to matters that are related to Contractor's performance of its obligations under the Contract Documents. Nothing herein shall be interpreted

as extending to County the right as part of such communications to direct the manner in which any Subcontractor performs the Work. Except as otherwise provided in the Construction Contract or these General Conditions, Contractor shall be provided with a copy of all such communications that are in writing. Such communications shall not create, or be interpreted as creating, any contractual obligation of County to any Subcontractor.

5.5 **DOCUMENT AVAILABILITY**

Contractor shall make available to each proposed Subcontractor with whom it enters into a contract for performance of any portion of the Work, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound so as to ensure that all matters disclosed thereby are taken into consideration and included in the terms of such contracts and shall identify to such Subcontractor the terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. The Subcontractors shall similarly be required to make copies of applicable portions of such documents available to their respective proposed subsubcontractors or sub-subconsultants.

5.6 NO LIABILITY OF COUNTY

Nothing set forth in this <u>Article 5</u>, and no action taken by County with respect to review or approval of the Subcontractors or their contracts, shall impose any liability or responsibility upon County nor relieve Contractor of its responsibilities under the Contract Documents or Applicable Laws.

ARTICLE 6 COUNTY'S OWN FORCES AND SEPARATE CONTRACTORS

6.1 COUNTY'S RIGHT TO PERFORM CONSTRUCTION WITH OWN FORCES AND TO AWARD SEPARATE CONTRACTS

- 6.1.1 **Right of County.** County reserves the right to perform construction or operations related to the Project with County's own forces and to award other contracts to Separate Contractors in connection with other portions of the Project or other construction or operations on the Site.
- 6.1.2 **Separate Contractors.** Contractor shall ascertain to its own satisfaction the scope of the Project and the nature of any other contracts that have been or may be awarded by County to Separate Contractors in prosecution of the Project. Contractor shall look solely to such Separate Contractors, and County shall not be responsible, for any Losses for which Contractor is not provided a right or recovery by means of a right to Contract Adjustment for Compensable Change or Compensable Delay, that are suffered by Contractor or the Subcontractors, of any Tier, resulting directly or indirectly from the conduct of such work by the Separate Contractors.
- 6.1.3 **Coordination.** Nothing in the Contract Documents creates or will create any duty on the part of County to coordinate the Work of Contractor with the work of Separate Contractors. Contractor shall, when directed to do so by County, participate with the Separate Contractors and County in reviewing the Separate Contractors' construction schedules. Contractor and Separate Contractors will coordinate all work with the other so as to facilitate the general progress of the Project. Contractor agrees that any recovery of Losses for which Contractor is not provided a right or recovery by means of a right to Contract Adjustment for Compensable Change or Compensable Delay, that are suffered by Contractor due to a failure by a Separate Contractor to coordinate its work with the Work of Contractor will be sought directly against the Separate Contractors as set forth elsewhere in this Article 6.
- 6.1.4 **Disputes.** Contractor and County agree that Separate Contractors in direct contractual privity with County are third party beneficiaries of the Contract Documents, but only to the extent of claims and causes of action against Contractor arising out of or resulting from Contractor's performance or failure of performance under the Contract Documents or any act or omission of Contractor or the Subcontractors causing Loss to such Separate Contractors. Contractor consents to being sued by Separate Contractors for Losses caused by Contractor or any of the Subcontractors. Contractor hereby waives lack of privity of contract with such Separate Contractors as a defense to such actions.
- 6.1.5 Remedy. If Contractor as a result of the acts or omissions of one or more of the Separate Contractors suffers a Loss that is not compensated by means of a right given to Contractor under the Contract Documents to a

Contract Adjustment, then Contractor's sole remedy is to assert a claim or cause of action directly against the Separate Contractor(s) causing the Loss and Contractor hereby releases, acquits, holds harmless and forever discharges County of and from any and all liability for such Loss.

6.2 MUTUAL RESPONSIBILITY

- 6.2.1 **Use of Site.** Nothing contained in the Contract Documents shall be interpreted as granting Contractor exclusive use or occupancy of the Site. Contractor shall afford County's own forces and the Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities. Contractor shall not Delay the work of the Separate Contractors or County's own forces.
- 6.2.2 **Adjoining Work.** If part of Contractor's performance of the Work depends for proper execution or results upon construction or operations by County's own forces or Separate Contractors, Contractor shall, prior to proceeding with that portion of the Work, carefully inspect such construction and operations and promptly report in writing to the County apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Contractor will be responsible, at Contractor's Own Expense, for Losses to County resulting from any such discrepancies or defects not reported in accordance with this <u>Paragraph 6.2.1</u> that were apparent or that should have been apparent to Contractor on careful inspection.
- 6.2.3 **Damage.** Contractor shall promptly remedy Loss caused by Contractor or its Subcontractors to completed construction or partially completed construction on the Site, or to property of County or the Separate Contractors.
- 6.2.4 **Disputes.** Contractor shall notify the County in writing within five (5) Days if it believes it has experienced or is experiencing any Delay or Loss due to the activities of County's own forces or the Separate Contractors or in the event of any dispute with County's own forces or a Separate Contractor.
- 6.2.5 **Settlement of Disputes.** If Contractor or any Subcontractor causes a Loss to a Separate Contractor, then Contractor will promptly settle the matter directly with the Separate Contractor and will defend, indemnify and hold County and the other Indemnitees harmless from any and all effects of such Loss in accordance with the terms of Section 3.18, above.

6.3 ALLOCATION OF CLEANUP COSTS

If a dispute arises among Contractor, the Separate Contractors and/or County as to the responsibility for maintaining the Site and surrounding area free from waste materials and rubbish, County may clean up such waste materials and rubbish and allocate the cost among those responsible as County determines in good faith to be just.

ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

- 7.1.1 **General.** County is authorized to make Changes in the Work in accordance with the provisions of this Article 7.
- 7.1.2 **Contract Adjustments.** Contract Adjustments shall only be permitted as follows: (1) the Contract Price shall only be adjusted by means of a Change Order or Unilateral Change Order for Compensable Change, Deleted Work or Compensable Delay; and (2) the Contract Time shall be adjusted by means of a Change Order or Unilateral Change Order for Excusable Delay, Compensable Delay or Deleted Work. All Contract Adjustments to the Contract Price shall conform, without limitation, to the requirements of this <u>Article 7</u>. All Contract Adjustments to the Contract Time shall conform, without limitation, to the applicable requirements of this <u>Article 7</u> and <u>Article 8</u>, below.
- 7.1.3 **Exclusive Rights.** The rights expressly set forth in the Contract Documents for Contract Adjustments constitute Contractor's exclusive rights for additional compensation or extensions of time and are intended to be in lieu of and wholly replace any other such rights and remedies that Contractor has under Applicable Laws for recovery or

relief on account of Loss or Delay in connection with performance of the Work, it being the intent of the County and Contractor that if circumstances arise for which the Contract Documents do not provide to Contractor an express right to a Contract Adjustment, then such omission of an express right shall conclusively be deemed to mean that no right to a Contract Adjustment was intended; and, consistent with that intent, no right to a Contract Adjustment on account of such circumstances shall by any means, legal or equitable, of interpretation, construction, inference, implication or application be considered, found or adjudged to exist.

- 7.1.4 **Written Authorization**. Any Change performed by Contractor pursuant to any direction other than a duly authorized and executed Change Order, Unilateral Change Order or Construction Change Directive shall be at Contractor's Own Expense.
- 7.1.5 **Prompt Performance.** Subject to the procedures set forth in this <u>Article 7</u> and elsewhere in the Contract Documents, all Changes shall be performed promptly and without Delay.

7.2 SIGNATURES AND AUTHORIZATIONS

- 7.2.1 **Parties.** A Change Order shall be executed by County and Contractor. A Unilateral Change Order shall be executed by the County. Construction Change Directives shall be executed in accordance with <u>Section 7.5</u>, below.
- 7.2.2 **Form.** Change Orders, Unilateral Change Orders and Construction Change Directives shall be executed using forms furnished by County or, if requested by County, using forms furnished by Contractor that are approved by County.

7.2.3 Authorization.

.1 Compensable Changes.

- (1) Director of Facilities Management. A Compensable Change shall be performed by Contractor only if authorized by a Change Order, Unilateral Change Order or Construction Change Directive signed by the Director of Facilities Management in accordance with the requirements of this <u>Article 7</u>; provided, however, that the Director of Facilities Management's authority to bind the County to a Contract Adjustment shall be subject to the limitations of Public Contract Code §20142.
- (2) County's Project Manager. The person identified by County as its "project manager" for the Project shall have the right to exercise the Director of Facilities Management's authority under this <u>Paragraph 7.2.3</u>, but only if and to the extent that such authority is expressly given to such project manager in a writing signed by the Director of Facilities Management (and not by a designee of the Director of Facilities Management).
- (3) Board of Supervisors. Except as otherwise provided in <u>Subparagraph 7.2.3.1 (4)</u>, below, if a Contract Adjustment increasing the Contract Price would exceed the limitations of Public Contract Code §20142, then in addition to written authorization by the Director of Facilities Management, such Compensable Change shall be performed only if approved by a vote of the Board of Supervisors in accordance with the requirements of Applicable Laws.
- (4) Disputed Changes. If a dispute arises between County and Contractor over (a) whether a particular portion of the Work constitutes a Compensable Change or (b) the amount of the Contract Adjustment to which Contractor is entitled on account of a Compensable Change, then, notwithstanding such dispute, the Contractor shall, if ordered to do so in a Construction Change Directive signed by the Direct of Facilities Management, perform the disputed Work without Delay. Such direction by County shall not be interpreted as an agreement or admission by County that the disputed Change constitutes Extra Work or a Compensable Change for which Contractor is entitled to a Contract Adjustment. Compliance by Contractor with such direction shall not be interpreted as a waiver of Contractor's right to a Contract Adjustment if and to the extent that Contractor is entitled to a Contract Adjustment or Claim under the terms of the Contract Documents, including, without limitation, the right of Contractor to recover upon a Claim for the amount of any excess in the event that it is adjudged that the amount of the Contract Adjustment to which Contractor is entitled exceeds the limits of Public Contract Code §20142.

.2 WRITING OF ESSENCE. IT IS OF THE ESSENCE TO THE CONSTRUCTION CONTRACT BETWEEN CONTRACTOR AND COUNTY THAT ALL CHANGES MUST BE AUTHORIZED IN ADVANCE, IN WRITING, AS REQUIRED BY THIS <u>ARTICLE 7</u>. ACCORDINGLY, NO VERBAL DIRECTIONS, COURSE OF CONDUCT BETWEEN THE PARTIES, EXPRESS OR IMPLIED ACCEPTANCE OF CHANGES OR OF THE WORK, OR CLAIM THAT THE COUNTY HAS BEEN UNJUSTLY ENRICHED (WHETHER OR NOT THERE HAS BEEN SUCH ENRICHMENT) SHALL BE THE BASIS FOR A CONTRACT ADJUSTMENT IF CONTRACTOR HAS NOT OBTAINED ADVANCE WRITTEN AUTHORIZATION IN THE MANNER REQUIRED BY THIS ARTICLE 7.

7.3 CHANGE ORDERS

- 7.3.1 **Purpose**. The purpose of a Change Order is to establish the terms of the County's and Contractor's mutual agreement to a Contract Adjustment.
 - 7.3.2 Content. A Change Order is a written instrument, prepared by the County, stating:
 - .1 a Compensable Change or Deleted Work;
 - .2 a Compensable Delay or Excusable Delay;
 - .3 the amount of the Contract Adjustment, if any, to the Contract Price; and/or
 - .4 the extent of the Contract Adjustment, if any, to the Contract Time.

7.4 UNILATERAL CHANGE ORDERS

- 7.4.1 **Purpose.** The purpose of a Unilateral Change Order is to establish the County's estimate of a disputed Contract Adjustment.
- 7.4.2 **Good Faith Determination.** The County's determination in a Unilateral Change Order of a Contract Adjustment shall be based upon a Good Faith Determination by County of the Contract Adjustment that is appropriate under the circumstances and consistent with the terms of the Contract Documents.
- 7.4.3 Claim by Contractor. If Contractor disputes any portion of the County's Good Faith Determination of a Contract Adjustment that is set forth in a Unilateral Change Order, Contractor shall file, within thirty (30) Days after issuance of the Unilateral Change Order by County, a Claim pursuant to Section 4.3, above. The amount of the Contract Adjustment requested in the Claim shall not exceed the difference between the amount (either in terms of dollar amount or number of Days) of the Contract Adjustment granted in the Unilateral Change Order. Contractor shall have no reserved right, and hereby waives any such right that may exist under Applicable Laws, to seek in such Claim a Contract Adjustment or recovery that is based upon any amount (either in terms of dollar amount or number of Days) that is in excess of such difference.

7.4.4 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO SUBMIT A CLAIM PURSUANT TO <u>SECTION 4.3</u>, ABOVE, WITHIN THIRTY (30) DAYS AFTER ISSUANCE OF A UNILATERAL CHANGE ORDER BY COUNTY SHALL, IN ACCORDANCE WITH THE PROVISIONS OF <u>SECTION 4.6</u> OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO FURTHER RECOURSE OR RECOVERY BASED ON AN ASSERTION THAT THE AMOUNT OF THE CONTRACT ADJUSTMENT ON ACCOUNT OF THE CHANGE OR DELAY DESCRIBED IN SUCH UNILATERAL CHANGE ORDER SHOULD BE DIFFERENT THAN THE AMOUNT OF THE COUNTY'S GOOD FAITH DETERMINATION OF THE CONTRACT ADJUSTMENT AS SET FORTH IN SUCH UNILATERAL CHANGE ORDER.

7.5 CONSTRUCTION CHANGE DIRECTIVES

- 7.5.1 **Purpose.** The purpose of a Construction Change Directive is to: (1) direct the performance of a Change that does not involve a Contract Adjustment; (2) establish a mutually agreed basis for compensation to Contractor for a Compensable Change under circumstances where performance of the Compensable Change needs to proceed in advance of the County performing a full evaluation of the Contractor's rights relative to a Contract Adjustment; or (3) direct performance of Work or a Change with respect to which there exists a dispute or question regarding the terms of a Contract Adjustment.
- 7.5.2 **No Contract Adjustment.** A Construction Change Directive that directs the performance of Work or a Change that does not involve a Contract Adjustment to the Contract Price or Contract Time may be authorized by either the Direct of Facilities Management or the County's project manager and shall be promptly performed by Contractor so as to not cause Delay to any other portion of the Work. A Construction Change Directive directing performance of a Change that does not contain any statement indicating that a Contract Adjustment is requested or required shall be conclusively presumed to be a Change that is not a Compensable Chang and no Contract Adjustment increasing the Contract Price or Contract Time will be made on account thereof.
- 7.5.3 **Agreed Contract Adjustment.** A Construction Change Directive that contains a complete or partial agreement by the County and Contractor with respect to the Contractor's right to, or the amount of, a Contract Adjustment shall be authorized in accordance with, conform to the requirements of and be binding upon County and Contractor as provided for in, this <u>Paragraph 7.5.3</u>.
- .1 Complete Agreement. Each Construction Change Directive involving a Compensable Change or Deleted Work with respect to which there is complete agreement on the terms of the Contract Adjustment shall comply with the following:
- (1) Statement of Agreement. A statement shall be included that the County and Contractor are in agreement on all of the terms of the Contract Adjustment related to performance of such Compensable Change and set forth a full description of the terms of the Contract Adjustment, including, without limitation, its effect on the Contract Price and Contract Time.

(2) Legal Effect.

(a) Upon Contractor.

THE AGREED TERMS OF THE CONTRACT ADJUSTMENT WITH RESPECT TO WHICH THERE IS A STATEMENT OF FULL AGREEMENT ON THE TERMS OF THE CONTRACT ADJUSTMENT FOR A CHANGE IN THE WORK SHALL BE FINAL AND BINDING UPON CONTRACTOR. ANY RIGHT OR CLAIM BY CONTRACTOR FOR ANY ADDITIONAL COMPENSATION OR EXTENSION OF TIME RELATING DIRECTLY OR INDIRECTLY TO SUCH CHANGE SHALL BE CONCLUSIVELY DEEMED WAIVED BY CONTRACTOR, EVEN IF THE CIRCUMSTANCES GIVING RISE TO SUCH ADDITIONAL COMPENSATION OR EXTENSION OF TIME WERE NOT SUSPECTED BY OR KNOWN TO THE CONTRACTOR AT THE TIME OF EXECUTION OF THE CONSTRUCTION CHANGE DIRECTIVE AND IF SUSPECTED OR KNOWN WOULD HAVE BEEN CONSIDERED BY CONTRACTOR TO HAVE BEEN MATERIAL TO CONTRACTOR'S AGREEMENT TO THE CONTRACT ADJUSTMENT SET FORTH IN THE CONSTRUCTION CHANGE DIRECTIVE.

(b) Upon County. In recognition of the fact that Construction Change Directives may be issued under circumstances in which the County may not have had the access to pertinent information required for the County to fully evaluate the circumstances giving rise to the Change, it is agreed that neither the issuance nor execution of, nor any statement contained in, nor any course of conduct in connection with, a Construction Change Directive (including, without limitation, a Construction Change Directive that constitutes a full agreement by County and Contractor on the terms of a Contract Adjustment) shall be interpreted as a waiver, release or settlement of any of County's rights relating to the subject matter of the Construction Change Directive, or as creating or implying any right of Contractor to a Contract Adjustment, if it is found by County upon further investigation that circumstances existed, not known to County at the time of executing the Construction Change Directive, demonstrating that the Contractor was not in fact entitled to a Contract Adjustment or was entitled to a Contract Adjustment on different terms than those agreed to in the Construction Change Directive.

- .2 Partial Agreement. Each Construction Change Directive involving a Compensable Change or Deleted Work with respect to which there is only agreement on a portion of the terms of a Contract Adjustment shall comply with the following:
- (1) Agreed Terms. The Construction Change Directive shall state those terms of the Contract Adjustment as to which there is agreement.
- (a) Legal Effect. Except to the extent of any additional open (i.e., non-agreed) terms stated or reserved in the Construction Change Directive, such agreement shall have the same legal effect set forth in Subparagraph 7.5.3.1 (2), above.
- (b) Time and Materials. In the event that County and Contractor agree in the Construction Change Directive to the "time and materials" method of calculation set forth in <u>Subparagraph 7.7.1.1 (4)</u>, below, but do not agree upon a maximum price, then the total cost to County for the Work covered by the Construction Change Directive shall under no circumstances exceed a price that is reasonable, competitive and fair to County given the amount and type of Work involved and the circumstances under which the Compensable Change is performed.
- (2) Open Terms. The Construction Change Directive shall state those terms of the Contract Adjustment that are "open" or "disputed"; meaning those terms as to which the County and Contractor did not reach agreement.
- (a) ROM Estimate. If such open terms involve the amount of the Contract Adjustment to the Contract Price or Contract Time on account of a Compensable Change, then the Construction Change Directive shall also include a Reasonable Order of Magnitude Estimate prepared by Contractor, or prepared by County and acknowledged in writing as accepted by Contractor, of the probable amount of the Contract Adjustment to the Contract Price and Contract Time associated with performance of the Compensable Change.
- (b) Legal Effect. A Reasonable Order of Magnitude Estimate constitutes neither (i) a guarantee by Contractor that the amount of the Contract Adjustment to the Contract Price or Contract Time that may be associated with the Compensable Change or Deleted Work covered by such Construction Change Directive may not exceed the Reasonable Order of Magnitude Estimate nor (ii) authorization or agreement by County to a Contract Adjustment based on the amounts set forth in such Reasonable Order of Magnitude Estimate.
- Change Directive an agreement that the Contractor is entitled to a Contract Adjustment to the Contract Price on account of a Compensable Change, but do not state therein an agreement upon the method of calculation to be used for the Contract Adjustment from among the optional methods of calculation set forth in Paragraph 7.7.1, below, and if the County nonetheless directs Contractor to perform the Compensable Change pending future agreement on the amount of the Contract Adjustment, then it shall be conclusively presumed that County and Contractor have agreed that such Compensable Change shall be performed and compensated based upon the "time and materials" method of calculation set forth in Subparagraph 7.7.1.1 (4), below, and that the total Contract Adjustment for performance thereof shall under no circumstances exceed a price that is reasonable, competitive and fair to County given the amount and type of Work involved and the circumstances under which the Compensable Change is performed.
- 7.5.4 **Disputed Contract Adjustment.** Each Construction Change Directive involving a Contract Adjustment with respect to which there is a dispute or partial agreement shall, if Contractor is ordered to do so in a Construction Change Directive signed by the Director of Facilities Management, be performed by Contractor without Delay. Except as otherwise provided elsewhere in this <u>Section 7.5</u>, with respect to any open terms as to which the County and Contractor have not reached agreement both County and Contractor shall be deemed to have reserved their respective rights and defenses.
- 7.5.5 **Other Notices.** With respect to any Contract Adjustment or portion of a Contract Adjustment that is not fully resolved in a Construction Change Directive, neither issuance nor execution of such Construction Change Directive shall be interpreted as relieving Contractor of its obligation to comply with the requirements of these General Conditions relative to timely submission of notices required by the Contract Documents, including, without limitation, Notice of Change, Change Order Request, Notice of Delay or Request for Extension.

7.6 PROCEDURES

7.6.1 **Notice of Change.**

- **Submission.** Contractor shall submit a written Notice of Change to County if any instruction, request, drawing, specification, action, condition, omission, default or other circumstance occurs that constitutes a Compensable Change, Deleted Work, Compensable Delay or other matter that may involve or require a Contract Adjustment (additive or deductive). Such notice shall be provided prior to commencement of performance of the Work affected and no later than three (3) working days after the Discovery Date of such circumstance.
- .2 Form. Notices of Change shall be provided using forms furnished by County or, if requested by County, using forms furnished by Contractor that are approved by County. Failure by County to request or approve a particular form shall not relieve Contractor of its obligation to provide a Notice of Change in a written form that complies with the requirements specified in <u>Subparagraph</u> 7.6.1.3, below.
 - .3 Content. Each Notice of Change in order to be considered complete shall include:
- (1) a general statement of the circumstances giving rise to the Notice of Change (including, without limitation, identification of any related Construction Change Directive);
- (2) a Reasonable Order of Magnitude Estimate by Contractor of any related Contract Adjustments (additive and deductive) to the Contract Price; and,
- (3) if such circumstances involve a right to adjustment of the Contract Time due to Compensable Delay or Excusable Delay that has not been waived pursuant to <u>Subparagraph 8.2.2.4</u>, below, or <u>Subparagraph 8.2.3.4</u>, below, Contractor shall include, if not previously provided, a complete and timely Notice of Delay.

.4 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO PROVIDE A COMPLETE AND TIMELY NOTICE OF CHANGE UNDER CIRCUMSTANCES WHERE A NOTICE OF CHANGE INVOLVING A CHANGE IS REQUIRED BY THIS PARAGRAPH 7.6.1 SHALL, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 4.6 OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF SUCH CIRCUMSTANCES AND A WAIVER OF ANY RIGHT TO FURTHER RECOURSE OR RECOVERY BY REASON OF OR RELATED TO SUCH CHANGE.

.5 Deductive Adjustments. Failure by Contractor to submit a timely or proper Notice of Change under circumstances in which a Notice of Change is required shall in no way affect County's right to any deductive Contract Adjustment on account of such circumstances.

7.6.2 Change Order Request.

- .1 Submission. With respect to any matter that may involve or require a Contract Adjustment (additive or deductive) of the Contract Price, Contractor shall, within fourteen (14) Days after receipt by the County of a Notice of Change pursuant to Paragraph 7.6.1, above, submit to the County a written Change Order Request.
- .2 Form. Change Order Requests shall be provided using forms furnished by County or, if requested by County, using forms furnished by Contractor that are approved by County. Failure by County to request or approve a particular form shall not relieve Contractor of its obligation to provide a Change Order Request in a written form that complies with the requirements stated in <u>Subparagraph 7.6.2.3</u>, below.
 - .3 Content. Each Change Order Request in order to be considered complete shall include:
- (1) a detailed description of the circumstances for the Compensable Change, Deleted Work or Compensable Delay;

- (2) a complete, itemized cost breakdown (additive and deductive) of the Allowable Costs that form the basis for the Contractor's request for Contract Adjustment, including: (a) if the pricing is based on time and materials charges, all of Contractor's and each Subcontractor's Allowable Costs (including, without limitation, quantities, hours, unit prices, and rates) and Allowable Markups and (b) if the pricing is in the form of a lump sum price a detailed breakdown of the lump sum price into its component and individual items of Allowable Costs and Allowable Markup; and
- if such circumstances involve a right to a Contract Adjustment of the Contract Time due to Compensable Delay or Excusable Delay that has not been waived pursuant to <u>Subparagraph 8.2.2.4</u>, below, or <u>Subparagraph 8.2.3.4</u>, below, Contractor shall include, if not previously provided, a complete and timely Request for Extension.

.4 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO PROVIDE A COMPLETE AND TIMELY CHANGE ORDER REQUEST UNDER CIRCUMSTANCES WHERE A CHANGE ORDER REQUEST INVOLVING A CHANGE IS REQUIRED BY THIS PARAGRAPH 7.6.2 SHALL, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 4.6 OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF SUCH CIRCUMSTANCES AND A WAIVER OF ANY RIGHT TO FURTHER RECOURSE OR RECOVERY BY REASON OF OR RELATED TO SUCH CHANGE.

- .5 **Deductive Adjustments.** Failure by Contractor to submit a timely or proper Change Order Request under circumstances in which a Change Order Request is required shall in no way affect County's right to any deductive Contract Adjustment on account of such circumstances.
- 7.6.3 **Formal Notice of Essence.** Contractor recognizes and acknowledges that timely submission of a formal Notice of Change and Change Order Request, whether or not the circumstances of the Change may be known to the County or available to County through other means, is not a mere formality but is of crucial importance to the ability of County to promptly identify, prioritize, evaluate and mitigate the potential effects of Changes. Any form of informal notice, whether verbal or written (including, without limitation, statements in Requests for Information, statements at regular job meetings or entries on monthly reports, daily logs or job meeting minutes), that does not strictly comply with the formal requirements of <u>Paragraph 7.6.1</u>, above, and <u>Paragraph 7.6.2</u>, above, shall therefore be insufficient.

7.7 PRICING

7.7.1 Basis of Calculation.

- .1 Changes Not Involving Time. Contract Adjustments to the Contract Price on account of Compensable Changes or Deleted Work, other than Contract Adjustments to the Contract Price for Compensable Delay, shall be calculated according to one of the following methods:
- (1) Lump Sum. By mutual acceptance of a lump sum proposal from Contractor based solely on Allowable Costs and Allowable Markups, that is properly itemized and supported by sufficient substantiating data to permit evaluation.
- (2) Unit Prices. By the unit prices set forth in the Construction Contract or such other unit prices as are subsequently and mutually agreed to in writing between the County and Contractor, with no amount added thereto for Allowable Markups.
- (3) Estimating Guides. For Compensable Changes with respect to which County elects to make a unilateral and final determination pursuant to <u>Paragraph 7.7.11</u>, below, by the sum of all the following:
- (a) Materials. The reasonable value of materials and equipment documented as having been actually incorporated into the Work, which reasonable value may be less but shall never be more than Contractor's actual Allowable Costs therefor.

- (b) Labor. An estimate of the reasonable costs of labor, installation and other services using the lower of the estimated prices for the locale of the Project (or if prices are not reported for the locale of the Project, the estimated prices that are reported for the region in which the Project is located) as reported in following recognized estimating guides: (i) R. S. Means Company, Inc. Building Construction Cost Data, Western Region Latest Edition, P.O. Box 800 Kingston, MA 02364-800; or (ii) Lee Saylor, Inc. Current Construction Costs Latest Edition, 9420 Topanga Canyon Boulevard, Woodland Hills, CA 91311.
- (c) Allowable Markup. The amount that results when the applicable Allowable Markup is applied to the sum of the amounts derived from preceding Clauses (a) and (b) of this <u>Subparagraph 7.7.1.1</u> (3).
 - (4) Time and Materials.
 - (a) Compensable Changes.
- (i) Contract Adjustment. With respect to Compensable Changes, if none of the methods provided for in Subparagraphs 7.7.1.1 (1) through 7.7.1.1 (3), above, is applicable, then the additive amount increasing the Contract Price shall be calculated by taking (A) the total of the reasonable expenditures by Contractor and its Subcontractors, documented in the manner required by Paragraph 7.7.2, below, for Allowable Costs that are actually and directly incurred and paid in the performance of the Compensable Change, not to exceed for any Compensable Change a price that is reasonable, competitive and fair to County given the amount and type of Work involved and the circumstances under which the Compensable Change is performed, and (B) adding thereto the amount which results when the applicable Allowable Markups are applied to such total specified in preceding Clause (A) of this Subparagraph 7.7.1.1 (4) (a) (1).
- (ii) T & M/Guaranteed Maximums. A Contract Adjustment that is calculated pursuant to this <u>Subparagraph 7.7.1.1 (4)</u> shall be subject to a not-to-exceed or guaranteed maximum price if such not-to-exceed or guaranteed maximum price has been mutually agreed upon between County and Contractor.
- (iii) Lump Sum Options. If Contractor has reason to believe that a lump sum or unit price for a Subcontractor's performance of a portion of Extra Work authorized to be performed on a time and materials basis is available and Contractor has reason to believe such price is lower than the price that would be charged by the Subcontractor pursuant to the foregoing time and materials calculation, then Contractor has an obligation to inform County of that fact (along with the provision to the County of a complete itemized breakdown in accordance with Subparagraph 7.6.2.3(2), above) so as to afford County the opportunity, on a fully informed basis as to the component Allowable Costs and Allowable Markups that comprise such price, to avail itself of such favorable pricing.
- Work involves a related Compensable Change as described in <u>Paragraph 7.7.8</u>, below), if none of the methods provided for in <u>Subparagraphs 7.7.1.1 (1) through 7.7.1.1 (3)</u>, above, is applicable, then, in addition to the reduction, if any, that may be due to Owner pursuant to <u>Subparagraph 8.2.6.2</u>, below, (pertaining to Contract Adjustments shortening the Contract Time due to Deleted Work) and any additional reductions or credits to which County may be entitled under <u>Paragraph 7.7.5</u>, below, the Contract Price shall be reduced by the greater of either:
- (i) the value assigned to the Deleted Work in the Schedule of Values attached to the Construction Contract, inclusive of all estimated markups by Contractor and any Subcontractor for overhead and profit set forth in the Schedule of Values (or, if insufficient detailed information on costs, overhead and profit for the Deleted Work is explicitly assigned in the Schedule of Values, as derived from the cost, bidding and/or estimating information that formed the basis for the establishment of the values set forth in such Schedule of Values); or
- (ii) a reasonable estimate of the value of the Deleted Work (inclusive of all costs, overhead and profit) as of the date that the Construction Contract was executed by County and Contractor.
- .2 Changes Involving Time. Contract Adjustments that are based on an extension of the Contract Time for Compensable Delay or a shortening of the Contract Time due to Deleted Work shall be calculated in the manner stated in the provisions of Section 3.3 of the Construction Contract and Article 8, below. Contract

Adjustments that are based on an acceleration in performance of the Work that is ordered by County in writing to overcome a Compensable Delay for which the Contractor is entitled to an extension of the Contract Time that has been properly requested and is not granted by County due to a County decision to accelerate rather than extend the Contract Time shall be calculated in the manner stated in the provisions of Article 8, below.

- 7.7.2 **Time and Materials Documentation.** Without limitation to any other provisions of the Contract Documents, Contractor's right to reimbursement of Allowable Costs incurred by Contractor or Subcontractors in the performance of a Compensable Change for which the Contract Adjustment is calculated pursuant to the time and materials method set forth in <u>Subparagraph 7.7.1.1 (4)</u>, above, shall be conditioned on Contractor's compliance with the following conditions with respect to documentation of the Extra Work that is involved in the performance of the Compensable Change:
- Labor. At the close of each Day on which such Extra Work is performed, Contractor shall submit to County and, if requested, to the Inspector of Record, an Extra Work report, on forms provided by County, that sets forth with respect to each and all of the actual hours spent in performance of the Extra Work on the Day that the Extra Work was performed the following: the names of the workers, their classifications, hours worked and hourly rates. Such forms shall include a written certification by Contractor's project manager or superintendent at the time of submission that the information contained therein is complete and accurate.
- .2 Materials, Equipment. At the close of each Day on which such Extra Work is performed, Contractor shall submit to County and, if requested, to the Inspector of Record, an Extra Work report, on forms provided by County, that sets forth with respect to each and all of the materials and equipment used or consumed in the performance of the Extra Work on the Day that the Extra Work was performed, the following: a list of the materials and equipment, prices or rates charged, in the case of equipment a description of the type of equipment, identification number, and hours of operation (including loading and transportation), and copies of delivery tickets, invoices or other documentation confirmatory of the foregoing.
- .3 Other Expenditures. At the close of each Day on which such Extra Work is performed, Contractor shall submit to County and, if requested, to the Inspector of Record, an Extra Work report, on forms provided by County, that sets forth a list of other expenditures constituting Allowable Costs incurred in performance of the Extra Work on the Day that the Extra Work was performed, along with documentation verifying the amounts thereof in such detail as County may require.
- .4 Subsequent Documentation. Documentation not available on any Day that a portion of the Extra Work is performed shall be submitted as soon as they are available but not later than twenty-one (21) Days after the earlier of the Day of delivery or incorporation of the particular item of Extra Work at the Site.
- .5 Subcontractor Costs. Extra Work performed by Subcontractors on a time and materials basis shall documented in the same manner as required of Contractor under this <u>Paragraph 7.7.2</u>. If Owner approves of a lump sum price for a Subcontractor's performance of Extra Work, then Contractor shall submit in lieu of the documentation otherwise required by this <u>Subparagraph 7.7.2.5</u>, such documentation as may be requested by Owner confirming the Extra Work performed on any given Day.
- .6 Authentication. In addition to the foregoing, County may require that Contractor comply with other reasonable requirements pertaining to observation and verification of time and materials work and authentication of time and materials tickets and invoices by persons designated by County for such purpose.

.7 WAIVER BY CONTRACTOR.

THE FAILURE OF CONTRACTOR TO SUBMIT AUTHENTICATION OF COSTS IN THE MANNER REQUIRED BY THIS <u>PARAGRAPH 7.7.2</u> SHALL, IF COUNTY ELECTS IN ITS REASONABLE DISCRETION TO TREAT IT AS SUCH, CONSTITUTE A WAIVER BY CONTRACTOR OF ANY RIGHT TO A CONTRACT ADJUSTMENT FOR THE ALLOWABLE COSTS INCURRED FOR PERFORMANCE OF THAT PORTION OF THE EXTRA WORK FOR WHICH CONTRACTOR HAS FAILED TO PROVIDE SUCH AUTHENTICATION.

7.7.3 **Allowable Costs.** The term "Allowable Costs" (1) means the costs that are listed in this <u>Paragraph 7.7.3</u> and (2) excludes costs that do not constitute Allowable Costs under <u>Paragraph 7.7.4</u>, below:

- Labor. Straight-time wages and, if specifically authorized by County in writing, overtime wages for employees employees employed at the Site, including wages for employees of Subcontractors performing engineering or fabrication detailing at locations other that at the Site. The use of a labor classification which would increase the Allowable Costs for Extra Work will not be permitted unless Contractor establishes the necessity for the use of such labor classification. Overtime wages and salaries shall only constitute an Allowable Cost to the extent permitted by the Contract Documents and only as specifically authorized by County in writing setting forth the amount of overtime anticipated, which amount shall be deemed the maximum amount of overtime reimbursable as an Allowable Cost. As part of the Allowable Costs permitted by this <u>Subparagraph 7.7.3.1</u>, Contractor shall be entitled to be reimbursed wages paid to a "time and materials clerk" employed by Contractor to track and document Compensable Changes that are authorized or permitted to be performed on a time and materials basis pursuant to <u>Subparagraph 7.7.1.1 (4)</u>, above, provided that the time expended by such employee is verified by contemporaneously maintained time sheets maintained by such clerk showing the actual time spent tracking and documenting the performance of Compensable Changes separately from other tasks or functions performed by such clerk.
- **Benefits.** To the extent based on wages reimbursable under <u>Subparagraph 7.7.3.1</u>, above, net actual employer costs of payroll taxes (FICA, Medicare, SUTA, FUTA), insurance (as adjusted for experience modifiers, premium discounts, dividends, rebates, expense constants, assigned risk pool costs, net cost reductions due to policies with deductibles for self-insured losses, assigned risk rebates, or the like), health and welfare, pension, vacation, apprenticeship funds and benefits required by lawful collective bargaining agreements.
- Materials. Costs of materials used or consumed in the Work. Such costs for Extra Work shall be at a price that is competitive to the price charged for similar materials delivered within the general vicinity of the Site by other subcontractors, suppliers, manufacturers and distributors. The cost for any such item that is not new shall mean "fair market value" based on the estimated price a reasonable purchaser would pay to purchase the used material at the time it was used or consumed for the Work, which fair market value must be declared by Contractor and approved by County prior to such use or consumption.
 - .4 Taxes. Sales taxes on the costs of the materials described in <u>Subparagraph 7.7.3.3</u>, above.
- Equipment Rental. Rental charges for necessary machinery and equipment, exclusive of hand tools, whether rented from Contractor or others. No charge shall be allowed or credit required for items which have a replacement value of One Hundred Dollars (\$100) or less. The allowable rental rates shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, loading, transportation, repairs and maintenance of any kind, depreciation, storage, insurance and all incidentals. If equipment used for Extra Work is used intermittently and, when not in use, could be returned to its rental source at less expense to County than holding it at the Site, it shall be returned, unless Contractor elects to keep it at the Site at no expense to County. Under no circumstances shall the aggregate rentals chargeable for any item of equipment exceed the following percentages of the fair market value of the item at the time of its first use for the Work, which fair market value must be declared by Contractor and approved by County prior to the first use of such item in or for the Work: (1) if the item is owned by the Contractor or any company affiliated with Contractor, the aggregate rentals shall not exceed 75% of such fair market value; and (2) if the item is not owned by the Contractor or any company affiliated with Contractor, the aggregate rentals shall not exceed 100% of such fair market value. All equipment shall be acceptable to County, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment, and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer. The cost of major repairs or overhauls of rented equipment or machinery shall be deemed a cost of business of the lessor of such equipment or machinery and shall not be reimbursable as an Allowable Cost.
- Subcontractors. Payments made by Contractor to Subcontractors; provided, however, that: (1) such payments are not otherwise precluded from reimbursement by the terms of the Contract Documents; (2) such payments are for Work performed in accordance with the requirements of the Contract Documents; (3) such payments are for amounts properly due and owing by Contractor under the terms of the governing contract between Contractor and such Subcontractor; and (4) in the case of payments for extra work performed by a Subcontractor pursuant to a change order executed between Contractor and a Subcontractor the change order was executed under circumstances in which the Subcontractor was entitled under the terms of its contract with Contractor to receive the amount of additional compensation agreed to in the change order.
 - .7 Royalties, Permits. Costs of royalties and permits.

- .8 Bonds. Costs of bonds required to be furnished by Contractor (not Subcontractors) under the terms of the Contract Documents; provided, however, that such additional costs chargeable for Extra Work or credited for Deleted Work shall not exceed two percent (2%) of the costs described in <u>Subparagraphs 7.7.3.1 through 7.7.3.7</u>, above.
- 7.7.4 **Costs Not Allowed.** Allowable Costs shall not include any of the costs associated with any of the following (whether incurred by Contractor or a Subcontractor):
 - .1 superintendent(s);
 - .2 assistant superintendent(s);
 - .3 project engineer(s);
 - .4 project manager(s);
 - .5 scheduler(s);
 - .6 estimator(s);
 - .7 drafting or detailing (except as otherwise permitted by Paragraph 7.7.3.1, above)
 - .8 vehicles not dedicated solely to the performance of the Work;
 - .9 small tools with a replacement value not exceeding One Hundred Dollars (\$100);
 - .10 office expenses, including staff, materials and supplies;
 - .11 on-Site and off-Site trailer and storage rental and expenses;
 - .12 Site fencing not added solely due to the performance of Extra Work;
 - .13 utilities, including gas, electric, sewer, water, telephone, telefax and copier equipment;
 - .14 computer and data-processing personnel, equipment and software:
 - .15 federal, state or local business, income and franchise taxes;
- .16 insurance (including, without limitation, general liability, automobile and worker's compensation);
- .17 without limitation to Contractor's right to liquidated damages under <u>Section 3.3</u> of the Construction Contract, Losses, of any kind, incurred by Contractor or a Subcontractor, of any Tier, that arise from or relate to Delay (including Excusable Delay, Compensable Delay or Unexcused Delay) or acceleration to overcome the effects of such Delay; and
- .18 costs and expenses of any kind or item not specifically and expressly included in Paragraph
 7.7.3, above.
- 7.7.5 Allowable Markups. Allowable Markups consist of the percentages set forth provided for by this Paragraph 7.7.5. Allowable Markups are deemed to cover, without limitation, the following: (1) direct and indirect overhead (including, without limitation, consumables, small tools and cleanup) and profit of the Contractor; (2) direct and indirect overhead (including, without limitation, consumables, small tools and cleanup) and profit of the Subcontractors, of every Tier; and (3) all costs that are not reimbursable to Contractor under Paragraph 7.7.4, above. Subject to the exclusions and limitations set forth in Paragraph 7.7.7, below, or elsewhere in the Contract Documents, Allowable Markups include and are limited to the following:

.1 Self-Performed Work

- (1) Compensable Change. With respect to all or that portion of a Compensable Change involving Self-Performed Work, the Allowable Markup to Contractor shall be not more than five percent (5%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the Allowable Costs incurred by Contractor in the performance thereof, including, without limitation, Allowable Costs for materials or equipment purchased by Contractor from a first-Tier Subcontractor that is not an Installation Subcontractor.
- (2) Deleted Work. With respect to all or that portion of Deleted Work involving Self-Performed Work, County shall be entitled to a credit equal to five percent (5%) of the amount of the credit for the savings to Contractor for the Self-Performed Work as calculated pursuant to <u>Subparagraph 7.7.1.1 (4), (b)</u>, above.

.2 Installation Subcontractors (First-Tier)

- (1) Compensable Change. With respect to all or that portion of a Compensable Change that is performed by a first-Tier Installation Subcontractor, the Allowable Markups to the first-Tier Installation Subcontractor and the Contractor shall be as follows:
- (a) The Allowable Markup to the first-Tier Installation Subcontractor shall be not more than fifteen percent (15%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the Allowable Costs incurred by such first-Tier Installation Subcontractor in the performance of such Compensable Change.
- **(b)** The Allowable Markup to Contractor shall be five percent (5%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the sum of (i) the Allowable Costs incurred by such first-Tier Subcontractor in the performance of such Compensable Change and (ii) the amount which results when the Allowable Markups thereon that are permitted pursuant to preceding Clause (a) of this Subparagraph 7.7.5.2 (1) are multiplied times such Allowable Costs.
- (2) Deleted Work. With respect to all or that portion of Deleted Work that was to have been performed by a first-Tier Installation Subcontractor, the Contract Price shall be reduced as provided in Subparagraph 7.7.1.1 (4), (b), above. In addition, a credit shall be due from Contractor of five percent (5%) of the amount of the total credit due pursuant to Subparagraph 7.7.1.1 (4), (b), above.

.3 Installation Subcontractors (Second-Tier)

- (1) Compensable Change. With respect to all or that portion of a Compensable Change that is performed by a second-Tier Installation Subcontractor, the Allowable Markups to such second-Tier Installation Subcontractor, to the first-Tier Installation Subcontractor that is above and in the same vertical contractual line of Tiers with such second-Tier Installation Subcontractor and to the Contractor, shall be as follows:
- (a) The Allowable Markup to the second-Tier Installation Subcontractor shall be not more than five percent (5%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the Allowable Costs incurred by such second-Tier Installation Subcontractor in the performance of such Compensable Change.
- (b) The Allowable Markup to the first-Tier Installation Subcontractor that is above and in the same vertical contractual line of Tiers with such second-Tier Installation Subcontractor shall be not more than fifteen percent (15%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the sum of (i) the Allowable Costs incurred by such second-Tier Installation Subcontractor in the performance of such Compensable Change and (ii) the amount which results when the Allowable Markups thereon pursuant to preceding Clause (a) of this Subparagraph 7.7.5.3 (1) are multiplied times such Allowable Costs.
- (c) The Allowable Markup to Contractor shall be five percent (5%), which percentage shall for purposes of calculating the Contract Adjustment be multiplied times the sum of (i) the Allowable Costs incurred by the second-Tier Installation Subcontractor in the performance of such Compensable Change and (ii)

the amounts which result when the Allowable Markups thereon that are permitted pursuant to Clauses (a) and (b) of this <u>Subparagraph 7.7.5.3 (1)</u> are multiplied times such Allowable Costs.

(2) Deleted Work. With respect to all or that portion of Deleted Work that was to have been performed by a second-Tier Installation Subcontractor, the Contract Price shall be reduced as provided in Subparagraph 7.7.1.1 (4), (b), above. In addition, a credit shall be due from Contractor of five percent (5%) of the amount of the total credit due pursuant to Subparagraph 7.7.1.1 (4), (b), above.

.4 Other Subcontractors.

- (1) Compensable Changes: With respect to any other Subcontractor, of any Tier, performing all or a portion of a Compensable Change who is not an Installation Subcontractor or who is an Installation Subcontractor below the second-Tier, the following shall apply:
 - (a) No markup shall be allowed to such other Subcontractor.
- (b) The Subcontractor that is positioned in the Tier immediately above such other Subcontractor shall be entitled to an Allowable Markup of not more than five percent (5%) upon the Allowable Costs incurred by such other Subcontractor in the performance thereof.
- (c) No other Allowable Markup by any Subcontractor of any Tier above such other Subcontractor shall be permitted.
- (d) Contractor shall be entitled to an Allowable Markup of five percent (5%) of the sum of (i) the Allowable Costs of such other Subcontractor incurred in the performance of such Compensable Change and (ii) the amount which results when the Allowable Markup permitted by Clause (b) of this Subparagraph 7.7.5.4 (1) is multiplied times such Allowable Costs.
- **(2) Deleted Work.** With respect to all or that portion of Deleted Work that was to have been performed by such other Subcontractor who is not an Installation Subcontractor or who is an Installation Subcontractor below the second-Tier, the Contract Price shall be reduced as provided in <u>Subparagraph 7.7.1.1 (4), (b)</u>, above. In addition, a credit shall be due from Contractor of five percent (5%) of the amount of the total credit due pursuant to <u>Subparagraph 7.7.1.1 (4), (b)</u>, above.
- 7.7.6 **Review of Markups.** It is Contractor's responsibility to review information submitted by Subcontractors to ensure that all markups comply with the requirements of the Contract Documents. Payment by the County of markups that exceed Allowable Markups shall not be considered as a waiver by County of the right to require repayment by Contractor of any markup charged that is in excess of Allowable Markups and such excess amounts shall be promptly paid by Contractor to County.

7.7.7 Exclusions and Limitations. Allowable Markups are not permitted:

- .1 on agreed unit prices;
- .2 on materials, products or equipment furnished by County;
- .3 on liquidated damages payable to Contractor pursuant to <u>Section 3.3</u> of the Construction Contract for Compensable Delay;
- .4 to a Subcontractor who contracts to perform a Compensable Change that is in fact wholly performed by another Subcontractor (for purposes of this Paragraph 7.7.7, "wholly performed" means that all of the Compensable Change, other than supervision or minor labor or materials, are furnished by such other Subcontractor); or
- on any cost or compensation with respect to which the Contract Documents state that there shall be "no Allowable Markup", "no markup for overhead and profit" or words of similar meaning.

- 7.7.8 **Net Calculations.** If any one Change or collection of Changes in the same or related portions of the Work, or in multiple portions of Work covered by a single bulletin or instruction by County, involve both Compensable Change and Deleted Work, and if the added Allowable Costs resulting from the Compensable Change exceed the reduction calculated in accordance with <u>Subparagraph 7.7.1.1 (4)</u>, (b), above, (excluding any Allowable Markup to the Contractor) then the calculation of Allowable Markups to Contractor shall be based on and limited to the resulting net increase in the Allowable Costs.
- 7.7.9 **Unit Prices.** Unless otherwise stated in the Contract Documents, unit prices stated in the Contract Documents or subsequently agreed upon by County and Contractor shall be deemed to include and encompass all costs of performance, overhead and profit, including, without limitation, all Allowable Costs and Allowable Markups. If the unit price stated in the Contract Documents is based on an estimated quantity established by County in the Construction Contract and the actual quantity of such unit-priced item varies by more than 25% above or below the estimated quantity, an equitable adjustment in the Contract Price shall be made upon demand of either County or Contractor. Such equitable adjustment shall be based solely upon any increase or decrease in Allowable Costs (without any Allowable Markups), due solely to the variation above 125% or below 75% of the estimated quantity.
- 7.7.10 **Discounts**. For purposes of determining Allowable Costs of a Compensable Change, all trade discounts, rebates, refunds, and returns from the sale of surplus materials and equipment shall accrue and be credited to County, and Contractor shall take all necessary steps to ensure that such discounts, rebates, refunds, and returns are secured.
- 7.7.11 **Prompt Pricing.** It is fundamental to the County's objective of controlling costs that performance of Compensable Changes on a time and materials basis of compensation and without a not-to-exceed price be curtailed. Contractor recognizes that prompt pricing by Contractor is critical to this objective. Accordingly, in addition to and without limitation on any of the County's other rights or remedies, including, without limitation, its right to enforce a waiver under Subparagraph 7.6.2.4, above, it is agreed that if Contractor fails to timely submit a complete Change Order Request in accordance with Paragraph 7.6.2, above, with respect to any circumstance, event or occurrence constituting a Compensable Change then: (1) any Delay to the performance of the Work associated with the performance, delayed performance or nonperformance of such Compensable Change shall be conclusively deemed to be an Unexcused Delay; and (2) the County shall have the option, exercised in its sole discretion, to unilaterally fix and determine the amount of the Contract Adjustment to the Contract Price for such Compensable Change based on the "estimating guide" method set forth in Subparagraph 7.7.1.1 (3), above, which determination shall be conclusively final and binding upon Contractor.
- 7.7.12 **Final Payment.** No Claim by Contractor for a Contract Adjustment shall be allowed if asserted after Final Payment.
- 7.7.13 Full Resolution. Except as otherwise stated in Paragraph 7.7.14, below, the signing of a Change Order by Contractor and the County shall be conclusively deemed to be a full resolution, settlement and accord and satisfaction with respect to any and all Loss and Delay, whether known or unknown at the time of execution of the Change Order, related to the subject matter of the Change Order, including, without limitation, all rights to recovery of costs, expenses or damages for delay, disruption, hindrance, interference, extended or extraordinary (direct and indirect) overhead, multiplicity of changes, loss of productivity, labor, wage or material cost escalations, inefficiency, legal expenses, consultant costs, interest, lost profits or revenue, bond and insurance costs, changes in taxes and other similar and related Losses. The foregoing provisions of this Paragraph 7.7.13 shall, whether or not they are expressly stated or referenced on the face of a Change Order, be deemed to be part of the terms of the Change Order and shall be deemed to supersede and govern over any other provision contained in any proposal, estimate or other documents attached to or referenced in such Change Order that conflicts with the provisions of this Paragraph 7.7.13. ANY RIGHT OR CLAIM BY CONTRACTOR FOR ANY ADDITIONAL COMPENSATION OR EXTENSION OF TIME RELATING DIRECTLY OR INDIRECTLY TO A COMPENSABLE CHANGE DESCRIBED IN A FULLY EXECUTED CHANGE ORDER SHALL BE CONCLUSIVELY DEEMED WAIVED BY CONTRACTOR, EVEN IF THE CIRCUMSTANCES GIVING RISE TO SUCH ADDITIONAL COMPENSATION OR EXTENSION OF TIME WERE NOT SUSPECTED BY OR KNOWN TO THE CONTRACTOR AT THE TIME OF EXECUTION OF THE CONSTRUCTION CHANGE DIRECTIVE AND IF SUSPECTED OR KNOWN WOULD HAVE BEEN CONSIDERED BY CONTRACTOR TO HAVE BEEN MATERIAL TO CONTRACTOR'S AGREEMENT TO THE CONTRACT ADJUSTMENT SET FORTH IN THE CHANGE ORDER.

- 7.7.14 **Reserved Rights.** Change Orders shall be executed by Contractor without any express reservation of rights by Contractor to reserve for the future the assertion of any right of recovery from the County for Loss or Delay arising out of or relating to the subject matter of the Change Order. Execution of a Change Order, Unilateral Change Order or Construction Change Directive shall not be interpreted as a waiver, release or settlement of any rights or claims that the County may have for any of the following: (1) Defective Work; (2) liquidated damages or actual Losses for Delay; or (3) recoupment by County (by way of withholding of funds, set off or recovery from Contractor) of amounts paid by County for costs or markups on costs that the County discovers, following payment of such amounts to Contractor, do not constitute proper charges to County, or that constitute charges that are not properly substantiated, under the terms of the Contract Documents.
- 7.7.15 No "Total Cost" Calculations. Contractor represents and warrants that it has the ability to generate and maintain complete and accurate cost accounting records that, if required, will reflect the actual costs of the Work incurred or avoided for multiple Compensable Changes and, on an event-by-event basis, the effect of multiple and concurrently occurring or caused Compensable Delays on the progress of the Work. Accordingly, Contractor agrees that all Change Order Requests and Claims shall be itemized in a manner that, with reasonable mathematical certainty and without reliance upon probabilities or inferences, segregates on a discrete, event-by-event basis the direct, actual Allowable Costs associated with each individual Compensable Change or Compensable Delay. Unless otherwise agreed to by County in writing in the exercise of its sole discretion, Change Order Requests and Claims shall not be based, in whole or in part, upon any methodology (such as "total cost" or "modified total cost" methodologies) that purports to establish Contractor's entitlement to additional compensation inferentially based, solely or principally, on the difference between Contractor's total costs for the Work or a portion of the Work and its original Bid.
- 7.7.16 **Multiple Changes**. The County reserves the absolute right to make whatever Changes, including, without limitation, Compensable Changes or Deleted Work, that it determines, in its sole discretion, are necessary or otherwise desirable. Under no circumstances shall the individual or cumulative number, value or scope of such Changes, or their individual and cumulative impact on the Work, become a basis for Contractor to assert any claim for breach of contract, abandonment, rescission, termination, cardinal change or reformation of the Construction Contract, nor shall such circumstances be the basis for Contractor, or any of the Subcontractors, of any Tier, to assert a right of recovery of any Loss if such right is not permitted by, or is in excess of that allowed under, the Contract Documents.
- 7.7.17 **Continuous Performance.** Subject to Contractor's rights under <u>Section 15.4</u>, below, no dispute or disagreement with respect to any Changes or Delay, including, without limitation, disputes over Contractor's right to or the terms of a Contract Adjustment, shall relieve or excuse Contractor from the obligation to proceed with and maintain continuous, expeditious and uninterrupted performance of the Work, including performance of any disputed Changes.

ARTICLE 8 CONTRACT TIME

8.1 COMMENCEMENT AND COMPLETION

- 8.1.1 **Date of Commencement.** The Date of Commencement shall not be postponed by the failure of Contractor or of persons or entities for whom Contractor is responsible to perform an obligation. Contractor shall not knowingly, except by agreement or instruction of the County in writing, commence operations on the Site or elsewhere prior to receipt of a Notice to Proceed. Contractor shall not commence any Work at the Site prior to its obtaining the insurance required by <u>Article 11</u>, below, and the Performance Bond and Payment Bond required by <u>Article 12</u>, below, and the Date of Commencement of the Work shall not be changed by the effective date of such insurance or bonds.
- 8.1.2 **Substantial, Final Completion.** Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion and Final Completion within the Contract Time, as adjusted for extensions of time duly permitted, authorized and noticed pursuant to <u>Section 8.2</u>, below.
- 8.1.3 Adjustments to Contract Time. Subject to the limitations set forth in this Article 8 and elsewhere in the Contract Documents, the Contract Time shall be extended for Compensable Delays and Excusable Delays and shall, where appropriate, be shortened for Deleted Work.
- 8.1.4 **Early Completion.** Nothing stated in these General Conditions or elsewhere in the Contract Documents shall be interpreted as creating any contractual right, express or implied, on the part of Contractor to finish

the Work earlier than the Contract Time. Contractor has included in its Contract Price the costs of all Contractor's and its Subcontractors' direct and indirect overhead, including but not limited to all staff, temporary facilities, temporary utilities and home office overhead for the entire duration of the Contract Time. These costs have been included in the Contract Price notwithstanding Contractor's anticipation of possibly completing the Work in fewer Days than established by the Contract Time. Under no circumstances (including, without limitation, circumstances in which the County has approved in writing of Contractor completing early) shall the County be liable to Contractor for any Losses, of any kind, due to the inability of Contractor to complete the Work earlier than the Contract Time, regardless of the cause, including, without limitation, Delays due to acts or omissions (intentional or negligent) of the County, Inspectors of Record, County Consultants, Separate Contractors or others. If the Contractor anticipates completing early, it must obtain in advance County's approval in writing of such early completion. Approval by County of such early completion may be granted or withheld in the County's sole and absolute discretion.

8.2 DELAYS AND EXTENSIONS OF TIME

8.2.1 Adjustments to Contract Time

- .1 Extensions. Provided that Contractor has complied with the provisions of this Section 8.2 (including, without limitation, the requirements pertaining to timely delivery of a Notice of Delay and Request for Extension), if, as a result of Excusable Delay or Compensable Delay to the actual, as-built critical path of activities leading to achievement of Substantial Completion, Contractor is unable to achieve Substantial Completion within the Contract Time for Substantial Completion, then the Contract Time for Substantial Completion and Final Completion shall be extended, either by Change Order or Unilateral Change Order, for the length of the proven, resulting Delay to Contractor's ability to so complete the Work. The Contract Time shall not be adjusted for Unexcused Delays.
- .2 Shortening. Contractor shall within ten (10) Days after receiving notice of Deleted Work prepare and deliver to County a Time Impact Analysis of the impact of the Deleted Work upon the critical path to determine if the Contract Time should be shortened thereby and if so the duration of the shortening. If the County and Contractor are unable to agree upon the duration of the shortening, then County shall make a Good Faith Determination of the reasonable amount of time that the Contract Time shall be shortened on account of such Deleted Work.

.3 Prescribed Calculations.

- Compensable Delay for a full Day only if all Work on a critical path activity is stopped for more than six (6) hours of a normal eight (8) hour Work Day and for a half-Day only if all Work on a critical path activity is stopped for three (3) to six (6) hours of such a normal Work Day. No Excusable Delay or Compensable Delay may be claimed if all Work on a critical path activity is stopped for less than three (3) hours of such a normal work Day. Similarly, where Deleted Work results in the projected avoidance of the need to perform more than six (6), or between three (3) and six (6) hours of all Work on a critical path activity on such a normal work day, the Contract Time shall be contracted by a full Day or half Day, respectively.
- based upon unusual precipitation that is an Act of God as defined in Paragraph 1.1.2, above, shall include, in addition to the number of Days of Excusable Delay to which Contractor is entitled due to a cessation of Work that occurs at the Site while the unusual precipitation is occurring, an additional extension for the Delay to the critical path of activities affecting Substantial Completion that is the result of Contractor being unable, after cessation of the unusual precipitation at the Site, to proceed with performance of Work due to wet or muddy conditions at the Site (hereinafter referred to as "dry out" time); provided, however, that the amount of dry out time for which Contractor is entitled to an extension of time in any given calendar month shall not exceed the number of Days that is the product derived by multiplying (a) the number of Days of Excusable Delay to which Contractor is entitled due to a cessation of Work that occurs at the Site while such unusual precipitation is occurring, by (b) a fraction, the (i) numerator of which is the number of Days of Excusable Delay due to measurable unusual precipitation occurring at the Site during such calendar month that constitutes an Act of God as defined in Paragraph 1.1.2, above, and (ii) the denominator of which is the total number of Days of measurable precipitation occurring at the Site during said calendar month (including both the number of Days comprising the normal, 10-year monthly average of measurable precipitation recorded by NOAA and the excess, or unusual precipitation that constitutes an Act of God as defined in Paragraph 1.1.2, above).

8.2.2 Notice of Delay.

- Submission. Contractor shall submit written Notice of Delay to County if any instruction, request, drawing, specification, action, condition, omission, default or other circumstance occurs that constitutes an Excusable Delay or Compensable Delay or other matter that may involve or require a Contract Adjustment extending the Contract Time. Such notice shall be provided prior to performance of the Work affected or involved and no later than seven (7) Days after the Discovery Date of such circumstance.
- .2 Form. Notices of Delay shall be provided using forms furnished by County or, if requested by County, using forms furnished by Contractor that are approved by County. Failure by County to request or approve a particular form shall not relieve Contractor of its obligation to provide Notice of Delay in a written form that complies with the requirements of this Paragraph 8.2.2.
 - .3 Content. Each Notice of Delay in order to be considered complete shall include:
- (1) a general statement of the circumstances giving rise to the Notice of Delay (including, without limitation, identification of any related Construction Change Directive);
- (2) a Reasonable Order of Magnitude Estimate by Contractor of any related Contract Adjustments extending the Contract Time; and
- (3) if such circumstances involve a right to a Contract Adjustment to the Contract Price for Compensable Change that has not been waived by Contractor, Contractor shall include, if not previously provided, a complete and timely Notice of Change.

.4 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO PROVIDE A COMPLETE AND TIMELY NOTICE OF DELAY UNDER CIRCUMSTANCES WHERE A NOTICE OF DELAY INVOLVING A DELAY IS REQUIRED BY THIS <u>PARAGRAPH 8.2.2</u> SHALL, IN ACCORDANCE WITH THE PROVISIONS OF <u>SECTION 4.6</u> OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF SUCH CIRCUMSTANCES AND A WAIVER OF ANY RIGHT TO FURTHER RECOURSE OR RECOVERY BY REASON OF OR RELATED TO SUCH DELAY.

.5 No County Notice. Failure by Contractor to submit a timely or proper Notice of Delay under circumstances in which a Notice of Delay is required shall in no way affect County's right to a Contract Adjustment shortening the Contract Time on account of such circumstances.

8.2.3 Request for Extension.

- .1 **Submission.** With respect to any matter that may involve or require an adjustment extending the Contract Time, Contractor shall, within fourteen (14) Days after receipt by County of a Notice of Delay pursuant to Paragraph 8.2.2, above, submit to County a written Request for Extension.
- .2 Form. Requests for Extension shall be provided using forms furnished by County or, if requested by County, using forms furnished by Contractor that are approved by County. Failure by County to request or approve a particular form shall not relieve Contractor of its obligation to provide Requests for Extension in a written form that complies with the requirements of this Paragraph 8.2.3.
 - .3 Content. Each Request for Extension in order to be considered complete shall include:
- (1) a detailed description of the circumstances giving rise to the request for Contract Adjustment to the Contract Time and a Time Impact Analysis (a Request for Extension that seeks an extension for more than one Delay shall be supported by a separate Time Impact Analysis for each separate Delay); and

(2) if such circumstances involve a right to a Contract Adjustment of the Contract Price on account of Compensable Change that has not been waived by Contractor, Contractor shall include, if not previously provided, a complete and timely Change Order Request.

.4 WAIVER BY CONTRACTOR.

FAILURE BY CONTRACTOR TO PROVIDE A COMPLETE AND TIMELY REQUEST FOR EXTENSION UNDER CIRCUMSTANCES WHERE A REQUEST FOR EXTENSION INVOLVING A DELAY IS REQUIRED BY THIS PARAGRAPH 8.2.3 SHALL, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 4.6 OF THE GENERAL CONDITIONS, CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF SUCH CIRCUMSTANCES AND A WAIVER OF ANY RIGHT TO FURTHER RECOURSE OR RECOVERY BY REASON OF OR RELATED TO SUCH DELAY.

- .5 Adjustments Shortening Time. Failure by Contractor to submit a timely or proper Request for Extension under circumstances in which a Request for Extension is required shall in no way affect County's right to a Contract Adjustment shortening the Contract Time on account of such circumstances.
- 8.2.4 **Response by County.** After receipt of a timely and complete Request for Extension, County shall investigate the facts concerning the cause and extent of such Delay and, depending on whether the Request for Extension is justified, will notify Contractor of its approval or disapproval of all or a portion of Contractor's request. Extensions of time approved by County shall apply only to that portion of the Work affected by the Delay, and shall not apply to other portions of Work not so affected.
- 8.2.5 **Formal Notice of Essence.** Contractor recognizes and acknowledges that timely submission of a formal Notice of Delay and a formal Request for Extension, whether or not the circumstances of a Delay may be known to County or available to County through other means, are not mere formalities but are of crucial importance to the ability of County to promptly identify, prioritize, evaluate and mitigate the potential effects of Delay. Any forms of informal notice, whether verbal or written (including, without limitation, statements at regular job meetings or entries in monthly reports, daily logs, job meeting minutes, updated Construction Schedules or look-ahead schedules), that do not strictly comply with the formal requirements of Paragraph 8.2.2, above, and Paragraph 8.2.3, above, shall accordingly be deemed insufficient to satisfy the notice requirements of this Article 8.

8.2.6 Compensation for Delay.

- .1 Compensable Delay. Contract Adjustments to the Contract Price for a Compensable Delay that involve an extension of the Contract Time shall be based, without duplication to any other Contract Adjustments to the Contract Price, on the terms of Section 3.3 of the Construction Contract. Contractor agrees to accept such right of Contract Adjustment in lieu of any other right that may exist under Applicable Laws for recovery of Losses due to Compensable Delay, whether incurred by Contractor or its Subcontractors, of any Tier.
- .2 Deleted Work. The Contract Time and Contract Price shall be reduced by Contract Adjustment for Deleted Work (including, without limitation, Deleted Work associated with a termination by County of a portion of the Construction Contract or a deletion of portion of Work for the convenience of the County or due to an Event of Contractor Default) that results in a shortening of the Contract Time.
- (1) Contract Time. The Contract Adjustment shortening the Contract Time for Substantial Completion shall be the number of Days that Contractor at the time of contracting would have reasonably expected to expend in performance of the Deleted Work and that, based on the Contractor's original Construction Schedule prepared on or about the time of contracting, were reasonably expected by Contractor to be critical to Substantial Completion of the Work within the Contract Time for Substantial Completion.
- (2) Contract Price. The Contract Adjustment reducing the Contract Price shall be the product of (1) the number of Days that the Contract Time for Substantial Completion is shortened pursuant to preceding Clause (1) of this <u>Subparagraph 8.2.6.2</u> multiplied times (2) the amount of liquidated damages set forth in <u>Paragraph 3.3.2</u> of the Construction Contract, without any additional credit to County for Allowable Markups.

8.2.7 Acceleration of the Work.

- Due to Unexcused Delay. If County makes a Good Faith Determination based on County's observations of progress in performance of the Work by Contractor that Contractor will not achieve Substantial Completion of the Work within the Contract Time as adjusted pursuant to Paragraph 8.2.1, above, then Contractor shall, following receipt of a written request by County to accelerate, immediately respond in writing setting forth a detailed plan for accelerating the Work. All measures necessary, including working overtime, additional shifts, Saturdays, Sundays and holidays, to accelerate performance to ensure that the Work is performed within the Contract Time shall be taken by Contractor and the cost thereof shall be paid for by Contractor at Contractor's Own Expense. County may also take all other necessary measures to ensure no further Delays affect achievement of Substantial Completion and Final Completion of the Work within the Contract Time and the Contractor shall reimburse County, or County may withhold from payment due to Contractor, for Losses incurred by County in taking such measures.
- .2 Due to Excusable Delay. Contractor shall have the right, exercised in its sole discretion, to accelerate performance of the Work to overcome time lost due to Excusable Delay. Such acceleration, if performed other than at the written direction of County, shall be deemed a voluntary acceleration and the cost of such accelerated performance shall paid for by Contractor at Contractor's Own Expense. If County directs in writing that the Work be accelerated to overcome an Excusable Delay that is not concurrent with an Unexcused Delay, then Contractor shall be entitled to a Contract Adjustment to the Contract Price for such acceleration on and subject to the same terms as provided for in Subparagraph 8.2.7.3, below, in the case of an acceleration to overcome a Compensable Delay.
- Jue to Compensable Delay. County shall have the right, exercised in its sole and absolute discretion, in lieu of granting a Contract Adjustment to the Contract Time for Compensable Delay, to direct in writing the acceleration of the Work by Contractor in order to recapture time lost due to such Compensable Delay. County and Contractor shall endeavor prior to commencement of such acceleration to mutually agree upon the amount of compensation to be paid therefor. County shall have the right, in the absence of such an agreement, to direct in writing that Contractor accelerate. Contractor shall comply with such directive. Contractor's right to a Contract Adjustment to the Contract Price on account of such acceleration shall be limited to (1) the premium time portion of any overtime paid for labor provided by Contractor or any Subcontractor, plus (2) additional supervision costs for additional shifts of supervision provided at the Site by Contractor only (not by Subcontractors), plus (3) Allowable Markup thereon as provided in Paragraph 7.7.5, above. Except as directed by County in the manner stated in this Subparagraph 8.2.7.3, no statements, conduct or actions by County will be construed as creating an obligation on the part of County to agree to a Contract Adjustment to the Contract Price on account of any cost of overtime or other costs associated with an acceleration of the Work to recapture time lost due to Compensable Delay.
- 8.2.8 **Concurrent Delays.** For purposes of the calculations provided for in this <u>Paragraph 8.2.8</u>, the words "concurrent delay", "concurrently delay" or "occur concurrently" mean the portion of two or more Delays affecting the critical path to Substantial Completion that are overlapping or co-existent. Contractor's right to a Contract Adjustment of the Contract Time (pursuant to <u>Subparagraphs 8.2.8.1, 8.2.8.2 and 8.2.8.3</u>, below) and Contract Price (pursuant to <u>Subparagraphs 8.2.8.4, 8.2.8.5 and 8.2.8.6</u>, below) shall, in the case of concurrent delays, be calculated in accordance with the following:
- .1 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.
- .2 If an Unexcused 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 such Excusable Delay or Compensable Delay exceeds the number of Days of such Unexcused Delay.
- .3 If an Unexcused Delay occurs concurrently with both an Excusable Delay and a Compensable Delay, the maximum extension of the Contract Time shall be the number of Days, if any, by which such Excusable Delay and Compensable Delay, as determined pursuant to Subparagraph 8.2.8.1, above, exceeds the number of Days of such Unexcused Delay.
- .4 If an Unexcused Delay occurs concurrently with a Compensable Delay, the maximum period of time for which Contractor shall be entitled to a Contract Adjustment to the Contract Price in accordance with <u>Section 3.3</u> of the Construction Contract shall be the number of Days, if any, by which such Compensable Delay exceeds the number of Days of such Unexcused Delay.

- .5 If a Compensable Delay occurs concurrently with an Excusable Delay, the maximum period of time for which Contractor shall be entitled to a Contract Adjustment to the Contract Price in accordance with <u>Section 3.3</u> of the Construction Contract shall be the number of Days, if any, by which such Compensable Delay exceeds the number of Days of such Excusable Delay.
- .6 If an Unexcused Delay occurs concurrently with both an Excusable Delay and a Compensable Delay, the maximum period of time for which Contractor shall be entitled to a Contract Adjustment to the Contract Price in accordance with Section 3.3 of the Construction Contract shall be the number of Days, if any, by which such Compensable Delay exceeds the number of Days of such Unexcused Delay.
- 8.2.9 **Delay Claims**. Claims by Contractor relating to disputed Contract Adjustments due to Delay shall be made in accordance with applicable provisions of <u>Section 4.3</u>, above.
- 8.2.10 **Exercise of County Rights.** Notwithstanding any other provision of the Contract Documents to the contrary, County's exercise in accordance with the Contract Documents of any of its rights or remedies permitted by Applicable Laws or the Contract Documents in response to a failure by Contractor or any Subcontractor to comply with the Contract Documents shall not, under any circumstances, entitle Contract to a Contract Adjustment.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 PAYMENT BY COUNTY

- 9.1.1 **Time for Payment.** County shall make payment of undisputed sums due to the Contractor upon Applications for Payment requesting Progress Payment not later than thirty (30) Days after receipt of an Application for Payment requesting Progress Payment that has been properly and timely prepared and submitted by Contractor, and approved by County, in accordance with the requirements of the Contract Documents.
- 9.1.2 **Not Acceptance.** No approval, inspection or use of, or payment for, the Work by County or by any person or entity acting on County's behalf shall constitute acceptance of Work that is not in accordance with the Contract Documents or a waiver of any of County's rights under the Contract Documents.
- 9.1.3 **Interest.** If County fails to make payment of an undisputed sum due as a Progress Payment to the Contractor as required by this <u>Article 9</u>, County shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of California Code of Civil Procedure §685.010. The number of Days available to the County to make payment without incurring such interest shall be reduced by the number of Days by which the County exceeds the seven (7) Day response time applicable to the County set forth in <u>Section 9.5</u>, below. The foregoing is the County's sole obligation with respect to payment of interest earned or accrued on an amount claimed due prior to the commencement by Contractor of legal proceedings for recovery of such amount.
- 9.1.4 **Disputed Payments.** Subject to Contractor's rights under <u>Section 9.8</u>, below, no good faith dispute or disagreement between County and Contractor with respect to the amount of any payment claimed due by Contractor shall relieve or excuse Contractor from the obligation to proceed with and maintain continuous, expeditious and uninterrupted performance of the Work.

9.2 APPLICATIONS FOR PAYMENTS

- 9.2.1 **Submission by Contractor**. Applications for Payment requesting Progress Payment shall be properly prepared and submitted by Contractor to County once a month on the twenty-fifth (25th) Day of the month. If the twenty-fifth (25th) Day of the month is a weekend or Holiday, the Application for Payment shall be submitted on the next working day.
- 9.2.2 **Period of Application**. The period covered by each such Application for Payment requesting Progress Payment shall be not more than thirty (30) Days ending on the twenty-fifth (25th) Day of the month in which such Application for Payment is submitted.

- 9.2.3 **Schedule of Values.** Each Application for Payment shall be accompanied by a Schedule of Values prepared and submitted in accordance with the requirements of the Contract Documents, including, without limitation, the provisions of <u>Section 9.3</u>, below.
- 9.2.4 **Changes in Work.** Applications for Payment may include requests for payment on account of Compensable Changes in the Work which have been properly authorized by Change Order or Unilateral Change Order.
- 9.2.5 **Progress Payments.** Applications for Payment requesting Progress Payments shall be based on amounts calculated in accordance with the provisions of <u>Section 9.4</u>, below.
- 9.2.6 **Percentage Completion.** Applications for Payment requesting Progress Payments shall indicate the Contractor's estimate of the percentage of completion of each line item listed in the Schedule of Values as of the end of the period covered by the Application for Payment.
- 9.2.7 **Projected Work.** Unless approved by County in writing in advance of an Application for Payment being submitted, which approval may be granted or denied in the sole and absolute discretion of County, Applications for Payment shall only include amounts for Work performed to the twenty-fifth (25th) Day of the month in which the Application for Payment was submitted and shall not include request for payment of amounts for Work projected to be performed, stored or delivered beyond that date.
- 9.2.8 **Disagreements.** In the event of a disagreement between County and Contractor over the accuracy or reasonableness of the Contractor's statement of percentage of progress achieved that is contained in the Application for Payment, the County shall make a Good Faith Determination of the percentage, which percentage shall then be inserted by Contractor in the Application for Payment and the Application for Payment submitted, incorporating such revision.
- 9.2.9 **Substantial Completion.** For the sole purpose of the percentage calculation set forth in <u>Paragraph 9.2.6</u>, above, and for no other purpose, the Work shall be deemed one hundred percent complete upon Substantial Completion and the amount released to Contractor shall, subject to County's right to withhold pursuant to <u>Section 9.6</u>, below, be a sum sufficient to increase the total of Progress Payments to Contractor to ninety-five percent (95%) of the Contract Price.
- 9.2.10 **Certification by Contractor.** Each Application for Payment that is submitted by Contractor shall be signed by Contractor with a certification by Contractor to County that: (1) the data comprising the Application for Payment is accurate and the Work has progressed to the point indicated; (2) to the best of Contractor's knowledge, information and belief, the Work is in accordance with the Contract Documents; (3) Contractor is entitled to payment in the amount certified; and (4) all sums previously applied for by Contractor on account of the Work performed by the Subcontractors and that have been paid by County have been paid to the Subcontractors performing such Work, without any retention, withholding or back charge by Contractor.
- 9.2.11 **Stored Materials.** County may, in the exercise of its sole and absolute discretion, approve or disapprove for inclusion in Contractor's Application for Payment the cost of materials to be incorporated, but not yet incorporated, in the Work and delivered and suitably stored either at the Site or at some other appropriate location acceptable to the County. As part of any request for such approval, Contractor shall furnish evidence satisfactory to County: (1) of the cost of such materials; (2) that such materials are under the exclusive control of Contractor, or if not, that title to the materials is in the County, free of any lien or encumbrance; and (3) with respect to materials stored off-Site, that the materials are safely and suitably stored in a bonded warehouse with appropriate insurance coverage satisfactory to County. No payment or approval by County pursuant to this Paragraph 9.2.11 shall (a) be construed as an inspection or acceptance of the materials; (b) relieve Contractor of its continuing and sole responsibility for the care and protection of, and sole responsibility for any Loss to, such materials, from any cause whatsoever; or (c) operate as a waiver of rights by County.
- 9.2.12 **Title.** Contractor warrants that title to all the Work covered by an Application for Payment will pass to County no later than the time of payment. Contractor further warrants that upon submittal of an Application for Payment all Work for which approval for payment has been previously issued by County shall, to the best of Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of

Contractor, the Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials or equipment for the Work.

9.3 SCHEDULE OF VALUES

- 9.3.1 **Initial Submission.** Within twenty-one (21) Days after issuance by County of the Notice of Intent to Award, Contractor shall submit to County a Schedule of Values, prepared in a form and incorporating a level of detail satisfactory to County, that allocates the Contract Price to various portions of the Work, including, without limitation, each portion of the Work to be performed by a Subcontractor, self-performed Work, discrete categories of direct (i.e., on-Site) overhead costs (sometimes referred to as "general conditions costs"), Contractor home office and indirect overhead and profit and amounts reserved for contingencies.
- 9.3.2 **Balanced Allocation.** The Schedule of Values shall be balanced, reflecting in each line item Contractor's estimated or actual cost commitments for the category of Work included in the line item and a proportionate share of Contractor's overhead and profit. Techniques, such as "front-end loading", designed to create an imbalanced cash flow are strictly prohibited.
- 9.3.3 **Line Estimates.** Line item values stated in the Schedule of Values that are based on Contractor's estimates, rather than actual subcontract prices, shall be identified as such and replaced with actual subcontract prices when they become available as the subcontracting process progresses.
- 9.3.4 **Updating.** The Schedule of Values shall be updated by Contractor each month as necessary to reflect the Contractor's actual progress in subcontracting the Work. An updated Schedule of Values shall be attached to each Application for Payment.
- 9.3.5 **Substantiation.** Contractor shall provide such data as County may reasonably require to substantiate that the Schedule of Values has been prepared in conformance with the requirements of the Contract Documents. Failure to provide such substantiation shall result in the Schedule of Values being deemed incomplete and unapproved by County for use by Contractor in submitting its Applications for Payment.
- 9.3.6 **Corrections.** If corrections are required in order to make the Schedule of Values comply with the requirements of the Contract Documents, such corrections shall be made as a condition of the Contractor's Application for Payment being considered properly prepared, submitted and complete.
- 9.3.7 **Changes to Work.** Costs involved in the performance of Work covered by Change Orders, Unilateral Change Orders or Construction Change Directives shall be, at the option of County, either separately scheduled or incorporated as adjustments to the respective trade lines of Work to which they apply. Except as otherwise expressly required by Article 7, above, the Schedule of Values shall not be utilized by Contractor as a basis for calculating Contract Adjustments.
- 9.3.8 **Applications for Payment.** The Schedule of Values prepared by Contractor in accordance with the requirements of the Contract Documents shall be used as a basis for County's review and approval or disapproval of Applications for Payment.

9.4 PROGRESS PAYMENT CONDITIONS

- 9.4.1 **Progress Payment Amount.** Subject to the other provisions of the Contract Documents, the amount of each Progress Payment requested in an Application for Payment shall be computed as follows:
- .1 take that portion of the Contract Price properly allocable to Work (other than materials, products or equipment furnished by County) permanently incorporated at the Site as part of the Work, based on the product derived by multiplying (1) the percentage completion of each such portion of the Work times (2) the portion of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less a retention of five percent (5%) thereof;

- add that portion of the Contract Price that is allocable to materials and equipment (other than materials, products or equipment furnished by County) approved by County pursuant to Paragraph 9.2.11, above, and suitably stored at the Site or at a location off-Site, less a retention of five percent (5%) thereof:
 - .3 subtract the aggregate of previous payments made by the County; and
- .4 subtract amounts, if any, that County has determined will be withheld pursuant to an exercise of the County's right to withhold pursuant to Section 9.6, below.
- 9.4.2 **Other Conditions and Documentation**, Contractor shall submit its Applications for Payment requesting Progress Payments to County using such forms as required by County. Without limitation to any other conditions to payment set forth elsewhere in the Contract Documents, the following shall be conditions precedent to a proper submission, and to County's approval, of each Application for Payment:
 - .1 submission of a Schedule of Values that complies with Section 9.3, above;
 - .2 submission of Contractor's certification required by Paragraph 9.2.10, above;
- submission of: (1) forms of conditional releases of stop payment notice and bond rights upon progress payment, complying with California Civil Code §8132, for all Work performed during the time period covered by the current Application for Payment, signed by Contractor and the Subcontractors, of every Tier; and (2) forms of unconditional releases of stop payment notice and bond rights upon progress payment, complying with California Civil Code §8134, for all Work performed during the time period covered by the previous Application for Payment, signed by Contractor and the Subcontractors, of every Tier;
- .4 compliance by Contractor with its obligation for daily maintenance of Record Drawings and Specifications as required by Paragraph 3.10.1, above;
- .5 compliance by Contractor with its obligation for submission of daily reports as required by Paragraph 3.10.2, above;
- .6 compliance by Contractor with its obligations for submission of scheduling information and updating of the Construction Schedule as required by <u>Section 3.9</u>, above, and other provisions of the Contract Documents pertaining to preparation or updating of schedules and scheduling information;
 - .7 proper payment of prevailing wages as defined in California Labor Code §1720, et seq.;
- .8 timely submission of adequate and complete certified payroll records for any time period that Work was performed and for which payment is being requested;
- .9 submission of certifications by Contractor and the Subcontractors as required by Applicable Laws certifying that all employee benefit contributions due and owing have been paid in full;
 - .10 submission of sales tax information as required by Paragraph 3.6.3, above; and
- .11 compliance by Contractor with all of its other obligations for submission of documentation or performance of conditions which, by the terms of the Contract Documents, constitute conditions to Contractor's right to receive payment for Work performed.

9.5 COUNTY APPROVAL/REJECTION OF APPLICATIONS FOR PAYMENT

9.5.1 **Review by County.** Subject to County's rights under <u>Paragraph 9.5.4</u>, below, County shall promptly review Applications for Payment submitted by Contractor and provide its approval or disapproval, in whole or part, within (1) seven (7) Days after receipt of an Application for Payment requesting Progress Payment, and (2) within fourteen (14) Days after receipt of an Application for Payment requesting Final Payment.

- 9.5.2 **Disapproval by County.** Disapproval by County disapproving of an Application for Payment shall be accompanied by an explanation of the reasons for such disapproval. Failure by County to specify in its disapproval a particular grounds for disapproval of an Application for Payment shall not waive the County's right to assert such grounds as a basis for any future disapproval, or nullification of its prior approval, of that or any other Application for Payment.
- 9.5.3 **Re-submittal by Contractor.** An Application for Payment that is disapproved by County shall be corrected and re-submitted by Contractor after receipt by Contractor of the notice of disapproval. A re-submitted Application for Payment shall be reviewed and responded to by County in the same manner as provided in <u>Paragraphs 9.5.1 and 9.5.2</u>, above. If re-submitted, the re-submitted Application for Payment shall be reviewed and responded to by County in the same manner as provided in <u>Paragraph 9.5.1</u> and <u>Paragraph 9.5.2</u>, above. If not re-submitted, only the amount, if any, that is approved for payment shall be paid until such time as a proper Application for Payment that includes the disapproved amount has been submitted in another Application for Payment and, upon such re-submittal, approved for payment.
- 9.5.4 **Approval Nullification.** County reserves the right to nullify any prior approval of an Application for Payment that is later found to not be in compliance with the requirements of the Contract Documents, whether or not such noncompliance was previously actually observed or apparent on the face of the Application for Payment, and based on such nullification County may take either of the following actions, as applicable: (1) if the Application for Payment has not yet been paid by County, disapprove of that portion of the Application for Payment that is not in compliance and withhold payment of that sum until the noncompliance is fully rectified; or (2) if the Application for Payment has been paid by County, nullify the County's prior approval and withhold payment of such disputed amounts in response to future Applications for Payment; provided, however, that in either case the amount of the County's nullification shall be limited to that portion of the amount requested in the Application for Payment that is in dispute and the amount of its withholding from the current or any future Application for Payment shall be limited to the amount nullified plus any additional withholding permitted under Section 9.6, below.
- 9.5.5 **No Waiver by County.** Neither approval by County or Architect of, failure by County to exercise its right of nullification with respect to, nor payment by County upon, an Application for Payment or any portion thereof shall be interpreted as or constitute a waiver or release of any of County's rights to require Contractor's full compliance with the Contract Documents.
- 9.5.6 **No Representation.** Neither approval by County or Architect of, failure by County to exercise its right of nullification with respect to, nor payment by County upon, an Application for Payment or any portion thereof shall be interpreted as a representation that County or Architect has: (1) made exhaustive or continuous on-Site inspections to check the quality or quantity of the Work, (2) reviewed Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from the Subcontractors and other data requested by County or Architect to substantiate Contractor's right to payment, or (4) made examination to ascertain how or for what purpose Contractor has used money previously paid on account of the Contract Price.

9.6 WITHHOLDING OF PAYMENT

- 9.6.1 **Grounds for Withholding.** County may decline to approve an Application for Payment and withhold payment requested under any unpaid Application for Payment, in whole or in part, to such extent that County makes a Good Faith Determination that withholding is necessary, in the sole discretion of County, because of any of the following circumstances:
- .1 Third-Party Claims. Third-party claims or stop payment notices filed or reasonable evidence (including, without limitation, failure by Contractor to submit conditional releases of stop payment notice and bond rights required by the Contract Documents) indicating the possible filing of such claims or stop payment notices.
 - .2 Defective Work. Defective Work not remedied.
- .3 Nonpayment. Failure of Contractor to make proper payments to a Subcontractor for services, labor, materials or equipment or other Work.

- .4 Inability to Complete. Reasonable doubt that the Work can be completed for the then unpaid balance of the Contract Price or within the Contract Time.
- .5 Violation of Applicable Laws. Failure of Contractor or a Subcontractor to comply with Applicable Laws.
- .6 Penalty. Any penalty asserted against County by virtue of Contractor's failure to comply with Applicable Laws.
- .7 Lack of Progress. Failure by Contractor to maintain progress in accordance with the Construction Schedule.
- .8 Setoff. Any reason specified elsewhere in the Contract Documents as grounds for a withholding, offset or setoff or that would legally entitle County to a setoff or recoupment.
- .9 Consultant Services. Additional professional, consultant or inspection services required due to Contractor's failure to comply with the Contract Documents.
- .10 Liquidated Damages. Liquidated damages payable to County pursuant to Section 3.2 of the Construction Contract or that there is a reasonable basis to believe will be payable to County based upon the Contractor's project date for Substantial Completion based on its update Construction Schedule or based upon other evidence available to County of the probable date that the Work will be Substantially Completed.
- .11 Damage. Loss caused to County, a Separate Contractor or any other person or entity under contract to County, by Contractor or a Subcontractor.
- .12 Cleanup. Cleanup performed by County and chargeable to Contractor pursuant to the terms of the Contract Documents.
- .13 Employee Benefits. Failure of Contractor to pay contributions due and owing to employee benefits funds pursuant to any applicable collective bargaining agreement or trust agreement.
- .14 Required Documents. Failure of Contractor to submit on a timely basis, proper and complete documentation required by the Contract Documents, including, without limitation, schedule updates, 'look ahead' schedules, pricing information, certifications and other required reports or documentation.
- .15 Labor Compliance. Failure of Contractor or any Subcontractor to properly pay prevailing wages as defined in California Labor Code §§1720 et seq.
- .16 **Nullification.** Nullification by County pursuant to <u>Paragraph 9.5.4</u>, above, of its prior approval of an Application for Payment.
- .17 Releases. Failure by Contractor to submit any conditional release of stop payment notice and bond rights that is required pursuant to <u>Subparagraph 9.4.2.3</u>, above or <u>Subparagraph 9.10.4.4</u>, below.
- .18 Other Breach. A breach by Contractor of any obligation or provision of the Contract Documents.
- 9.6.2 **Application of Withholding.** Sums properly withheld pursuant to <u>Paragraph 9.6.1</u>, above, may be used by County without a prior judicial determination of County's actual rights with respect to the grounds on which such withholding is based. Contractor agrees and hereby designates County as its agent for such purposes, and agrees that such payments shall be considered as payments made under the Construction Contract by County to Contractor. County shall submit to Contractor an accounting of such funds disbursed on behalf of Contractor. As an alternative to such payment, County may, in its sole and absolute discretion, elect to exercise its right to adjust the Contract Price as provided in <u>Section</u> 13.4, below.

- 9.6.3 **Final Payment**. In accordance with California Public Contract Code §7107, the amount to be withheld from Contractor's Final Payment pursuant to a withholding asserted pursuant to <u>Paragraph 9.6.1</u>, above, shall be limited to one hundred fifty percent (150%) of the disputed amount.
- 9.6.4 **Release of Withholding.** When the reasons for withholding of payment as set forth in <u>Paragraph 9.6.1</u>, above, are removed, approval by County will be promptly issued to Contractor for amounts previously withheld and payment of amounts withheld will be made by County within thirty (30) Days thereafter.
- 9.6.5 Additional Rights. The County's right of withholding set forth in this <u>Section 9.6</u> is in addition to, and not a limitation upon, any other rights of withhold that County may have under the Contract Documents or Applicable Laws.

9.7 PAYMENTS BY CONTRACTOR

- 9.7.1 Payments to Subcontractors. Contractor shall not include in its Applications for Payment sums on account of any Subcontractor's portion of the Work that it does not intend to pay to such Subcontractor. Upon receipt of payment from County, Contractor shall pay the Subcontractors performing the Work, out of the amount paid to Contractor on account of such Subcontractors' portions of the Work, the amount to which said Subcontractors are entitled in accordance with the terms of their contracts with Contractor and Applicable Laws, including, without limitation, California Public Contract Code §7107. Contractor shall remain responsible, notwithstanding a withholding by County pursuant to the terms of these General Conditions, to promptly satisfy from its own funds sums due to all the Subcontractors who have performed the Work that is included in Contractor's Application for Payment. Contractor shall, by appropriate agreement, require each Subcontractor to make payments to its sub-subcontractors and suppliers in similar manner. County shall have no obligation to pay or be responsible in any way for payment to the Subcontractors, of any Tier.
- 9.7.2 **Payments in Trust.** Any funds that Contractor receives in payment for services or Work performed by a Subcontractor shall constitute assets of a trust, which trust funds shall be used for the exclusive benefit of the Subcontractor for the purpose of discharging Contractor's financial obligations on account of labor, services, materials or equipment furnished to the Project by the Subcontractor, provided that such labor, services, materials or equipment were performed in accordance with the Contract Documents, were included in an Application for Payment to County, and were paid by the County to Contractor. Contractor shall be the trustee of the trust and shall be required to deal with the trust assets for the benefit of the Subcontractor. Contractor shall not be a beneficiary of the trust. Nothing herein shall be construed as an intent to require that Contractor maintain trust funds in separate bank accounts, specifically designate any third party as a beneficiary of the trust created herein, or otherwise give rise to any cause of action against the County by any third party beneficiary of the trust created herein.
- 9.7.3 **Payment Information.** County will, on request, furnish to any of the Subcontractors, if practicable, information for such Subcontractor's review regarding percentages of completion or amounts applied for by Contractor and action taken thereon by County on account of portions of the Work done by such Subcontractor.
- 9.7.4 **Joint Payment.** County shall have the right, if deemed necessary in its sole discretion, to issue joint checks made payable to Contractor and any of the Subcontractors, of any Tier. The joint check payees shall be solely responsible for the allocation and disbursement of funds included as part of any such joint payment. Endorsement on such check by a payee shall be conclusively presumed to constitute receipt of payment by such payee. In no event shall any joint check payment be construed to create: (1) any contract between County and any of the Subcontractors, of any Tier; (2) any obligation from County to any of the Subcontractors; or (3) any third-party rights against County or Architect.
- 9.7.5 **Direct Negotiation of Stop Payment Notices.** County shall have the right to directly discuss, negotiate, settle or pay, without notice to or participation by Contractor, any stop payment notice claims asserted by the Subcontractors, of any Tier, and to deduct such sums paid from sums due to Contractor.
- 9.7.6 **Release of Stop Payment Notices.** With the exception of that portion, and only that portion, of a stop payment notice or other claim that arises as a result of a failure by the County to make payment to Contractor under circumstances constituting a breach of the Construction Contract by County, if any stop payment notice or other claim, whether invalid or valid, is filed with, served upon or made or asserted against the County or the Site by any

Subcontractor, of any Tier, or their agent or employee, for money claimed due, then Contractor shall within five (5) Days after written notice by the County procure, furnish and record appropriate releases or other instruments which under Applicable Laws will fully release, extinguish and remove such stop payment notice or claim, as well as any notices of pending action or other notices recorded against the Site in connection with the enforcement thereof. All costs of such actions by Contractor shall be paid for by Contractor at Contractor's Own Expense. Unless and until fully released as aforestated, the County shall have the right to retain from any payment then due, or thereafter to become due, to Contractor an amount equal to one hundred and fifty percent (150%) of the amount necessary to satisfy, discharge and defend against any such stop payment notice or claim and any action or proceeding thereon, including, without limitation, an amount for anticipated attorney's fees and costs. If the amount to be paid, or the amount retained, is insufficient to satisfy, discharge and defend against any such stop payment notice or claim and any action or proceeding thereon, then Contractor shall be liable for the difference and upon demand shall immediately deposit the same with the County. The provisions of this Paragraph 9.7.6 are in addition to such other rights as the County may have against Contractor under the Contract Documents or Applicable Laws.

9.7.7 **No County Obligation.** Neither County nor Architect shall have any obligation to pay or to see to the payment of money to any of the Subcontractors except as may otherwise be required by Applicable Laws.

9.8 FAILURE OF PAYMENT

If, through no fault of Contractor or failure by Contractor to comply with its obligations under the Contract Documents either: (1) approval or disapproval by County of an Application for Payment properly prepared and submitted by Contractor and requesting payment that is otherwise undisputed by County is not issued within the time period required therefor by the terms of this Article 9; or (2) the County does not (a) upon an Application for Payment properly prepared and submitted by Contractor pay to Contractor, within the time period required for payment by County, an undisputed amount approved by County as earned, which approval has not been, and is not thereafter, nullified by County, or (b) pay to Contractor an amount that has been awarded by arbitration or judgment of a court of competent jurisdiction, then Contractor may, following delivery to County of a written "10-day stop work order", stop the Work until, as applicable, an approval or disapproval by County, or payment by County, is received by Contractor. Promptly upon receipt of such approval or disapproval, or payment, as applicable, Contractor shall resume the Work. Any resulting Delay associated with the shut down and start up of the Work as a result of Contractor's proper exercise of its right to stop work under this Section 9.8 shall constitute a Compensable Delay.

9.9 SUBSTITUTION OF SECURITIES FOR RETENTION

- 9.9.1 **Public Contract Code.** Pursuant to the requirements of California Public Contract Code §22300, upon the Contractor's request, the County will make payment to the Contractor of any funds withheld from payments to ensure performance under the Contract Documents if the Contractor deposits with the County, or in escrow with a California or federally chartered bank in California acceptable to the County ("Escrow Agent"), securities eligible for the investment of State Funds under Government Code §16430, or bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the County, upon the following conditions:
- .1 The Contractor shall be the beneficial owner of any securities substituted for monies withheld for the purpose of receiving any interest on such securities.
- .2 All expenses relating to the substitution of securities under said §22300 and under this <u>Section 9.9</u>, including, but not limited to the County's overhead and administrative expenses and expenses of Escrow Agent, shall be the responsibility of the Contractor.
- .3 Securities or certificates of deposit substituted for monies withheld shall be of a value of at least equivalent to the amounts of the retention to be paid to the Contractor pursuant to the Contract Documents.
- .4 If the Contractor shall choose to deposit securities in lieu of monies withheld with an Escrow Agent, the Contractor, the County and Escrow Agent shall, as a prerequisite to such deposit, enter into an escrow agreement. Such escrow agreement shall be substantially in the form "Escrow Agreement for Security Deposits in Lieu of Retention" set forth in California Public Contract Code §22300(f).

- .5 The Contractor shall obtain the written consent of Surety to such agreement.
- .6 Securities, if any, shall be returned to the Contractor only upon satisfactory Final Completion of the Work.
- 9.9.2 **Substitute Security.** To minimize the expense caused by such substitution of securities, the Contractor shall, prior to or at the time the Contractor requests to substitute security, deposit sufficient security to cover the entire amount to be withheld. Should the current market value of such substituted security at any time fall below the amount for which it was substituted, or any other amount which the County withholds pursuant to the Contract Documents, the Contractor shall immediately and at the Contractor's Own Expense deposit additional security qualifying under said §22300 until the current market value of the total security deposited is no less than the amount subject to withholding under the Contract Documents. Securities shall be valued as often as conditions of the securities market warrant, but in no case less frequently than once per month.
- 9.9.3 **Deposit of Retentions.** Alternatively, subject to the conditions set forth in Paragraph 9.9.1, above, upon request of the Contractor, the County shall make payment of retentions directly to Escrow Agent at the expense of the Contractor, provided that the Contractor, the County and Escrow Agent shall, as a prerequisite to such payment, enter into an escrow agreement in the same form as prescribed in <u>Subparagraph 9.9.1.4</u>, above. At the Contractor's Own Expense, the Contractor may direct the investment of the payments into securities and interest bearing accounts and the Contractor shall receive the interest earned on the investments. Escrow Agent shall hold such direct payments by the County under the same terms provided herein for securities deposited by the Contractor. Upon satisfactory Final Completion of the Work, the Contractor shall receive from Escrow Agent all securities, interest and payments received by Escrow Agent from the County, less escrow fees and charges of the Escrow Account, according to the terms of said §22300 and the Contract Documents.

9.10 FINAL PAYMENT

- 9.10.1 Payment by County. Subject to the County's right of withholding as set forth in <u>Section 9.6</u>, above, or elsewhere in the Contract Documents, Final Payment shall be made by County not more than sixty (60) Days after completion of the Work as defined in Clauses (1), (2), (3) or (4) of California Public Contract Code § 7107(c), whichever definition is earliest satisfied.
- 9.10.2 **Application for Final Payment.** Upon issuance by County of the Notice of Final Completion pursuant to <u>Paragraph 9.13.5</u>, below, Contractor shall submit to County its Application for Payment requesting Final Payment.
- 9.10.3 **Review by County.** County will review and approve or disapprove of the Application for Payment requesting Final Payment as provided in <u>Section 9.5</u>, above.
- 9.10.4 **Conditions to Final Payment.** Without limitation to any other conditions to payment set forth elsewhere in the Contract Documents, the following shall be conditions to a proper submission, and to County's approval, of Contractor's Application for Payment requesting Final Payment:
 - .1 submission of Contractor certification as required by Paragraph 9.2.10, above;
 - .2 submission of consent of Surety, if any, to Final Payment;
- submission of a certificate evidencing that the insurance required by the Contract Documents is in force;
- .4 submission of conditional releases and waivers of stop payment notice and bond rights upon final payment in the form required by California Civil Code §8136 executed by Contractor and by all the Subcontractors, of every Tier;
- .5 submission of all Close-Out Documents (including, without limitation, complete, accurate Record Drawings and Specifications certified by Contractor as required by Paragraph 3.10.1, above);

- .6 timely submission of adequate and complete certified payroll records for any time period that Work was performed, which have not been submitted by Contractor in connection with its previous Applications for Payment;
 - .7 proper payment of prevailing wages as defined in California Labor Code §§1720, et seq.;
- .8 submission of certifications by Contractor and each Subcontractor, as required by any applicable collective bargaining agreement or trust agreement or Applicable Laws, certifying that all employee benefit contributions due and owing have been paid in full; and
- .9 submission of any other documents or information required by the Contract Documents as a condition of Final Payment or Final Completion.
- 9.10.5 **Disputed Amounts.** Pursuant to California Public Contract Code § 7107, County may deduct and withhold from Final Payment an amount of up to one hundred fifty percent (150%) of any disputed amounts, including, without limitation, amounts to protect County against any Loss caused or threatened as a result of Contractor's failing to fully satisfy the conditions of Final Completion and Final Payment.
- 9.10.6 **No Waiver by County**. The making of Final Payment by County shall not constitute a waiver by County of any rights or claims, including, without limitation, any right or claim for reimbursement of Allowable Costs or Allowable Markup paid to Contractor that is determined by County, either before or after Final Payment, to have been not due to Contractor.

9.10.7 WAIVER BY CONTRACTOR.

ACCEPTANCE OF FINAL PAYMENT BY CONTRACTOR OR A SUBCONTRACTOR SHALL CONSTITUTE A WAIVER OF ALL RIGHTS BY THAT PAYEE AGAINST COUNTY FOR RECOVERY OF ANY LOSS, EXCEPTING ONLY THOSE CLAIMS THAT HAVE BEEN SUBMITTED BY CONTRACTOR IN THE MANNER REQUIRED BY SECTION 4.3, ABOVE, PRIOR TO, OR AT THE TIME OF CONTRACTOR'S SUBMISSION TO COUNTY OF, ITS APPLICATION FOR PAYMENT REQUISTING FINAL PAYMENT.

9.11 SUBSTANTIAL COMPLETION

- 9.11.1 **Contract Time.** Contractor shall achieve Substantial Completion of the Work, or such portion of the Work as may be designated at any time by County for separate delivery, in accordance with the requirements of the Contract Time and other provisions of the Contract Documents.
- 9.11.2 **Request for Inspection.** Contractor shall notify the County when Contractor believes that the Work, or portion thereof designated by the County in the Contract Documents or otherwise for separate delivery, is Substantially Complete.
- 9.11.3 **Substantial Completion Inspection.** When Contractor gives notice to County that it has achieved Substantial Completion of the Work, or a County designated portion thereof, unless the County determines that the Work or County designated portion thereof is not sufficiently complete to warrant an inspection to determine Substantial Completion, County, Inspector of Record, Architect and such others as may be designated by County will inspect the Work, or such County designated portion thereof.
- 9.11.4 Substantial Completion Punch List. At the conclusion of such inspection, County shall prepare and give to Contractor (or, Owner may request that Contractor prepare and provide to County) a Substantial Completion Punch List of items, if any, to be completed or corrected for Substantial Completion. If Contractor disputes any of the items included, it shall so note its objection on the Substantial Completion Punch List. Contractor shall proceed within forty-eight (48) hours after preparation of the Substantial Completion Punch List to commence correction or completion of the items on the Substantial Completion Punch List, including, without limitation, any disputed items, and all such items of Work shall be completed promptly by Contractor before the Work will be considered as Substantially Complete. Failure by County, Architect, Inspector of Record or Contractor to include an item on the Substantial Completion Punch List does not alter the responsibility of Contractor to perform the Work in accordance with the Contract Documents. Items of Work necessary for Substantial Completion that, for any reason, have been omitted from the Substantial

Completion Punch List shall be added to the Substantial Completion Punch List and Contractor shall, at the request of County, Architect or Inspector of Record made at any time prior to Final Payment commence correction or completion of such items within forty-eight (48) hours and all such items of Work shall be completed by Contractor promptly and before the Work will be considered as Substantially Complete.

- 9.11.5 **Re-Inspection**. Contractor shall notify County when the items of Work shown on the Substantial Completion Punch List are completed. County, Inspector of Record, Architect and such others as County deems necessary or appropriate will then make a further inspection to determine whether such Work is Substantially Complete. If such inspection, or any subsequent re-inspection required pursuant hereto, discloses any item, whether or not included on the Substantial Completion Punch List, which must be completed or corrected before Substantial Completion, Contractor shall, as a condition of Substantial Complete, contractor shall reimburse County, or County may at its option withhold from Contractor's payments, amounts incurred by County to the Inspector of Record, Architect, County Consultants or others whose services, for reasons within the control or responsibility of Contractor or the Subcontractors, are necessary for more than two (2) such re-inspections to determine Substantial Completion.
- 9.11.6 **Notice of Substantial Completion.** When County determines that the Work, or such designated portion thereof, is Substantially Complete, County will prepare a Notice of Substantial Completion on the County's form, which shall state the date of Substantial Completion. If the Notice of Substantial Completion is for the entire Work, then the County will attach to it the Final Completion Punch List prepared in accordance with <u>Paragraph 9.13.2</u>, below. Regardless of the date the Notice of Substantial Completion is issued, Substantial Completion shall be deemed to have occurred on the date stated in the Notice of Substantial Completion.

9.12 PARTIAL OCCUPANCY OR USE

County reserves the right to beneficially occupy all or any portion of the Work at any time before Substantial Completion of the entire Work. Beneficial occupancy means that County has assumed physical occupancy and use of all or such portion of the Work. Commencement of improvements or other work by Separate Contractors in order to ready the Work for use or occupancy by County shall be unconditionally permitted in all cases prior to Substantial Completion and shall not constitute a taking of beneficial occupancy by County. Exercise by County in accordance with the provisions of this Section 9.12 of its right to take beneficial occupancy shall not constitute grounds for a Contract Adjustment. The County's right of beneficial occupancy of all or a portion of the Work prior to Substantial Completion shall be subject to the following conditions:

- 9.12.1 County and such others as County deems necessary will make an inspection of the portion of the Work to be beneficially occupied and prepare a list of items to be completed or corrected in the same manner as required by and subject to the same conditions as set forth in <u>Section 9.11</u>, above.
- 9.12.2 Beneficial occupancy by County shall not be construed as Acceptance of that portion of the Work which is to be occupied.
- 9.12.3 Except as otherwise provided in this <u>Section 9.12</u>, beneficial occupancy by County shall not constitute a waiver of rights of the County against Contractor. Notwithstanding anything stated in this <u>Section 9.12</u> or elsewhere in the Contract Documents to the contrary, beneficial occupancy by County shall not constitute a waiver of rights of County relating to Defective Work in the area beneficially occupied or in any other portion of the Work.
- 9.12.4 Prior to the County's taking beneficial occupancy, Contractor shall submit to County an itemized list of each piece of equipment located in or serving the area to be occupied stating the date operation of such piece of equipment commenced, together with operating instructions, manuals and other information required by the Contract Documents. Contractor shall provide, in the areas beneficially occupied, on a continual basis, utility services, elevator service, and heating and cooling systems in operable condition commencing at the time of beneficial occupancy and until Final Completion of the entire Work. County shall be responsible, from and after taking occupancy, for utility consumption, regular operation and regular maintenance of such systems or equipment.
- 9.12.5 County shall pay all normal operating and maintenance costs resulting from its use of equipment in areas beneficially occupied.

- 9.12.6 County shall pay all utility costs that arise out of its beneficial occupancy.
- 9.12.7 Contractor shall not be responsible for providing security in areas beneficially occupied.
- 9.12.8 County shall use its best efforts to prevent its beneficial occupancy from interfering with the conduct of Contractor's remaining Work.
 - 9.12.9 Contractor shall not be required to repair damage caused solely by County's beneficial occupancy.
- 9.12.10 Contractor shall continue to maintain all insurance required by the Contract Documents in full force and effect.

9.13 FINAL COMPLETION

- 9.13.1 **Contract Time.** Contractor shall expeditiously and diligently perform the Work after Substantial Completion, including, without limitation, all items of Work on the Final Completion Punch List that accompanies the Notice of Substantial Completion, so as to achieve Final Completion within the requirements of the Contract Time for Final Completion.
- 9.13.2 Final Completion Punch List. Contractor shall prepare and submit to County at the time that Contractor requests inspection for Substantial Completion of the entire Work pursuant to Paragraph 9.11.2, above, a draft proposed Final Completion Punch List of items of Work that will be required to be completed or corrected for Final Completion. Items identified in the course of any inspection for Substantial Completion that are required to Finally Complete the Work following Substantial Completion shall be added to the proposed Final Completion Punch List and the revised Final Completion Punch List attached to the Notice of Substantial Completion. If Contractor disputes any of the items included, it shall so note its objection on the Final Completion Punch List. When Contractor considers the Final Completion Punch List to be complete, it shall promptly sign and deliver the Final Completion Punch List to the County. Failure by County, Architect, Inspector of Record or Contractor to include an item on the Final Completion Punch List does not alter the responsibility of Contractor to perform the Work in accordance with the Contract Documents. Items of Work necessary for Final Completion that, for any reason, have been omitted from the Final Completion Punch List shall be added to the Final Completion Punch List upon request by the County made at any time prior to Final Payment and completion of such items shall be made promptly and before the Work will be considered Finally Complete.
- 9.13.3 **Performance of Punch List.** Contractor shall proceed promptly and in accordance with the Contract Time to correct and complete the items on the Final Completion Punch List, including, without limitation, any disputed items, and all such items of Work shall be completed by Contractor before the Work will be considered as Finally Complete.
- 9.13.4 Request for Final Inspection. Contractor shall notify County when Contractor believes that the Work is Finally Complete. County, Inspector of Record, Architect and such others as County deems necessary or appropriate will then make a further inspection to determine whether such Work is Finally Complete. If such inspection, or any subsequent re-inspection required pursuant hereto, discloses any item, whether or not included on the Final Completion Punch List, which must be completed or corrected before Final Completion, Contractor shall, as a condition of Final Completion, complete or correct such item, which shall then be re-inspected to confirm that such Work is Finally Completed. Contractor shall reimburse County, or County may at its option withhold from Contractor's payments, amounts incurred by County to the Inspector of Record, Architect, County Consultants or others whose services, for reasons within the control or responsibility of Contractor or the Subcontractors, are necessary for more than two (2) inspections to determine Final Completion.
- 9.13.5 **Notice of Final Completion**. When County determines that the Work is Finally Complete, County will prepare a Notice of Final Completion on the County's form, which shall state the date of Final Completion. Regardless of the date the Notice of Final Completion is issued, Final Completion shall be deemed to have occurred on the date stated in the Notice of Final Completion.

- 9.13.6 **Acceptance by County**. Acceptance may be exercised by County, in its sole and absolute discretion, either after Final Completion or, without waiving or releasing Contractor from any of its obligations under the Contract Documents, at any time after Substantial Completion and prior to Final Completion.
- 9.13.7 **Notice of Completion.** In addition to issuance of the Notice of Substantial Completion and Notice of Final Completion, County shall have the right, exercised in its sole and absolute discretion, to record a Notice of Completion pursuant to California Civil Code §9204.
- 9.13.8 **No Waiver by County.** No inspections conducted pursuant to this <u>Article 9</u> nor any approvals or certificates issued by County, Architect or Inspector of Record shall be deemed to be a waiver or limitation on County's right to insist on Final Completion and full performance of all other conditions to Final Payment under the Contract Documents prior to issuance of Final Payment to Contractor.

ARTICLE 10 INSPECTIONS, SAFETY AND HAZARDOUS SUBSTANCES

10.1 INSPECTIONS

- 10.1.1 **General.** One or more Inspectors of Record, including special inspectors as required, may be employed by County and assigned to the Work. The fees of Inspectors of Record shall be directly paid for by County. IF INSPECTORS OR RECORD ARE ASSIGNED TO THE WORK, THEN NO WORK SHALL BE CARRIED ON EXCEPT UNDER THE INSPECTION, AND WITH THE KNOWLEDGE, OF THE APPROPRIATE INSPECTOR(S) OF RECORD, and Contractor shall be responsible, at Contractor's Own Expense, to remove and replace any Work performed without such inspection by the appropriate Inspector of Record.
- 10.1.2 **Coordination.** Contractor shall schedule, arrange, and coordinate its activities with the activities of the County, Inspectors of Record, Architect, County Consultants and others designated by County to inspect or observe the Work. When, in order to comply with the intent of the Contract Documents, inspection or observation must be made at the plant or mill of the manufacturer or fabricator of material or equipment, Contractor shall notify the County, as well as any other persons identified by County as assigned by it to inspect or observe the Work, a sufficient length of time in advance to allow for arrangements to be made for such inspection or observation.
- 10.1.3 **Uncovering of Work.** County or an Inspector of Record shall have the right to request that any portion of the Work be uncovered by Contractor for inspection. Except as otherwise provided in <u>Paragraph 10.1.1</u>, above, if such Work is found to be in accordance with the Contract Documents, then all of the additional costs incurred in uncovering, replacing and re-covering the Work shall constitute grounds for Contractor, upon proper notice and request pursuant to <u>Article 7</u>, above, to receive a Contract Adjustment for Compensable Change and if such uncovering, replacing and re-covering of the Work causes a Delay, such Delay shall constitute grounds for Contractor, upon proper and timely notice and request pursuant to <u>Article 8</u>, above, to receive a Contract Adjustment for Compensable Delay. If such Work is not in accordance with the Contract Documents, then such costs of uncovering, replacing and recovering shall be paid for by Contractor at Contractor's Own Expense and any resulting Delay shall be consider an Unexcused Delay.
- 10.1.4 **Off-Hours Inspections.** Contractor shall request approval by County before arranging any inspections either: (1) before 7:00 am or after 3:00 pm on Monday through Friday, or (2) on any Saturday, Sunday, holiday or any other time when Work is not usually in progress. Such request shall be delivered to County at least two (2) working days in advance of the inspection being performed. Approval or disapproval of such request is in the sole and absolute discretion of County. Except where such off-hours inspections are due to a breach by County of an obligation under the Contract Documents, the additional cost (over and above that which would be required for inspections during regular business hours) to County of the inspection shall be paid for by Contractor at Contractor's Own Expense.
- 10.1.5 Access to the Work. Contractor shall make available for use by County, Inspectors of Record, Architect, County Consultants and others assigned to inspect or observe the Work, any equipment (wheelbarrow, shovel, ladder, man-lift, etc.) that is available or in use on Site, and is required to assist in such inspections or observations.

- 10.1.6 **Right to Stop Work.** County shall have the right, but not the obligation, to order Contractor to stop performance of Work. Inspectors of Record shall, only if and to the extent permitted by Applicable Laws or if they are given written authority to do so by County, have the authority, but not the obligation, to stop the Work whenever provisions of Contract Documents are not being complied with, or the conduct of the Work poses a probable risk of harm to persons or property.
- 10.1.7 **No County Duty.** No authority of the County, Inspectors of Record, Architect, County Consultants or others designated by County to inspect the Work that is conferred by the Contract Documents nor any decision made by any of them in good faith either to exercise or not exercise such authority, nor any recommendation by any of them, shall give rise to a duty or responsibility on the part of any of them to Contractor or to the Subcontractors, of any Tier.
- 10.1.8 **Contractor Responsibility.** Inspections or observations by the County, Inspectors of Record, County Consultants or others shall not in any way relieve Contractor from its sole responsibility for full compliance with all of the terms and conditions of the Contract Documents, nor be construed to lessen, to any degree, Contractor's responsibility for providing efficient and capable superintendence as required herein or for incorporating into the Work only those items of the Work that conform to the Contract Documents.
- 10.1.9 **Reimbursement to County.** Without limitation to any other provisions of the Contract Documents, Contractor shall reimburse the County at Contractor's Own Expense, or County shall have the right, at its option, to withhold from payments due to Contractor, costs of inspections, observations or testing and other Losses that are incurred for any of the following reasons: (1) Contractor has failed to execute the Work in accordance with the Contract Documents; (2) materials or equipment have been substituted by Contractor, without prior approval by the County and Architect; (3) Defective Work; or (4) to conduct load testing of certain portions of the structure that have not fully met the requirements of the Contract Documents.

10.2 SAFETY PRECAUTIONS AND PROGRAMS

- 10.2.1 **General Safety Obligation.** Contractor shall, notwithstanding the activities of others (such as, but not limited to, the County, Architect, Inspectors of Record, County Consultants or others designated by County to prepare safety recommendations or inspect or observe the Work), be solely responsible, on a twenty-four (24) hours a Day, seven (7) Days a week basis, for initiating, maintaining and supervising all safety precautions and programs on the Site in connection with the preparation, performance, observation or inspection of the Work, including all necessary precautions to protect and safeguard all persons and property from loss, injury, death or damage resulting, directly or indirectly, from the activities of Contractor or the Subcontractors, including, without limitation, all of the following:
 - .1 persons in and around the Site, as well as their personal property and vehicles;
- .2 the Work, materials and equipment to be incorporated therein under care, custody or control of Contractor or the Subcontractors, of any Tier, whether in storage on or off the Site, including, without limitation, the provision of temperature control, covering and enclosures necessary to prevent Loss due to adverse weather conditions;
- other property at the Site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, curbs, roadways, structures (including, without limitation, protection from settlement or loss of lateral support) and utilities not designated for removal, relocation or replacement in the course of construction; and
 - .4 construction and operations by the County, Architect and Inspectors of Record.
- 10.2.2 Contractor's Safety Program. Prior to starting the Work, Contractor shall prepare and submit to County a Safety Program, which shall comply with the requirements of the Contract Documents and shall include, at a minimum, guidelines, requirements and procedures for the following: safety management policy; emergency response plan; illness and injury prevention procedures; safety meetings; accident investigation; basic accident causes; safety inspection checklist; fire prevention and control; report forms; and employee safety manual and procedures for achieving compliance with safety requirements of insurers. A copy of the Safety Program shall be maintained on Site at all times and provided to the County upon request. Contractor is solely responsible for monitoring activities at the Site for compliance with the Safety Program and for the enforcement thereof.

- 10.2.3 **Safety Orders.** Contractor shall comply with all Applicable Laws, including, without limitation, all safety laws, standards, orders, rules, regulations and building codes, to prevent accidents or injury to persons on, about or adjacent to the Site and to provide a safe and healthful place of employment. Contractor shall, at Contractor's Own Expense, correct any violations of Applicable Laws occurring or threatened by conditions on the Site.
- 10.2.4 **Safety Representative.** Contractor shall designate a responsible member of its organization on the Site, who meets the qualification and competency requirements of Applicable Laws and whose sole duty shall be giving safety instructions, prevention of accidents and overall job site safety (including, without limitation, posting of information and other notices regarding safety that are required under occupational safety and health laws and compliance with reporting and other occupational safety requirements pertaining to the protection of the life, safety and health of the workers). The name of the person so designated shall be reported to the County by Contractor prior to the commencement of any Work on the Site.
- 10.2.5 **Protection.** Contractor shall take reasonable precautions to protect the Work and all building materials, equipment, temporary field offices, storage sheds, and other public and private real and personal property that might be affected, directly or indirectly, by Contractor's activities associated with performance of the Work, and shall make good, at Contractor's Own Expense, all Loss due to failure to provide such reasonable precautions.
- 10.2.6 **Safeguards, Disabled Access.** Contractor shall erect and maintain, as required by existing conditions and performance of the Work, all necessary safeguards for safety and protection, including, without limitation, safety devices, belts, nets, barriers, safety rails, canopies, danger signs, fire protection, no smoking prohibitions, warnings against hazards, safety regulations postings and notifications to owners and users of adjacent sites and utilities, and shall, as required by Applicable Laws, make provision for access for, and provide assistive devices to, persons with disabilities, including, without limitation, providing safe pathways of travel around areas where construction is being performed so that occupants, visitors, the public and others on the Site with disabilities are afforded reasonably direct and barrier-free access to areas of the Site and Existing Improvements.
- 10.2.7 Fire, Explosives, Hazardous Substances. Contractor shall take all necessary precautions to guard against and eliminate possible fire hazards. Explosives may be used or stored only when authorized in writing by the County. Explosives shall be handled, used and stored in accordance with Applicable Laws. When use or storage of explosives or other Hazardous Substances or methods of construction involving use of dangerous materials or equipment are necessary for execution of the Work, Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- 10.2.8 **First Aid.** Contractor shall maintain emergency first aid treatment for all workers and other persons on the Project which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A. §§651 et seq.) and all other Applicable Laws.
- 10.2.9 **Unsafe Conditions.** Contractor shall immediately correct any condition that exists on the Site, or that County, in its reasonable judgment, determines to exist on the Site, that is unsafe or potentially unsafe to persons or property.
- 10.2.10 **Responsibility for Loss**. Contractor shall promptly remedy Loss to any property or person caused in whole or in part by the failure of Contractor, the Subcontractors, of any Tier, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable to fully comply with the requirements of this <u>Article 10</u>, except Loss attributable solely to the negligent acts or omissions of the County, Inspectors of Record, Architect, County Consultants or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable, in whole or in part, to the negligence, willful misconduct or violation of Applicable Laws by Contractor or a Subcontractor, of any Tier, or the failure by Contractor to comply with the Contract Documents. The foregoing obligations of Contractor are in addition to and not a limitation upon Contractor's indemnity obligations under <u>Section 3.18</u>, above.
- 10.2.11 **Loading, Storage**. Contractor shall be responsible for coordinating the storage and staging of materials and equipment on-Site and off-Site and shall not load or store or permit any part of the Work or the Site to be loaded or stored so as to endanger the safety of persons or risk loss or damage to property.
 - 10.2.12 Emergency.

- .1 Contractor Responsibility. In an emergency involving safety or protection of persons or property, Contractor shall act immediately, either at County's direction or as otherwise necessary under the circumstances, to prevent any Loss. In such cases, Contractor shall immediately notify County, which notice may be oral, followed within twenty-four (24) hours after occurrence of the incident by written confirmation of the occurrence of such emergency and Contractor's action in response thereto.
- .2 County Action. If, in the sole discretion of County, the condition is immediately threatening life or property, County may, with or without notice to Contractor, take whatever immediate action is necessary to correct the life-threatening condition, and the costs thereof, including, without limitation, any fees or costs of Architect, Inspectors of Record, County Consultants or others to whom County may be liable, shall be borne by Contractor at the Contractor's Own Expense.
- 10.2.13 **No County Responsibility**. Nothing set forth in this <u>Section 10.2</u> or elsewhere in the Contract Documents shall be interpreted as an assumption of any responsibility on the part of County or other persons or entities other than the Contractor and the Subcontractors, to report such conditions to Contractor nor as relieving Contractor of any of its responsibilities under the Contract Documents.
- 10.2.14 **Separate Contractors.** With respect to work of a Separate Contractor being performed within an area of the Site that is under the responsibility or control of the Contractor, Contractor shall: (1) provide copies of the Safety Program to the Separate Contractors and advise the Separate Contractors of the areas of the Site to which the Safety Program applies and where compliance with the Safety Program is expected; (2) protect the Separate Contractors' work and workers from Loss due to the actions or inactions of Contractor and the Subcontractors; and (3) notify the Separate Contractor and County of any observed violation by the Separate Contractor of the Safety Program or of any violations by the Separate Contractor of Applicable Laws governing safety on the Site. Nothing herein shall be interpreted as relieving the Separate Contractors from their obligations to comply with the Contractor's Safety Program, as excusing any failure by a Separate Contractor from performing its obligations under its contracts with County or Applicable Laws or as obligating Contractor to directly supervise or enforce the obligations of the Separate Contractors to comply with the requirements of the Safety Program or Applicable Laws relating to safety.

10.3 HAZARDOUS SUBSTANCES, MOLD

10.3.1 Hazardous Substances.

.1 On Site Conditions.

Existing Conditions. In the event Contractor or its Subcontractors encounter materials existing or otherwise present at the Site that are reasonably believed to be Hazardous Substances that have not been rendered harmless, Contractor and Subcontractors shall, except in cases where the removal, encapsulation or abatement of such Hazardous Substances is indicated by the Contract Documents to be part of the Work to be performed by Contractor, immediately stop Work in the area affected and report the condition to County in writing. Contractor and Subcontractors shall continue Work in unaffected areas reasonably believed safe. County shall then promptly arrange for the sampling, testing and profiling of such suspected Hazardous Substances to confirm the nature, quantity or concentration thereof. In the event that such suspected Hazardous Substances are determined not to be Hazardous Substances or to be Hazardous Substances but not of sufficient nature, quantity or concentration to trigger handling and manifesting of the same as a hazardous waste upon disturbance and removal, then Contractor and its Subcontractors shall, without any Contract Adjustment, be obligated to resume the portion of the Work that was suspended and shall proceed to handle and dispose of such materials pursuant to the Contract Documents, taking all reasonable precautions that are applicable under the circumstances. If, alternatively, the suspected Hazardous Substances are determined to be Hazardous Substances of sufficient nature, quantity or concentration to trigger handling and manifesting of the same as hazardous waste upon disturbance and removal, the parties shall determine what, if any, action to take with respect to such Hazardous Substances, whether to resume Work with respect to such Hazardous Substances, taking all reasonable precautions that are applicable under the circumstances, and what, if any, Contract Adjustment is appropriate and mutually agreed in order to account for any increased cost of, or Delay in connection with, handling or disposal of Hazardous Substances not already contemplated and provided for in the Contract Documents.

(2)Contractor Release. Contractor and its Subcontractors shall not cause the discharge, release, emission, spill, storage, treatment or disposal of any Hazardous Substance on or adjacent to the Site, except as required and permitted by the Contract Documents and Applicable Laws in connection with Contractor's performance of an obligation to remove Hazardous Substances as part of the Work agreed to be performed under the Contract Documents or as otherwise required under the provisions of this Subparagraph 10.3.1.1. Should Contractor or its Subcontractors discharge, release, emit, spill, treat, store or dispose of any Hazardous Substance on the Site in violation of the foregoing obligation or otherwise in violation of Applicable Laws, Contractor shall at Contractor's Own Expense and without limitation to County's other rights or remedies for default immediately (a) inform County in writing of such event, (b) advise County with respect to any release reporting or notification requirement that may apply as a result of such event, (c) assist County in complying with any such reporting or notification requirement as determined by County, and (d) perform any investigation, remediation, removal or other response that is necessary or desirable in order to abate or clean up the condition resulting from such event to the full satisfaction of County and any applicable Governmental Authority. Such Hazardous Substances shall be removed and properly disposed of as soon as they can be accepted at an appropriate disposal facility, and in no event later than sixty (60) Days after such waste is generated, unless a longer time is approved by County.

.2 Remediation by Contractor.

- (1) Application. The provisions of this <u>Paragraph 10.3.1.2</u> shall apply only if the Work to be performed by Contractor includes within its scope the removal, abatement, moving, handling, containment, disposal or transport of Hazardous Substances
- Advance Submissions to County. Before Contractor or any of its Subcontractors moves, removes, or transports Hazardous Substances to a facility for the receipt, treatment, storage or disposal of the Hazardous Substances ("Hazardous Substances Facility"), Contractor shall cause the person or entity who will be moving, removing or transporting the Hazardous Substances to provide to County the following: (a) verification of the Hazardous Substance Facility's or other transporter's licensed status to haul such materials; (b) verification of the Hazardous Substance Facility's licensed status, including a current permit to receive the specific materials to be transported there; (c) certification that the Hazardous Substance Facility is not under enforcement action by the U.S. Environmental Protection Agency ("EPA") or applicable State Governmental Authority or listed on any applicable EPA or applicable State Government Authority list of violating facilities; (d) verification of the Hazardous Substances Facility's EPA Identification Number (if applicable); and (e) original executed letter(s) of indemnity from the Hazardous Substances Facility bearing the Hazardous Substance Facility's letterhead. Contractor further warrants that the selected Hazardous Substance Facility is appropriately licensed and permitted to store, treat and dispose of Hazardous Substances waste in connection with the Work.
- (3) Contractor Responsibility. Contractor warrants that it is aware of and understands the hazards which are presented to persons, property and the environment in performance of the transportation, storage and disposal of the Hazardous Substances described in the Contract Documents. Contractor and its Subcontractors and agents shall be responsible for the following: (a) processing the application for, and receiving on behalf of the County or appropriate entity, an EPA or state-equivalent generator identification number (if required); (b) preparing manifests and other shipping documents; (c) making all necessary arrangements (after consultation with County) for any off-Site transportation, treatment, storage and disposal of such Hazardous Substances in accordance with Applicable Laws; (d) ensuring the proper and lawful transportation and disposal of such Hazardous Substances, even if such services are performed by other entities under contract with Contractor or its Subcontractors; and (e) taking any necessary actions to ensure such proper transport and disposal in the event of any contingency, such as the rejection of the Hazardous Substances as nonconforming by any waste disposal facility. Contractor shall promptly provide to County copies of all manifests and other shipping documents confirming the receipt and proper disposal of all Hazardous Substances at the Hazardous Substances Facility, even if such services are performed by other entities under contract with Contractor or its Subcontractors.
- (4) Reporting Requirements. Contractor shall comply with any Hazardous Substances release reporting requirements to Governmental Authorities directly applicable to Contractor. Notice of such reporting must be provided in advance to County or concurrently in the event of an emergency.
- (5) Samples. Contractor and its Subcontractors shall retain all media samples for the longer of (a) the longest holding period specified in any federal, state or local laboratory analytical procedures or

guidance for the analyses performed; or (b) three months for soil samples and thirty (30) Days for water samples. Further storage or transfer of samples will be made at County's expense upon County's written request of Contractor. Contractor shall require by contract that each and every Subcontractor and agent of Contractor or a Subcontractor who performs testing of samples in connection with the Work properly disposes of such samples in accordance with Applicable Laws after completion of testing and notice to County. Regarding any such samples which may remain on-Site, provided County has approved of such on-Site storage in advance, County agrees to pay all costs associated with the storage, transport, and disposal of such samples.

- **(6) Verification.** Upon Final Completion of the Work, Contractor shall confirm to County in writing that: (a) all Hazardous Substances specified for removal in the Contract Documents have been removed; and (b) all Hazardous Substances wastes removed from the Site as part of the Work have been disposed of in accordance with this <u>Subparagraph 10.3.1.2</u> and Applicable Laws in a Hazardous Substances Facility.
- 10.3.2 **Mold.** Contractor is responsible to immediately notify County in writing if any conditions in the construction materials incorporated or to be incorporated into the Work or present in Existing Improvements are encountered at the Site that Contractor or any Subcontractor knows or, in the exercise of due care of a Contractor and not that of a consultant with special or technical expertise in the subject of Mold, should know indicate the presence of Mold or if untreated are likely to result in the growth of Mold. Contractor shall thereafter take such precautions as are reasonably required to prevent the exposure of persons to such conditions until they have been evaluated. Except as otherwise authorized by the Contract Documents or as are usual and customary according to prevailing standards of the construction industry in the vicinity of the Project, Contractor shall not allow water or moisture to come into contact with materials in Existing Improvements or with materials located at the Site that are incorporated or to be incorporated into the Work and if such contact occurs, the areas affected shall be inspected by Contractor, using appropriate consultants experienced in testing and evaluating Mold, for the presence of Mold and evaluated for the potential of future growth of Mold. All portions thereof that are found to indicate the presence of Mold, or that are found to be in a condition that has the potential for becoming a source of Mold, shall be removed and replaced. Costs incurred by Contractor due to its failure to perform its obligation under this <u>Paragraph 10.3.2</u> shall be borne by Contractor at Contractor's Own Expense.
- 10.3.3 **Release of County**. Contractor assumes the risk that its employees or the employees of its Subcontractors, and other persons that they cause or permit to be present on the Site, may be exposed to known or unknown Hazardous Substances or Mold. Under no circumstances shall County be liable for, and Contractor hereby fully and unconditionally releases County and the other Indemnitees from, and agrees to defend and indemnify County and the other Indemnitees on the terms set forth in <u>Section 3.18</u>, above, against, any and all known and unknown Losses resulting from or relating to the exposure of any employee of Contractor or its Subcontractors, or other person that they cause or permit to be present on the Site, to: (1) Hazardous Substances or Mold encountered in connection with or as a result of the performance of the Work, or (2) Hazardous Substances or Mold not necessarily encountered in connection with the performance of the Work, but to which any of them may nevertheless be exposed as a result of their being present on the Site.
- 10.3.4 **Communications with Governmental Authorities.** Contractor shall provide to County copies of all written communications with Governmental Authorities or others relating to Hazardous Substances or Mold (other than privileged communications); provided, however, that non-disclosure of privileged communications shall not limit Contractor's obligation to otherwise comply with the terms of the Contract Documents, including, without limitation, this <u>Section 10.3</u>.
- 10.3.5 **Subcontractors.** Contractor shall include provisions in all contracts it enters into with Subcontractors for the Work requiring them to assume toward Countractor and County the same obligations that Contractor assumes toward County under this <u>Section 10.3</u>. Contractor shall require the Subcontractors to ensure that such provisions are included in all contracts they enter into with all lower-Tier Subcontractors.

ARTICLE 11 INSURANCE

11.1 INSURANCE

- 11.1.1 Contractor's Insurance Requirements. Without limiting or diminishing any of the Contractor's obligations to defend, indemnify or hold the County harmless as set forth elsewhere in the Contract Documents, Contractor shall procure and maintain or cause to be maintained throughout the performance of the Work and for the duration of any guarantee or warranty provided under the Contract Documents, at Contractor's Own Expense, the following insurance coverages:
- .1 Workers' Compensation. If the Contractor has "employees", as defined by the State of California, the Contractor shall provide a policy of statutory Workers' Compensation Insurance (Coverage A) as prescribed by the laws of the State of California. Such policy shall include Employers' Liability (Coverage B) including Occupational Disease with limits not less than \$1,000,000 per person per accident. Such policy shall be endorsed to waive subrogation in favor of the County and, if applicable, to provide a Borrowed Servant/Alternate Employer Endorsement. Pursuant to §3700 of the California Labor Code, Contractor shall file with the County before commencing the Work the following signed certification:

"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 shall comply with such provisions before commencing the performance of the Work of this Construction Contract."

- Liability insurance coverage, including but not limited to, premises liability, contractual liability, products and completed operations liability, personal and advertising injury, and cross liability coverage, covering claims which may arise from or out of Contractor's performance of its obligations hereunder. Such policy shall name the County, its agencies, districts, special districts and departments, and their respective directors, officers, elected or appointed officials, agents, employees and representatives, including, without limitation, the members of the Board of Supervisors, and all other Indemnitees, as "additional insureds" and contain a waiver of subrogation in favor of the County and all other such additional insureds. Such policy's limit of liability shall not be less than \$1,000,000 per occurrence combined single limit. If such policy contains a general aggregate limit, it shall apply separately to the Construction Contract or be no less than two (2) times the occurrence limit.
- Vehicle Liability. If vehicles or mobile equipment are used in the performance of the Work or other obligations under the Contract Documents, then Contractor shall provide a policy of liability insurance converage for all owned, non-owned or hired vehicles so used in an amount not less than \$1,000,000 per occurrence combined single limit. If such policy contains a general aggregate limit, it shall apply separately to the Construction Contract or be no less than two (2) times the occurrence limit. Such policy shall name the County, its agencies, districts, special districts and departments, and their respective directors, officers, elected or appointed officials, agents, employees and representatives, including, without limitation, the members of the Board of Supervisors, and all other Indemnitees, as "additional insureds" and contain a waiver of subrogation in favor of the County and all other such additional insureds.
- .4 Property (Physical Damage). Contractor shall provide a policy of all-risk property insurance coverage for the full replacement value of all Contractor's equipment, improvements/alterations, temporary structures, and systems, including without limitation, items owned by others in the Contractor's care, custody or control, used on the Site or other County-owned property, or used in any way connected with the performance of the Work.
- .5 Builder's All Risk (Course of Construction) Insurance. The Bid Form utilized by Contractor to prepare its Bid states whether the Contractor shall include Builder's All Risk (Course of Construction) Insurance for the Project. If the Bid Form states that such insurance shall be included by the Bidder in its Bid, then Contractor shall provide a policy of Builder's All Risk (Course of Construction) insurance coverage including (if the Work is located in an earthquake or flood zone or if required on financed or bond financing arrangements) coverage for earthquake and flood, covering the County, Contractor and every Subcontractor, of every Tier, for the entire Project, including property to be used in the construction of the Work while such property is at off-Site storage locations or while in transit or temporary

off-Site storage. Such policy shall include, but not be limited to, coverage for fire, collapse, faulty workmanship, debris removal, expediting expense, fire department service charges, valuable papers and records, trees, grass, shrubbery and plants. If scaffolding, falsework and temporary buildings are insured separately by the Contractor or others, evidence of such separate coverage shall be provided to County prior to the start of the Work. Such policy shall be written on a completed value form. Such policy shall also provide coverage for temporary structures (on-Site offices, etc.), fixtures, machinery and equipment being installed as part of the Work. Contractor shall be responsible for any and all deductibles under such policy. Upon request by County, Contractor shall declare all terms, conditions, coverages and limits of such policy. NOTWITHSTANDING THE FOREGOING, COUNTY RETAINS THE RIGHT EXERCISED AT ANY TIME PRIOR TO AWARD TO ELECT TO USE ITS OWN BUILDER'S ALL RISK (COURSE OF CONSTRUCTION) INSURANCE and in the event County so elects to deduct the price for such insurance that is stated in Contractor's Bid, or if not so stated the amount included by Contractor for such insurance in the preparation of the Contractor's Bid, from the Contract Price by means of a Contract Adjustment pursuant to Change Order or Unilateral Change Order. If the County so provides the All Risk (Course of Construction) insurance for the Project, then Contractor shall assume the cost of any and all applicable policy deductibles (currently, \$50,000 per occurrence) and shall insure its own machinery, equipment, tools, etc. from any loss of any nature whatsoever.

- 11.1.2 **Other Mandatory Insurance Requirements.** The Contractor shall comply with the following requirements, which shall be deemed applicable to all carriers and insurance policies provided pursuant to <u>Paragraph 11.1.1</u>, above:
- Insurer Rating. Any and all insurance carrier(s) providing insurance coverage under any and all policy(ies) of insurance provided by Contractor pursuant to Paragraph 11.1.1, above, shall be admitted to the State of California and have an A M BEST rating of not less than A: VIII (A:8) (unless such requirements are waived in writing by the County Risk Manager, and if the County's Risk Manager waives such requirement for a particular insurer such waiver is only valid for that specific insurer and only for one policy term);
- Self Insured Retentions. Contractor shall advise County in writing the dollar amount of any "self insured retention" maintained by the Contractor that exceeds \$500,000 per occurrence. Each such self insured retention must have the prior written consent of the County Risk Manager before the commencement of any Work or operations or activities relating to the Work. If Contractor is notified that a self insured retention is unacceptable to the County, then at the election of the County, exercised in the County's sole and absolute discretion, by means of the written approval of the County's Risk Manager, the insurance carriers affected shall either: (1) reduce or eliminate such self-insured retention as respects the Construction Contract; or (2) procure a bond, satisfactory to County and approved by County in writing, which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses.
- Evidence of Insurance. Contractor shall cause Contractor's insurance carrier(s) to furnish to the County either: (1) properly executed original certificate(s) of insurance and certified original copy(ies) of endorsement(s) effecting the coverage(s) required by this Section 11.1, or (2) if requested to do so orally or in writing by the County Risk Manager, provide original, certified copy(ies) of policy(ies) including all endorsement(s) and all attachment(s) thereto, showing such insurance is in full force and effect. Such certificate(s) and all policies of insurance provided by Contractor pursuant to this Section 11.1 shall contain the covenant of the insurance carrier(s) that thirty (30) Days' written notice shall be given to the County prior to any material modification, cancellation, expiration or reduction in coverage of such insurance. Each certificate of insurance and endorsement shall be signed by an individual expressly authorized by the insurance carrier to do so on the carrier's behalf. Contractor shall, if requested, provide written proof of such authorization. Contractor shall not commence any Work or any activities or operations related to the performance of the Work unless and until Contractor has complied with all of the requirements of this Section 11.1.
- .4 Modification, Cancellation, Changes in Limits. A material modification, cancellation, expiration, or reduction in coverage, shall constitute an Event of Contractor Default for which County shall have right, without limitation to its other rights or remedies provided for in the Contract Documents or under Applicable Laws, to terminate this Construction Contract. Such Event of Contractor Default may only be deemed cured if the County receives, prior to the effective date of such material modification, cancellation, expiration or reduction in coverage, properly executed original certificate(s) of insurance and original, certified copy(ies) of policy(ies) and endorsement(s), including all attachment(s) thereto, evidencing that the coverage(s) required by this Section 11.1 is(are) and will

continue, without any gap in coverage, in full force and effect in accordance with all of the requirements of this $\underline{\text{Section}}$ $\underline{11.1}$

- .5 **Primary Coverage.** It is understood and agreed to by County and Contractor that the Contractor's insurance coverage(s) provided under this <u>Section 11.1</u> shall be construed as primary insurance, and the County's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.
- Additional Coverages. County reserves the right to modify, adjust, add to and/or increase the types, amounts and terms of any insurance required under this Section 11.1 if the County Risk Manager determines, in the exercise of his/her sole and absolute discretion, that the type, amount or terms of the insurance required by this Section 11.1 has(have) become inadequate or that additional risk or exposure exists (such as, without limitation, the use of aircraft, watercraft, cranes, etc.) due to: (1) a Change in the Work; (2) the period of time of Contractor's actual performance of the Work continuing for longer than five (5) years from the Date of Commencement, whether due to Contract Adjustment or for any for any other reason; or (3) other circumstances not reasonably foreseeable to County.
- 3.7 Subcontractors. Contractor shall include provisions in its subcontracts requiring each Subcontractor to assume an obligation toward Contractor to furnish insurance that complies with all of the requirements of this Section 11.1 as apply to Contractor's insurance provided to Owner and requiring such Subcontractors to furthermore include provisions in their contracts with lower-Tier Subcontractors likewise requiring such lower Tier Subcontractors assume the same obligations for providing such insurance and for passing through all such obligations to all lower Tier Subcontractors.
- .8 Self-Insurance. If approved by County, in the exercise of its sole and absolute discretion, the insurance requirements contained in this <u>Section 11.1</u> may be met with a program(s) of self-insurance provided that such program has been submitted to County and approved in writing by County prior to commencement of the Work or of any activity or operation related to the performance of the Work.
- .9 Notice of Claim. Contractor agrees to notify County of any claim by a third party or any incident or event that may give rise to a claim arising from the performance of the Work.

ARTICLE 12 BONDS

12.1 PERFORMANCE BOND AND PAYMENT BOND

- 12.1.1 **Performance and Payment Bonds.** Within ten (10) Days after the issuance of the Notice of Intent to Award and prior to commencing Work, Contractor shall deliver to County a good and sufficient labor and materials payment bond ("Payment Bond") and a good and sufficient performance bond ("Performance Bond"), each in the amount of one hundred percent (100%) of the Contract Price.
- 12.1.2 **Changes.** The penal amounts of the Performance Bond and Payment Bond shall be increased on account of Change Orders and Unilateral Change Orders increasing the Contract Price. If requested by County, Contractor shall deliver to County evidence of such increases.
- 12.1.3 **Replacement**. Should any bond required hereunder or any Surety on such bond become or be determined by County to be insufficient, it shall be replaced within ten (10) Days by a bond that fully complies with the requirements of this Section 12.1.
- 12.1.4 **Duration.** The Payment Bond shall remain in effect until Acceptance of the Work and all Claims of Contractor and the Subcontractors, of any Tier, have been fully and finally resolved. The Performance Bond shall remain in effect and assure faithful performance of all Contractor's obligations under the Contract Documents, including, without limitation, all warranty obligations.
- 12.1.5 **Condition of Payment.** No payments to Contractor for Work performed shall be made or due until there has been full compliance with the requirements of this <u>Section 12.1</u>.

- 12.1.6 **Surety Rating.** Any Surety company issuing the Payment Bond or Performance Bond shall be, at all times while such bond is in effect, an Admitted Surety. The Surety company issuing the Performance Bond shall additionally have at all such times a current A.M. Best rating of A VIII (A:8) or better.
- 12.1.7 **Premiums.** The premiums for the Performance Bond and Payment Bond are included in the Contract Price and shall be paid by Contractor at Contractor's Own Expense.
- 12.1.8 **Obligee.** The Performance Bond shall name County as obligee. All performance bonds, if any, purchased by Subcontractors shall name County as a dual obligee with Contractor.
- 12.1.9 **No Exoneration.** The Performance Bond and Payment Bond shall contain provisions to the effect that Changes, Change Orders, Unilateral Change Orders, Construction Change Directives, Modifications, Changes and Contract Adjustments shall in no way release or exonerate Contractor or its Surety from their obligations and that notice thereof is waived by the Surety.
- 12.1.10 **Communications.** County shall have the right to communicate with Surety with respect to matters that are related to performance of the Work. Contractor shall be provided with a copy of all such communications that are in writing. Such communications shall not create or be interpreted as creating any contractual obligation of County to Surety.
- 12.1.11 **No Limitation**. The requirements of this <u>Section 12.1</u> pertaining to the Performance Bond and the Payment Bond shall be without limitation to any other obligations Contractor may have under Applicable Laws to provide bonding for the benefit of, and to assure payment to the Subcontractors performing the Work for, the Project.
- 12.1.12 **Subcontractor Bonds.** Each performance bond, if any, furnished by a first-Tier Subcontractor shall include a provision whereby the Surety consents to the contingent assignment of Contractor's rights under such bond to County as provided in <u>Section 5.3</u>, above.
- 12.1.13 **Claims.** By incorporation of the Construction Contract into the Performance Bond issued by Surety, Surety shall be deemed, subject to the other terms of the Performance Bond, to be bound by all of the obligations assumed by Contractor under the Contract Documents, including, without limitation, bound by any determination, resolution, award or judgment entered or made upon any Claim by or against Contractor.

ARTICLE 13 UNCOVERING AND CORRECTION OF THE WORK

13.1 UNCOVERING OF THE WORK

If a portion of the Work is covered contrary to the request or direction of County, Inspector of Record or Architect, or contrary to the requirements of the Contract Documents, it must, if required by the any of them, be uncovered for observation and be re-covered by Contractor at Contractor's Own Expense.

13.2 CORRECTION OF THE WORK

Contractor shall promptly correct Defective Work, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. All such Defective Work shall be either: (1) replaced and all the Work disturbed thereby made good by Contractor at Contractor's Own Expense; or (2) County may exercise its option pursuant to Section 13.4, below, to accept such Work and adjust the Contract Price.

13.3 GUARANTEE TO REPAIR PERIOD

13.3.1 **Guarantee To Repair Period.** Besides guarantees and warranties required elsewhere in the Contract Documents, Contractor guarantees the Work as provided hereinbelow. The period of this guarantee, termed the "Guarantee To Repair Period," is for one (1) year commencing as follows:

- .1 for any portion of the Work that, upon Substantial Completion of the overall Work, is fully and finally complete and usable in all respects independent of other portions of the Work that are not fully and finally complete, on the date of Substantial Completion of such portion of the Work;
- .2 for space beneficially occupied or for separate systems fully utilized prior to Substantial Completion, from the first date of such beneficial occupancy or full utilization, as established by an appropriate written notice by County of intent to take beneficial occupancy; or
- for all Work other than that described in <u>Subparagraph 13.3.1.1</u>, above or <u>Subparagraph 13.3.1.2</u>, above, from the date of Final Completion of the Work.
- 13.3.2 Repair by Contractor. Subject to the provisions of Paragraph 13.3.3, below, Contractor shall do the following: (1) correct, repair, replace, remove and restore, to the County's satisfaction, any Defective Work that becomes apparent during the progress of the Work or during the Guarantee To Repair Period; (2) correct, repair, replace, remove and restore, to the County's satisfaction, any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of Defective Work or the correction of Defective Work; and (3) remove from the Site all the Work identified by the County as Defective Work, whether incorporated or not and whether discovered before or after Substantial or Final Completion. Ordinary wear and tear, abuse, or neglect by County or by County employees, its staff, visitors, public or others (except for those under the control or responsibility of Contractor or its Subcontractors) who are authorized or admitted by County to enter, use or occupy the Work, or who enter, use or occupy the Work after Final Completion, are excepted from the foregoing guarantee. All Losses resulting from Defective Work, including, without limitation, all costs of such correction, repair, replacement, removal and restoration, additional testing, inspection and additional service fees and costs of the Inspector of Record, Architect, County Consultants or others whose services may be made necessary thereby as well as any Loss to any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of Defective Work or the correction, repair, replacement, removal or restoration of Defective Work, shall be paid for by Contractor at Contractor's Own Expense. Contractor shall correct, repair, replace, remove and restore Defective Work at such times as are acceptable to the County and in such a manner as to avoid, to the greatest extent practicable, disruption to the activities of the County, its staff, visitors, the public or others. Contractor shall notify the County in writing upon the completion of such correction, repair, replacement, removal and restoration.
- 13.3.3 Notice by County. Except as otherwise provided in this Paragraph 13.3.3 where immediate corrections are needed due to dangerous conditions or risk of imminent Loss or interruption of County operations, the County will give notice to Contractor of Defective Work observed prior to Final Completion in accordance with the provision of Section 15.1, below, governing the occurrence of an Event of Contractor Default and the Contractor shall proceed to cure such Event of Contractor Default in accordance with the requirements of Section 15.1, below, and Paragraph 13.3.2, above. With respect to Defective Work observed after Final Completion, the County will give notice to Contractor with reasonable promptness and Contractor shall commence the correction, repair, replacement, removal and restoration as required by Paragraph 13.3.2, above, no later than ten (10) Days after mailing of such notice to Contractor and Contractor shall thereupon diligently and continuously prosecute such correction, replacement, repair, or restoration to completion. Notwithstanding the foregoing, if in the County's opinion the presence of Defective Work, whether observed prior to Final Completion or after Final Completion and during the Guarantee To Repair Period, poses a risk or threat: (1) to life, safety or the protection of property; (2) of imminent Loss to the County or to any other person or entity; or (3) of causing an interruption in the operations of the County, then County will have the right, in the exercise of its sole and absolute discretion, to proceed with correction or replacement of the Defective Work without prior notice to Contractor, but in such cases will attempt to notify Contractor as soon as possible of the conditions encountered and the action taken by County. Such action by County without prior notice to Contractor shall not relieve Contractor of its responsibility for the costs of such County action or for any Loss occasioned by the Defective Work or necessitated by the County's action, whether such Loss occurs before or after such County action is implemented or completed.
- 13.3.4 Correction by County. If Contractor fails to perform any of its obligations under Paragraph 13.3.2, above, to correct, repair, replace, remove or restore then County, or Separate Contractors under the County's direction, may, notwithstanding any other provisions of this Article 13, proceed to do so and all costs associated therewith (including, without limitation, the cost to store any materials removed) shall be the responsibility of and paid by Contractor at Contractor's Own Expense. Such action by County will not relieve Contractor of the guarantees provided in this Article 13 or elsewhere in the Contract Documents. In addition to Contractor's other obligations under Paragraph 13.3.2, above, Contractor shall correct, repair, replace, remove and restore, to the County's satisfaction and at

Contractor's Own Expense any other parts of the Work and any other real or personal property that are damaged or destroyed as a result of such actions by County or the Separate Contractors.

- 13.3.5 **Sale.** If Contractor does not pay the costs of, or any of the Losses associated with, the correction, repair, replacement, removal or restoration required by the provisions of <u>Paragraph 13.3.2</u> through <u>Paragraph 13.3.4</u>, above, then within five (5) Days after notice by the County, County may sell any materials or other items of Work removed at auction or at private sale or otherwise dispose of such materials or items and shall account for the net proceeds thereof, after deducting all such costs and Losses, and all costs of sale. If such net proceeds of sale do not cover the Losses for which Contractor is liable to the County, the County may at its option reduce the Contract Price or any payments due to Contractor by such deficiency or recover such deficiency from Contractor.
- 13.3.6 **No Limitation.** Contractor's obligations under this <u>Article 13</u> are in addition to, and not in limitation of, its warranty obligations under <u>Section 3.5</u>, above, and any other obligation, guaranty or warranty of Contractor or any other third party under the Contract Documents. Nothing contained in this <u>Article 13</u> shall be construed to shorten any periods of limitation with respect to other obligations of Contractor under the Contract Documents that are for longer specified periods. Establishment of the Guarantee To Repair Period in no way limits either Contractor's liability for Defective Work or the time within which proceedings may be commenced to enforce Contractor's obligations under the Contract Documents.

13.4 ACCEPTANCE OF NONCONFORMING WORK

Notwithstanding any other provisions of the Contract Documents to the contrary, the County shall have the option, exercised in its sole and absolute discretion after notice to Contractor, in lieu of requiring that Defective Work be remedied or corrected, to reduce the Contract Price to reflect the reduced value of the performance received by County. Such option shall be exercised solely by written notice to Contractor and shall not be implied from any act or omission by County. If there are no remaining payments of the Contract Price to be made to Contractor, or if the remaining payments and retention are insufficient to cover the amount of the reduction of the Contract Price, Contractor shall promptly pay to County the amount of any such deficiency.

ARTICLE 14 MISCELLANEOUS PROVISIONS

14.1 GOVERNING LAW

The interpretation and enforcement of the Construction Contract and other Contract Documents and of the performance by the parties thereunder shall, notwithstanding application of the principles of conflicts of laws, be governed by the laws of the State of California. The Superior Court for the County of Riverside shall have exclusive jurisdiction and venue over any legal proceedings arising out of or involving the interpretation or enforcement of, or other matters relating to, the Construction Contract, the other Contract Documents or the performance of the parties thereunder.

14.2 TIME OF ESSENCE

All time limits stated in the Contract Documents relative to Contractor's performance of its obligations under the Contract Documents are of the essence.

14.3 SUCCESSORS AND ASSIGNS

The Construction Contract and other Contract Documents shall be binding on successors, assigns and legal representatives of County and Contractor, respectively. Contractor shall not assign, sublet or transfer an interest in or claim under this Construction Contract without advance written approval of County, which approval may be granted or withheld by County in its sole and absolute discretion, and any assignment, subletting or transfer without written approval by County shall be deemed void from its inception. Any assignment, subletting or transfer, whether or not approved by County, will not release Contractor from any of its obligations under the Contract Documents to County. County shall have the right to assign, sublet or transfer its interest in or any claim under the Construction Contract upon written notice to Contractor.

14.4 WRITTEN NOTICE

Any notice from one party to the other or otherwise under the Contract Documents shall be in writing and shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. Any such notice shall be deemed to have been duly served if served in the following manner, and in accordance with Civil Code §8100 et seq.:

- 14.4.1 **Notice to County.** If notice is given to County: (1) by personal delivery thereof to County; or (2) by depositing same in United States mail, enclosed in a sealed envelope addressed to County at Facilities Management, 3133 Mission Inn Avenue, Riverside CA 92507, and to such other address as set forth in the Bidding Documents as the location for submission of Bids and sent by registered or certified mail with postage prepaid, or express mail or overnight delivery by an express mail carrier; or (3) by leaving the notice and mailing a copy in the manner provided in Code of Civil Procedure §415.20.
- 14.4.2 **Notice to Contractor.** If notice is given to Contractor: (1) by personal delivery thereof to Contractor; or (2) by depositing same in United States mails, enclosed in a sealed envelope addressed to Contractor at its address stated in the Construction Contract, or if none is so stated at the address on the records of the Contractor's State License Board and sent by registered or certified mail with postage prepaid or express mail or overnight delivery by an express mail carrier; or (3) by leaving the notice and mailing a copy in the manner provided in Code of Civil Procedure §415.20.
- 14.4.3 **Notice to Claimant.** If notice is given to a claimant as defined in Civil Code §8004: (1) by personal delivery thereof to claimant; or (2) by depositing same in United States mail, enclosed in a sealed envelope addressed to claimant at its address stated in: a preliminary notice, stop payment notice, or claim against a payment bond; or on the records of the Contractor's State License Board; and sent by registered or certified mail with postage prepaid or express mail or overnight delivery by an express mail carrier; or (3) by leaving the notice and mailing a copy in the manner provided in code of Civil Procedure §415.20.
- 14.4.4 **Notice to Surety**. If notice is given to the Surety: (1) by personal delivery to the Surety; or (2) by depositing same in United States mail, enclosed in a sealed envelope, addressed to the Surety at the address of the Surety shown in the applicable Performance Bond or Payment Bond, or if none is shown, the address on the records of the Department of Insurance, and sent by registered or certified mail with postage prepaid or express mail or overnight delivery by an express mail carrier; or (3) by leaving the notice and mailing a copy in the manner provided in Code of Civil Procedure §415.20.

14.5 RIGHTS AND REMEDIES

- 14.5.1 **County Rights.** Rights and remedies available to the County under the Contract Documents are in addition to and not a limitation of County's rights and remedies otherwise available under other provisions of the Contract Documents or Applicable Laws.
- 14.5.2 **Writing Required.** Provisions of the Contract Documents may be waived by County only in writing signed by the Director stating expressly that it is intended as a waiver of specified provisions of the Contract Documents.
- 14.5.3 **Subsequent Breach.** A waiver by either party of any breach of any term, covenant, or condition contained in the Contract Documents shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained therein whether of the same or a different character.

14.6 NO NUISANCE

Contractor shall not maintain, commit or permit the maintenance or commission of any nuisance in connection with the performance of Work.

14.7 EXTENT OF AGREEMENT

The Contract Documents represent the full and complete understanding of every kind or nature between the parties and all preliminary negotiations and prior representations, proposals and contracts, of whatever kind or nature, are merged herein and superseded hereby. No verbal agreement or implied covenant shall be held to vary the provisions of the Contract Documents. Any modification of this Construction Contract or the other Contract Documents will be effective only by written instrument signed by both County and Contractor and shall, if required by Applicable Laws, be formally approved or ratified by the Board of Supervisors.

14.8 NO THIRD-PARTY RIGHTS

Nothing contained in the Construction Contract or the other Contract Documents is intended to make any person or entity who is not a signatory to this Construction Contract a third-party beneficiary of any right of Contractor (including, without limitation, any right of Contractor to a benefit derived from, or to the enforcement of, an obligation assumed by County) that is expressly or impliedly created by the terms of the Contract Documents or by operation of Applicable Laws.

14.9 **SEVERABILITY**

Should any part, term, portion or provision of the Construction Contract or the other Contract Documents, or the application thereof to any party or circumstance, be held to be illegal, invalid or in conflict with Applicable Laws, or otherwise be rendered unenforceable or ineffectual, the validity of the remaining parts, terms, portions or provisions, or the application thereof to any other party or circumstances, shall be deemed severable and the same shall remain enforceable and valid to the fullest extent permitted by Applicable Laws.

14.10 PROVISIONS REQUIRED BY APPLICABLE LAWS

Each and every provision of law and clause required by Applicable Laws to be inserted in the Construction Contract or other Contract Documents shall be deemed to be inserted in the Contract Documents shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or if inserted and requires correction, then upon request of either party these General Conditions shall forthwith be amended by the parties to the Construction Contract to make such insertion or correction.

14.11 SURVIVAL

All provisions of the Contract Documents that either expressly, or by their nature, require performance or assumption by Contractor of an obligation that extends beyond termination of the Construction Contract or Final Completion of the Work, including, without limitation, Contractor's obligations of, or relating to, indemnification, insurance, ownership of documents, retention and audit of books and records, warranties and guaranties and resolution of Claims shall be deemed to survive either termination of the Construction Contract or Final Completion of the Work.

14.12 FEDERAL GRANTS

In the event of a federal grant or other federal financing participation in the funding of the Project, Contractor shall, as required in connection with, or as a condition to, such federal grant or other federal financing participation, permit access to and grant the right to examine its books covering its services performed and expenses incurred under the Construction Contract or other Contract Documents by the federal agency and comply with all applicable federal agency requirements including, without limitation, those pertaining to work hours, overtime compensation, non-discrimination, and contingent fees.

14.13 PROHIBITED INTERESTS

Contractor agrees not to accept any employment or representation which will, or is likely to, make Contractor "financially interested" (as provided in California Government Code §§1090 and 87100, hereinafter "financially interested") in any decision made by County on any matter in connection with which Contractor has been retained in connection with the Project. Without limitation to the foregoing, transactions and interests prohibited by this <u>Section 14.13</u> include the

following: (1) no official or employee of County who is authorized in such capacity and on behalf of County to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the Project, shall become directly or indirectly financially interested in the performance of the Construction Contract or in any part thereof; (2) no officer, employee, architect, attorney, engineer or inspector of or for County who is authorized in such capacity and on behalf of County to exercise any executive, supervisory or other similar functions in connection with Construction Contract or in any part thereof; and (3) Contractor shall receive no compensation hereunder, and shall repay County for any compensation received by Contractor hereunder, should Contractor or any of the Subcontractors aid, abet or knowingly participate in violation of this Section 14.13.

14.14 ASSIGNMENT OF ANTI-TRUST ACTIONS

California Public Contract Code §7103.5(b), which is hereby incorporated by this reference, provides:

"In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, contractor or the 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 the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, 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 Contractor, without further acknowledgement by the parties."

Contractor for itself and all the Subcontractors agrees to assign to County all rights, title and interest in and to all such causes of action Contractor and all the Subcontractors may have in connection with purchases related to or under the Contract Documents. This assignment shall become effective at the time County tenders Final Payment to Contractor, and Contractor shall require assignments from all the Subcontractors to comply herewith.

14.15 **NO WAIVER**

County's approval, acceptance, use or payment for any or part of Contractor's performance of the Work shall not in any way alter Contractor's obligations, or waive any of County's rights, under Contract Documents.

14.16 CONSENT TO PHOTOGRAPHING

Contractor is advised that County intends, from time to time, to take photographs, videotapes and/or motion pictures of the Work, and workers located on the Site and proximate settings. Contractor consents to the use of Contractor's name and likeness in instructional or training uses, news releases, advertising and/or publicity throughout the world in perpetuity, in all media now known or hereafter invented. Contractor shall include in its contracts with its Subcontractors a consent by the Subcontractor to the use of Subcontractor's name and the likenesses of its employees on the same terms as provided for herein applicable to such consent by Contractor.

ARTICLE 15 DEFAULT, TERMINATION AND SUSPENSION

15.1 COUNTY REMEDIES FOR DEFAULT

- 15.1.1 Event of Default. Each and any of the following shall be considered an Event of Contractor Default:
- .1 Contractor files a petition, or has filed against it a petition, for bankruptcy or is adjudged bankrupt;
 - .2 Contractor makes a general assignment for the benefit of its creditors;
 - .3 a receiver is appointed on account of Contractor's insolvency;

- Contractor defaults, by failing or refusing to perform any obligation set forth in the Construction Contract, General Conditions or elsewhere in the Contract Documents (including, without limitation, the performance or installation of Defective Work) and thereafter: (1) fails to commence to cure such default within two (2) working days after receipt of written notice of default; (2) if the default can be cured within three (3) Days, Contractor fails or refuses after commencing to cure in accordance with Clause (1) hereof to fully cure such default within three (3) Days after receipt of written notice of default; or (3) if the default cannot be fully cured within three (3) Days, Contractor fails after commencing to cure in accordance with Clause (1) hereof to diligently and continuously prosecute and fully cure such default within ten (10) Days after receipt of such written notice;
- .5 Contractor fails or refuses to perform an obligation set forth in the Construction Contract, General Conditions or other Contract Documents that either (1) cannot be cured, or (2) cannot be cured within the 10-Day cure period set forth in <u>Subparagraph 15.1.1.4</u>, above;
- a breach of any other agreement between County and Contractor as provided in <u>Paragraph</u> 15.1.9, below; or
- If Contractor was previously prequalified as a condition for its bidding the Project pursuant to a Prequalification conducted by County, Contractor's prequalification status has been revoked or cancelled due to any of the following: (1) receipt by County of new information indicating that a statement made in Contractor's Prequalification Submittal (as defined in the Prequalification Documents) was false or misleading; (2) ownership of 50% of more of the stock or assets Contractor has changed; (3) if Contractor is a Project Joint Venture, its Principal Managing Partner (as those terms are defined in the Prequalification Documents) has ceased to function, or fully function, in the capacity of a Principal Managing Partner; or (4) Contractor has failed to comply with the requirements of the Prequalification Documents pertaining to minimum safety Prequalification requirements for Subcontractors.
- 15.1.2 **County's Remedies.** Without limitation to the County's other rights or remedies under the Contract Documents or Applicable Laws, if there is an Event of Contractor Default, County shall have the right to exercise any one or more of the following remedies:
- .1 Take Over Work. County may, without terminating the Construction Contract and without incurring any additional liability or responsibility to Contractor (including, without limitation, any obligation to agree to a Contract Adjustment for any portion of the taken-over or non-taken-over Work), take over and perform, or engage others to perform, all or a portion of the Work.
- .2 Suspend Work. County may, without terminating the Construction Contract and without incurring any additional liability or responsibility to Contractor (including, without limitation, any obligation to agree to a Contract Adjustment for any portion of the suspended or non-suspended Work), suspend Contractor's performance of all or a portion of the Work for as long a period of time as the County determines, in its sole discretion, is appropriate.
- .3 Termination. County may, without incurring any additional liability or responsibility to Contractor, terminate the Construction Contract, the Work or any portion thereof.
- Letrough 15.1.1.5, above, County may, with or without terminating the Construction Contract and without incurring any additional liability or responsibility to Contractor or Surety (including, without limitation, any obligation to agree to a Contract Adjustment), exercise its rights under the Performance Bond furnished by Contractor by giving Surety ten (10) Days' written notice of demand to perform; provided, however, that if the Surety fails, within seven (7) Days after receipt by Surety of written demand, to deliver to the County written notice of its unconditional intention to perform or does not commence performance of the Work within ten (10) Days from receipt of such notice of demand, the County may, at Contractor's Own Expense and/or the expense of the Surety, and with or without terminating the Construction Contract, proceed to complete the Work by any other means County deems expedient. By executing its Performance Bond incorporating the terms of the Construction Contract, Surety shall be deemed to have agreed, without limitation, to the provisions of this Paragraph 15.1.2 as constituting a binding obligation of Surety under its Performance Bond that shall control over any conflicting provisions set forth in the Performance Bond. Neither delivery by Surety of such written notice of unconditional intention to perform nor its timely performance of the Work in accordance with the terms of the Contract Documents and Performance Bond shall constitute waiver by Surety of any rights it may have under the Performance Bond and Applicable Laws to limit its liability to the penal amount of the Performance Bond.

- 15.1.3 **Contractor Tools, Equipment.** Upon County's exercise of one or more of its remedies following an Event of Contractor Default, County shall have the right, but not the obligation, to perform or complete all or any portion of the Work using any means that County may deem expedient, including, without limitation, taking possession and utilization of any or all of the materials, equipment, appliances, tools, plant and other property not owned by Contractor that are on the Site for County's use in performing the Work.
- 15.1.4 **Contractor Obligations.** Upon exercise by County of its remedies following an Event of Contractor Default, Contractor shall, unless County directs in writing otherwise, do the following:
 - .1 immediately discontinue performance of the Work to the extent specified in writing by County;
- .2 remove no materials, equipment or tools (other than those owned by Contractor and not necessary for performance of a portion of the Work not terminated or discontinued) from the Site unless directed to do so by County and take all actions necessary or appropriate, or that the County may direct in writing, for the protection and preservation of the Work, any materials, equipment or tools at the Site and any materials or equipment in transit to the Site;
- .3 place no further orders or subcontracts for materials, equipment, services or facilities, except as may be necessary for Contractor to continue performance of such portion, if any, of the Work that is not discontinued or terminated by County in its written notice;
- .4 provide to the County, in writing, no later than two (2) Days after request by County, a statement listing or providing: (1) all subcontract agreements, purchase orders and contracts that are outstanding, as well as any change orders, amendments and modifications thereto; (2) the status of invoicing, payments and balance owing under each such subcontract agreement, purchase order and contract; (3) the status of performance and any claims asserted under each such subcontract agreement, purchase order and contract; and (4) providing such other information as the County may determine to be necessary in order to decide whether to accept assignment of any such subcontract agreement, purchase order or contract;
- .5 promptly following and in accordance with County's written direction: (1) assign to the County or its designee those subcontract agreements, purchase orders or contracts, or portions thereof, that the County elects in writing to accept by assignment; (2) cancel, on the most favorable terms reasonably possible, any subcontract agreement, purchase order or contract, or portion thereof, that the County does not elect to accept by assignment; and (3) if requested by County, settle, with the prior written approval of County of the terms of settlement, outstanding liabilities to Subcontractors with respect to the Work terminated or discontinued;
 - 6. not terminate any insurance required by the Contract Documents;
 - 7. thereafter continue only such performance as may be directed by County;
 - 8. deliver to the County the documents required to delivered pursuant to <u>Paragraph 1.3.6</u>, above;

and

9. at the written request and option of County, exercised in its sole discretion, deliver to the County, and transfer title to the County of, any completed items, materials, products, equipment or other unincorporated parts of the Work that have not been previously delivered to the Site.

15.1.5 Accounting and Payment

- .1 Full Termination or Discontinuance.
- (1) Further Payment. In the event an exercise by County of any of its remedies following an Event of Contractor Default results in a termination or discontinuance of the entire Work, then no further payment shall be due to Contractor for the Work until an accounting has been conducted in accordance with this Paragraph 15.1.5.

- (2) Time for Accounting. Within forty-five (45) Days after Final Completion of the Work by Contractor, Surety, County or others at request of County, an accounting shall be made pursuant to this <u>Paragraph 15.1.5</u> of the amount due to Contractor or County.
- (3) Payment Amount. If, based on the accounting conducted pursuant to this <u>Paragraph 15.1.5</u>, the Contractor Amount exceeds the County Amount, then the difference shall be paid by County to Contractor within fifteen (15) Days after demand by Contractor following completion of such accounting. If the County Amount exceeds the Contractor Amount, then the difference shall be paid by Contractor to County within fifteen (15) Days after demand by County following completion of such accounting. Payment by Contractor of the amount due to County pursuant to such accounting shall not be construed as a release of Contractor's obligation to County for, or County's right to recover from Contractor, any Losses, of any kind whatsoever, not part of the calculation of the County Amount (including, without limitation, additional Losses related to circumstances that formed the basis for calculation of the County Amount) that may be then or thereafter owing to or recoverable by County under Applicable Laws or the Contract Documents.
- (4) Contractor Amount. The Contractor Amount used as the basis for payment pursuant to the accounting under this Paragraph 15.1.5 shall be calculated as follows:
- (a) take a portion of the Contract Price determined by multiplying (i) the Contract Price, by (ii) the County's Good Faith Determination of the percentage of the Work properly performed by Contractor and (A) in permanent place, (B) previously fabricated and delivered to the Site or (C) fabricated and en route for delivery to the Site and delivered to the Site within a reasonable time after Contractor's receipt of such written notice; and
- (b) subtract therefrom all amounts previously paid by County to Contractor or to Subcontractors.
- (5) County Amount. The County Amount used as the basis for payment pursuant to the accounting under this Paragraph 15.1.5 shall be calculated based on the sum of all past, present and future Losses to County resulting or reasonably certain to result, directly or indirectly, from any or all of the following: (a) any negligence, willful misconduct, or Defective Work on the part of Contractor or any Subcontractor; (b) any Event of Contractor Default, whether or not constituting the basis of the County's termination or discontinuance; (c) the County's exercise of its rights and remedies under and in accordance with the Contract Documents or Applicable Laws following the occurrence of an Event of Contractor Default; and (d) the payment by County of amounts to Contractor or any Subcontractor that were not owing to Contractor or that were in excess of the amount to which Contractor was entitled under the Contract Documents.
- **Partial Termination or Discontinuance.** In the event an exercise by County of its remedies for an Event of Contractor Default results in a discontinuance or termination of only a portion of the Work, then the Contract Price and Contract Time shall be adjusted under the provisions of Article 8, above, applicable to Deleted Work. Contractor shall thereafter continue to be paid for its performance of the other portions of the Work in accordance with the terms of the Contract Documents, less any amounts that County is entitled to withhold under the terms of the Contract Documents.
- .3 Exclusive Compensation. Contractor agrees to accept such amounts, if any, as allowed under this Paragraph 15.1.5 as its sole and exclusive compensation in the event of an exercise by County of its remedies permitted by the Contract Documents or Applicable Laws following an Event of Contractor Default.
- 15.1.6 **Surety.** Without limitation to any of the County's other rights or remedies under a Performance Bond furnished by Contractor, Contract Documents or Applicable Laws, the County has the right to suspend, take over or terminate the performance of the Work by Surety in the event of any of the following: (1) failure of Surety or its contractors to begin the Work within a reasonable time in such manner as to ensure full compliance with the Contract Documents within the Contract Time; (2) abandonment of the Work by Surety or its contractors; (3) if at any time the County makes a Good Faith Determination that the Work is unnecessarily or unreasonably delayed by Surety or its contractors; (4) violation by Surety or its contractors of any terms of the Contract Documents, Performance Bond or Applicable Laws; or (5) failure by Surety or its contractors to follow instructions of the County for performance of the Work or for performance of the Work within the Contract Time. By executing its Performance Bond incorporating the terms of the Construction Contract, Surety shall be deemed to have agreed, without limitation, to the provisions of this

- <u>Paragraph 15.1.6</u> as constituting a binding obligation of Surety under its Performance Bond that shall control over any conflicting provisions set forth in the Performance Bond.
- 15.1.7 **Conversion.** In the event a termination for cause by the County is adjudged by a court or by binding arbitration conducted in accordance with the Contract Documents to have been wrongful, such termination shall be deemed converted to a termination for convenience pursuant to <u>Section 15.3</u>, below, in which case Contractor agrees to accept such amount, if any, as permitted by <u>Paragraph 15.3.3</u>, below, as its sole and exclusive compensation and agrees to waive any right to recovery of any other compensation or Loss, including, but not limited to, loss of anticipated profits, loss of revenue, lost opportunity or other consequential, direct, indirect or incidental damages, of any kind.
- 15.1.8 **Substantial Performance Waived**. The legal doctrine that a contractor may recover for substantial performance of a building contract is to have no application to the Construction Contract. Any Event of Contractor Default, whether occurring before or after the Work is Substantially Completed, shall be deemed material and shall give rise to the right of County to exercise its remedies permitted under the Contract Documents or Applicable Laws.
- 15.1.9 **Cross Default.** Contractor agrees that a breach of any other agreement between Contractor and County, whether related or unrelated to the Project, that is not cured in accordance with the terms of such other agreement constitutes an Event of Contractor Default under the Construction Contract, thereby entitling County to assert all its rights and remedies hereunder including, but not limited to, a specific right of off set by County against any amounts otherwise payable to Contractor under the Construction Contract or any other agreement between Contractor and County.
- 15.1.10 **Rights Cumulative.** All of County's rights and remedies under the Contract Documents are cumulative, and shall be in addition to and not a limitation upon those rights and remedies available under Applicable Laws.
- 15.1.11 Materiality. Designation in the Contract Documents of certain defaults as "material" shall not be construed as implying that other defaults not so designated are not material nor as limiting County's right to terminate or exercise its other rights or remedies for default to only material defaults.
- 15.1.12 **County Action.** No termination or action taken by County after termination shall prejudice any rights or remedies of County provided by Applicable Laws or by the Contract Documents, including, without limitation, the right of County to proceed against Contractor to recover all Losses suffered by reason of Contractor's default.

15.2 SUSPENSION BY COUNTY FOR CONVENIENCE

- 15.2.1 **Suspension Order.** Without limitation to the County's rights under <u>Section 15.1</u>, above, County may, at any time, for its convenience and without the occurrence of any Event of Contractor Default, order Contractor, in writing, to suspend, delay or interrupt performance of the Work, in whole or in part. Upon receipt of such an order, Contractor shall comply with its terms and take all reasonable steps to minimize additional costs that are incurred applicable to the portion of the Work suspended, delayed or interrupted by County.
- 15.2.2 **Resumption.** If an order issued by the County pursuant to this <u>Section 15.2</u> is canceled or expires, Contractor shall resume and continue with the previously affected portion of the Work. In such event, Contractor shall be entitled to a Contract Adjustment for additional Allowable Costs necessarily caused by such order and compensation allowed under <u>Section 3.3</u> of the Construction Contract for Compensable Delay; provided, however, that no such Contract Adjustment shall be made: (1) to the extent that performance either is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor or any of the Subcontractors is responsible or for which Contractor would not be entitled to a Contract Adjustment; (2) to the extent that a Contract Adjustment on account thereof is made or denied under another provision of the Contract Documents; or (3) for any general or specific escalation in prices of the Work.
- 15.2.3 **Limitation**. The provisions of this <u>Section 15.2</u> shall not apply unless a written order is issued by County pursuant to this <u>Section 15.2</u>.

15.3 TERMINATION BY COUNTY FOR CONVENIENCE

- 15.3.1 **Right to Terminate for Convenience.** Without limitation upon any of County's other rights or remedies under the Contract Documents or Applicable Laws, County shall have the option, at its sole discretion and without the occurrence of any Event of Contractor Default or any other cause, to terminate the Construction Contract or Work, in whole or in part, for its convenience by giving five (5) Days written notice to Contractor.
- 15.3.2 **Contractor Obligations.** Upon receipt of notice of termination for convenience pursuant to this <u>Section 15.3</u>, Contractor shall, unless such notice directs otherwise, comply with all of the provisions of <u>Paragraph 15.1.4</u>, above.
- 15.3.3 **Contractor Compensation.** Following a termination for convenience pursuant to this <u>Section 15.3</u> and within sixty (60) Days after receipt of a complete and timely Application for Payment from Contractor, an accounting shall be conducted in accordance with the process set forth in <u>Paragraph 15.1.5</u>, above. In such event, the amount due to Contractor shall be the Contractor Amount as calculated in the same manner provided for in <u>Paragraph 15.1.5</u>, above, except that there shall be added to the calculation of the Contractor Amount an amount for: (1) the reasonable, actual and direct Allowable Costs incurred and paid by Contractor (and not by Subcontractors) for (a) demobilizing Contractor's facilities from the Site, and (b) Contractor's administering the close out of its participation in the Project for a period of no longer than fifteen (15) Days; plus (2) a markup to Contractor on the Contractor's Allowable Costs incurred under Clause (1) of this <u>Paragraph 15.3.4</u> that is based on the percentage for Allowable Markup that Contractor is permitted to charge pursuant to <u>Article 7</u>, above, for Compensable Changes involving Extra Work that is Self-Performed Work.
- 15.3.4 **Exclusive Compensation.** Contractor agrees to accept the compensation allowed under <u>Paragraph 15.3.3</u>, above, as its sole and exclusive compensation in the event of a termination by County for convenience and waives any claim for Loss related to County's termination for convenience, including, but not limited to, loss of anticipated profits, loss of revenue, lost opportunity, or other consequential, direct, indirect, or incidental damages, of any kind.
- 15.3.5 **Subcontractors.** Contractor shall include provisions in all of its subcontracts, purchase orders and other contracts with the Subcontractors permitting termination for convenience by Contractor on terms that are consistent with, and that afford no greater rights of recovery against Contractor for termination than are afforded to Contractor under, this <u>Section 15.3</u>.

15.4 TERMINATION BY CONTRACTOR

- 15.4.1 **Contractor's Remedies.** Subject to the provisions of <u>Paragraph 15.4.2</u>, below and <u>Paragraph 15.4.3</u>, below, Contractor's sole right to terminate the Construction Contract shall be its right to terminate, for cause only, upon the occurrence of either of the following:
- .1 the entire Work is stopped for one hundred sixty (160) consecutive Days, through no act or fault of Contractor or any of the Subcontractors, of any Tier, or any employee or agent of any of them, due to issuance of an order of a court or other Governmental Authority or due to a declaration of a national emergency making material unavailable; or
- .2 the entire Work is suspended by Contractor, in accordance with a proper exercise by Contractor of its rights under Section 9.8, above, for a continuous period of thirty (30) Days.
- 15.4.2 **Notice of Intention to Terminate.** If one of the reasons to terminate as described in <u>Paragraph 15.4.1</u>, above, exists, Contractor may, upon thirty (30) Days written notice to County, terminate the Construction Contract and recover from County as its sole and exclusive compensation such sums as are permitted under <u>Paragraph 15.3.3</u>, above.
- 15.4.3 **Continuous Performance.** Provided that Contractor is paid undisputed sums due in accordance with the requirements of the Construction Contract, Contractor shall not stop, delay or interrupt continuous performance of the Work by reason of any dispute or disagreement with County, including, without limitation, any disputes or disagreements over payments of money claimed due under the Contract Documents.

15.5 WARRANTIES

All obligations of Contractor and the Subcontractors under the Contract Documents with respect to warranties and guarantees of the Work will continue in force and shall apply, notwithstanding a termination or other discontinuance of the Work by County or Contractor pursuant to an exercise of rights by either under this <u>Article 15</u>, to any portion of the Work that at the time of such termination or discontinuance has been completed or partially completed by Contractor to the point that it is substantially ready (exclusive of any incidental work that may be needed to connect such portion to other Work to other Work or Existing Improvements or to energize such portion of the Work for operation) for use or occupancy by County.

ARTICLE 16 NON-DISCRIMINATION

16.1 NON-DISCRIMINATION IN SERVICES

- **16.1.1** Contractor must, in accordance with Applicable Laws, not discriminate in the provision of services hereunder because of race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability. For the purpose of this <u>Section 16.1</u>, discrimination in the provision of services may include, but is not limited to the following:
 - .1 denying any person any service or benefit or the availability of a facility;
- .2 providing any service or benefit to any person which is not equivalent to, or is in a non-equivalent manner or at a non-equivalent time from, that provided to others;
- .3 subjecting any person to segregation or separate treatment in any manner related to the receipt of any service;
- .4 restricting any person in any way in the enjoyment of any advantage or privilege enjoyed by others receiving any service or benefit; or
- .5 treating any person differently from others in determining admission, enrollment, eligibility, membership, or any other requirement or condition which persons must meet in order to be provided any service or benefit.
- **16.1.2** Contractor shall ensure that services are provided without regard to race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability.
- 16.1.3 Contractor shall establish and maintain written procedures under which any person applying for, performing or receiving services hereunder, may seek resolution from Contractor of a complaint with respect to any alleged discrimination. Such persons shall be advised by Contractor of these procedures. A copy of such procedures shall be posted by Contractor in a conspicuous place, available and open to the public, in each of Contractor's facilities where services are provided hereunder.

16.2 NON-DISCRIMINATION IN EMPLOYMENT

Contractor must, in accordance with Applicable Laws, not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability. Without limitation to any other provisions of this Section 16.2, in the performance of the obligations under the Contract Documents, Contractor and the Subcontractors shall comply with all applicable provisions of the California Fair Employment Practices Act (California Government Code §§12940-48) and the applicable equal employment provisions of the Civil Rights Act of 1964 (42 U.S.C. §§200e - 217), whichever is more restrictive. Contractor and the Subcontractors shall ensure that qualified applicants are employed and that employees are treated during employment without regard to race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability, in accordance with requirements of Applicable Laws. Such shall include, but not be limited to, the following:

- employment, promotion, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation; or
 - .2 selection for training, including apprenticeship.
- **16.2.1** Contractor agrees to post in conspicuous places in each of Contractor's facilities providing services hereunder, available and open to employees and applicants for employment, notices setting forth the provisions of this <u>Section 16.2</u>.
- 16.2.2 Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability, in accordance with requirements of Applicable Laws.
- **16.2.3** Contractor shall send to each labor union, or workers' representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or the workers' representative of Contractor's commitments under this <u>Section 16.2</u>.
- **16.2.4** Contractor certifies and agrees that it will deal with the Subcontractors, bidders and vendors without regard to race, color, religion, national origin, ancestry, sex, age, sexual orientation, marital status, AIDS or disability, in accordance with the requirements of Applicable Laws.
- **16.2.5** In accordance with Applicable Laws, Contractor shall allow duly authorized representatives of the County, State, and Federal government access to its employment records during regular business hours in order to verify compliance with the provisions of this <u>Section 16.2</u>. Contractor shall provide such other information and records as such representatives may require in order to verify compliance with the provisions of this <u>Section 16.2</u>.
- 16.2.6 If County finds that any of the provisions of this Section 16.2 have been violated by Contractor or any of the Subcontractors, such violation shall constitute a material breach of the Construction Contract for which County may cancel, terminate or suspend the Construction Contract. While County reserves the right to determine independently that the anti-discrimination provisions of the Construction Contract have been violated, a determination by the California Fair Employment and Housing Commission or the Federal Equal Employment Opportunity Commission that Contractor or the Subcontractor has violated State or Federal anti-discrimination laws shall constitute a finding by County that Contractor or the Subcontractor has violated the provisions of this Section 16.2.
- 16.2.7 Contractor hereby agrees that it will comply with §504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794) and similar Applicable Laws relating to employment of or access to persons with disabilities, all requirements imposed by applicable Federal Regulations, and all guidelines and interpretations issued pursuant thereto, to the end that no qualified disabled person shall, on the basis of disability, be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity of Contractor receiving Federal Financial Assistance.

END OF GENERAL CONDITIONS

Geotechnical Report

Proposed Mecca Sports Park

Mecca, California

Prepared for:

Riverside County - EDA 44199 Monroe Street, Suite B Indio, CA 92201





Prepared by:

Landmark Consultants, Inc. 77948 Wildcat Drive Palm Desert, CA 92211 (760) 360-0665

May 2020



May 15, 2020

Ms. Anna Rodriquez Riverside County EDA 44199 Monroe Street, Suite B Indio, CA 92201 780 N. 4th Street El Centro, CA 92243 (760) 370-3000 landmark@landmark-ca.com

77-948 Wildcat Drive Palm Desert, CA 92211 (760) 360-0665 gchandra@landmark-ca.com

Geotechnical Report
Mecca Sports Park
SWC Dale Kiler Road and 66th Avenue
Mecca, California
LCI Report No. LP20059

Dear Ms. Rodriquez:

This geotechnical report is provided for design and construction of the proposed sports park located on the southwest corner of 66th Avenue (State Highway 195) and Dale Kiler Road in Mecca, California. Our geotechnical exploration was conducted in response to your request for our services. The enclosed report describes our soil engineering site evaluation and presents our professional opinions regarding geotechnical conditions at the site to be considered in the design and construction of the project.

Based on the geotechnical conditions encountered at the points of exploration, the project site appears suitable for the proposed construction provided the professional opinions contained in this report are considered in the design and construction of this project.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. Please provide our office with a set of the foundation plans and civil plans for review to insure, that the geotechnical site constraints have been included in the design documents. If you have any questions or comments regarding our findings, please call our office at (760) 370-3000.

Respectfully Submitted, LandMark Consultants, Inc.

Greg M. Chandra, PE, M.ASCE

Principal Engineer

No. C 34432

Steven K. Williams, PG,

Principal Engineering Geologis

ENGINEERING

GEOLOGIST CEG 2261

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EXECUTIVE SUMMARY

This executive summary presents *selected* elements of our findings and professional opinions. This summary *may not* present all details needed for the proper application of our findings and professional opinions. Our findings, professional opinions, and application options are *best related through reading the full report*, and are best evaluated with the active participation of the engineer of record who developed them. The findings of this study are summarized below:

- The findings of this study indicate the site is underlain by interbedded silts and silty sands. The near surface soils are expected to be low to non-expansive. The subsurface soils are loose to medium dense in nature.
- Groundwater was encountered in the borings at approximately 15 to 20 feet during the time of exploration. Previous geotechnical investigations at the project site measured static groundwater levels at approximately 7.5 feet (2008).
- Elevated sulfate and chloride levels were encountered in the soil samples tested for this study. We recommend that concrete should use Type V cement with a maximum water-cement ratio of 0.45 and a minimum compressive strength of 4,500 psi.
- Design soil bearing pressure of 1,500 psf. Differential movement of ½" to ¾" can be expected for slab on grade foundations placed on native soils.
- The risk of liquefaction induced settlement is moderate. Liquefaction may occur in isolated silt and sand layers between depths of 30 to 45 feet below ground surface. Liquefaction induced settlements of 31/4 inches. There is a very low risk of ground rupture should liquefaction occur.
- Seismic settlements of the dry sands have been calculated and are not expected to occur at the project site due to high moisture content of the site soils and shallow depth to groundwater.
- All reinforcing bars, anchor bolts and hold down bolts shall have a minimum concrete
 cover of 3.0 inches unless epoxy coated (ASTM D3963/A934). Hold-down straps are not
 allowed at the foundation perimeter. No pressurized water lines are allowed below or
 within the foundations.
- Pavement structural sections should be designed for subgrade soils (R-Value = 40) and an appropriate Traffic Index (TI) selected by the civil designer.

Section 1 INTRODUCTION

1.1 Project Description

This report presents the findings of our geotechnical exploration and soil testing for the proposed sports park located on the southwest corner of 66th Avenue (State Highway 195) and Dale Kiler Road in Mecca, County of Riverside, California (See Vicinity Map, Plate A-1). The proposed development will consist of a sports park with play-grounds, restrooms and maintenance/snack bar building, gazebo and picnic areas, pole-mounted lighting and walk areas on the approximately 6.7 acre project site. A concept site plan for the proposed development was prepared by Holt Architect, dated November 1, 2019.

The structures are planned to consist of slabs-on-grade foundations and masonry/wood-frame construction. Footing loads at exterior bearing walls are estimated at 1 to 5 kips per lineal foot. Column loads are estimated to range from 5 to 40 kips. If structural loads exceed those stated above, we should be notified so we may evaluate their impact on foundation settlement and bearing capacity. Site development will include building pad preparation, underground utility installation including trench backfill, concrete foundation construction, play-grounds grading, street and parking lot construction, and concrete hardscape and sidewalk placement.

1.2 Purpose and Scope of Work

The purpose of this geotechnical study was to investigate the subsurface soil at selected locations within the site for evaluation of physical/engineering properties and liquefaction potential during seismic events. Professional opinions were developed from field and laboratory test data and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction. The scope of our services consisted of the following:

- Field exploration and in-situ testing of the site soils at selected locations and depths.
- < Laboratory testing for physical and/or chemical properties of selected samples.
- < Review of the available literature and publications pertaining to local geology, faulting, and seismicity.
- < Engineering analysis and evaluation of the data collected.
- < Preparation of this report presenting our findings and professional opinions regarding the geotechnical aspects of project design and construction.

This report addresses the following geotechnical parameters:

- < Subsurface soil and groundwater conditions
- < Site geology, regional faulting and seismicity, near source factors, and site seismic accelerations
- < Liquefaction potential and its mitigation
- < Expansive soil and methods of mitigation
- < Aggressive soil conditions to metals and concrete

Professional opinions with regard to the above parameters are provided for the following:

- < Site grading and earthwork
- < Building pad and foundation subgrade preparation
- < Allowable soil bearing pressures and expected settlements
- < Concrete slabs-on-grade
- < Lateral earth pressures
- < Excavation conditions and buried utility installations
- < Mitigation of the potential effects of salt concentrations in native soil to concrete mixes and steel reinforcement
- < Seismic design parameters
- < Preliminary Pavement structural sections

Our scope of work for this report did not include an evaluation of the site for the presence of environmentally hazardous materials or conditions, storm water infiltration, groundwater mounding, or landscape suitability of the soil.

1.3 Authorization

Ms. Anna Rodriquez of Riverside County EDA provided authorization by Purchase Order FMARC-0000088495 to proceed with our work on March 31, 2020. We conducted our work in general accordance with our written proposal dated March 16, 2020.

Section 2 METHODS OF INVESTIGATION

2.1 Field Exploration

Subsurface exploration was performed on April 13, 2020 using 2R Drilling of Chino, California to advance five (5) borings to depths of 11.5 to 51.5 feet below existing ground surface. The borings were advanced with a truck-mounted, CME 75 drill rig using 8-inch diameter, hollow-stem, continuous-flight augers. The approximate boring locations were established in the field and plotted on the site map by sighting to discernible site features. The boring locations are shown on the Site and Exploration Plan (Plate A-2).

A geo-technician observed the drilling operations and maintained logs of the soil encountered with sampling depths. Soils were classified during drilling according to the Unified Soil Classification System using the visual-manual procedure in accordance with ASTM D2488. Relatively undisturbed and bulk samples of the subsurface materials were obtained at selected intervals. The relatively undisturbed soil samples were retrieved using a 2-inch outside diameter (OD) split-spoon sampler or a 3-inch OD Modified California Split-Barrel (ring) sampler lined with 6-inch stainless-steel sleeves.

In addition, Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586 and ASTM D6066. The samples were obtained by driving the samplers ahead of the auger tip at selected depths using a 140-pound CME automatic hammer with a 30-inch drop. The number of blows required to drive the samplers the last 12 inches of an 18-inch drive depth into the soil is recorded on the boring logs as "blows per foot". Blow counts (N values) reported on the boring logs represent the field blow counts. No corrections have been applied to the blow counts shown on the boring logs for effects of overburden pressure, automatic hammer drive energy, drill rod lengths, liners, and sampler diameter.

After logging and sampling the soil, the exploratory borings were backfilled with the excavated material. The backfill was loosely placed and was not compacted to the requirements specified for engineered fill. The subsurface logs are presented on Plates B-1 through B-5 in Appendix B. A key to the log symbols is presented on Plate B-6. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

2.2 Laboratory Testing

Laboratory tests were conducted on selected bulk (auger cuttings) and relatively undisturbed soil samples obtained from the soil borings to aid in classification and evaluation of selected engineering properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

[Laboratory tests were conducted on selected bulk soil samples obtained from hand auger borings made adjacent to the CPT locations to aid in classification and evaluation of selected engineering properties of the near surface soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:]

- < Plasticity Index (ASTM D4318)
- < Particle Size Analyses (ASTM D422)
- < Unit Dry Densities (ASTM D2937)
- < Moisture Contents (ASTM D2216)
- < Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Methods)

The laboratory test results are presented on the subsurface logs (Appendix B) and in Appendix C.

Engineering parameters of soil strength, compressibility and relative density utilized for developing design criteria provided within this report were obtained from the field and laboratory testing program.

Section 3 **DISCUSSION**

3.1 Site Conditions

The project site is irregular-shaped in plan view, is relatively flat-lying, sloping gently to the southwest, and consists of approximately 6.7 acres of vacant land with scattered brush and weeds covering the site. The site is located just south of the existing Mecca Boys and Girls Club, and west of Dale Kiler Road. Adjacent properties are flat-lying and are approximately at the same elevation with this site.

The project site lies at an elevation of approximately 189 to 184 feet below mean sea level in the Coachella Valley region of the California low desert. Annual rainfall in this arid region is less than 4 inches per year with four months of average summertime temperatures above 100°F. Winter temperatures are mild, seldom reaching freezing.

3.2 Geologic Setting

The project site is located in the Coachella Valley portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The surrounding regional geology includes the Peninsular Ranges (Santa Rosa and San Jacinto Mountains) to the south and west, the Salton Basin to the southeast, and the Transverse Ranges (Little San Bernardino and Orocopia Mountains) to the north and east. Hundreds of feet to several thousand feet of Quaternary fluvial, lacustrine, and aeolian soil deposits underlie the Coachella Valley.

The southeastern part of the Coachella Valley lies below sea level. In the geologic past, the ancient Lake Cahuilla submerged the area. Calcareous tufa deposits may be observed along the ancient shoreline as high as elevation 45 to 50 feet MSL along the Santa Rosa Mountains from La Quinta southward. Lacustrine (lake bed) deposits comprise the subsurface soils over much of the eastern Coachella Valley with alluvial outwash along the flanks of the valley.

3.3 Subsurface Soil

Subsurface soils encountered during the field exploration conducted on April 13, 2020 consist of loose to dense interbedded silty sands and silts. The near surface soils have been classified as having a very low expansion potential. The subsurface logs (Plates B-1 through B-6) depict the stratigraphic relationships of the various soil types.

3.4 Groundwater

Groundwater was encountered in the borings at about 15 to 19 feet during the time of exploration. The well information collected near the subject site (Well 335763N1160795W001), has indicated that the ground water level ranges from 4 feet to 10 feet below the ground surfaces in the last 5 years. Previous geotechnical investigations have encountered stabilized groundwater at a depth of 7.5 feet at the project site (2008).

There is uncertainty in the accuracy of short-term water level measurements, particularly in fine-grained soil. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, drainage, and site grading. The groundwater level noted should not be interpreted to represent an accurate or permanent condition. Based on the regional topography, groundwater flow is assumed to be generally towards the south-east within the site area. Flow directions may vary locally in the vicinity of the site.

Subsurface agricultural tile drainage pipelines exist below this site and have assisted in preventing an artificially high groundwater depth. Abandoning and plugging the subsurface drainage pipelines can allow groundwater levels to rise variably across the site. A copy of the tile drainage system plan obtained from Coachella Valley Water District records is attached (Plate A-9).

Historic groundwater records in the vicinity of the project site indicate that groundwater has fluctuated between 10.0 to 35.0 feet below the ground surface over the last 65 years according to a report "Coachella Valley Investigation" conducted by the Department of Water Resources, published July 1964.

3.5 Faulting

The project site is located in the seismically active Coachella Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. We have performed a computer-aided search of known faults or seismic zones that lie within a 46-mile (74 kilometer) radius of the project site (Table 1).

A fault map illustrating known active faults relative to the site is presented on Figure 1, *Regional Fault Map*. Figure 2 shows the project site in relation to local faults. The criterion for fault classification adopted by the California Geological Survey defines Earthquake Fault Zones along active or potentially active faults. An active fault is one that has ruptured during Holocene time (roughly within the last 11,000 years). A fault that has ruptured during the last 1.8 million years (Quaternary time), but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during Quaternary time is considered to be inactive.

Review of the current Alquist-Priolo Earthquake Fault Zone maps (CGS, 2000a) indicates that the nearest mapped Earthquake Fault Zone is the San Andreas – Coachella fault located approximately 3.9 miles northeast of the project site.

3.6 General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

2019 CBC General Ground Motion Parameters: The California Building Code (CBC) requires that a site-specific ground motion hazard analysis be performed in accordance with ASCE 7-16 Section 11.4.8 for structures on Site Class D and E sites with S_1 greater than or equal to 0.2 and Site Class E sites with S_5 greater than or equal to 1.0. This project site has been classified as Site Class D and has a S_1 value of 0.77, which would require a site-specific ground motion hazard analysis. However, ASCE 7-16 Section 11.4.8 provides three exceptions which permit the use of conservative values of design parameters for certain conditions for Site Class D and E sites in lieu of a site-specific hazard analysis. The exceptions are:

- Exception 1: Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
- Exception 2: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Equations 12.8-2 for values of $T \le 1.5T_S$ and taken as equal to 1.5 times the value computed in accordance with either Equation 12.8-3 for $T_L \ge T > 1.5T_S$ or Equation 12.8-4 for $T > T_L$.
- Exception 3: Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_S and the equivalent static force procedure is used for design.

The project structural engineer should confirm that an exception applies to the project. If none of the exceptions apply, our office should be consulted to perform a site-specific hazard analysis.

The 2019 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps Web Application (SEAOC, 2020) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for soil site class effects (PGA_M) value to be used for liquefaction and seismic settlement analysis in accordance with 2019 CBC Section 1803A.5.12 (PGA_M = F_{PGA}*PGA) is estimated at 0.88g for the project site. *Design earthquake ground motion parameters are provided in Table 2*.

3.7 Seismic and Other Hazards

- < **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the San Andreas fault. A further discussion of groundshaking is provided in Sections 3.5 and 3.6 of this report.
- < Surface Rupture. The project site does not lie within a State of California, Alquist-Priolo Earthquake Fault Zone. Surface fault rupture is considered to be unlikely at the project site because of the well-delineated fault lines through the Coachella Valley as shown on USGS and CDMG maps. However, because of the high tectonic activity and deep alluvium of the region, we cannot preclude the potential for surface rupture on undiscovered or new faults that may underlie the site.</p>
- < Liquefaction and lateral spreading. Liquefaction is a potential design consideration because of underlying saturated sandy substrata. The potential for liquefaction at the site is discussed in more detail in Section 3.8. The project site lies in a Riverside County designated zone of a high potential for liquefaction (See Riverside County Geographic Information System (GIS) Liquefaction Zones, Plate A-6).</p>

Other Potential Geologic Hazards.

- < Landsliding. The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps, and no indications of landslides were observed during our site investigation.
- < **Volcanic hazards.** The site is not located in proximity to any known volcanically active area and the risk of volcanic hazards is considered very low.
- < Tsunamis and seiches. Tsunamis are giant ocean waves created by strong underwater seismic events, asteroid impact, or large landslides. Seiches are large waves generated in enclosed bodies of water in response to strong ground shaking. The site is not located near any large bodies of water, so the threat of tsunami and seiches is considered unlikely.
- < **Flooding.** The site does not lie near any large bodies of water, so the threat of seismically-induced flooding is unlikely. The project site is located on Zone X, outside the 0.2% annual change floodplain by Federal Emergency Management Agency (FEMA) (see Plate A-8).
- < Seismic settlement of dry sands. Due to the very moist nature of the subsurface soils and shallow groundwater, the potential for hydro-collapse of the subsurface soils at this project site is considered low.

- Collapsible soils. Collapsible soil generally consists of dry, loose, low-density material that have the potential collapse and compact (decrease in volume) when subjected to the addition of water or excessive loading. Soils found to be most susceptible to collapse include loess (fine grained wind-blown soils), young alluvium fan deposits in semi-arid to arid climates, debris flow deposits and residual soil deposits. Due to the very moist nature of the subsurface soils and shallow groundwater, the potential for hydro-collapse of the subsurface soils at this project site is considered low.
- < **Expansive soils.** The near surface soils at the project site consist of sandy silts, silty sands and sands which are non-expansive.

3.8 Liquefaction

Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as produced by earthquakes. With strong ground shaking, an increase in pore water pressure develops as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations. Four conditions are generally required for liquefaction to occur:

- (1) the soil must be saturated (relatively shallow groundwater);
- (2) the soil must be loosely packed (low to medium relative density);
- (3) the soil must be relatively cohesionless (not clayey); and
- (4) groundshaking of sufficient intensity must occur to function as a trigger mechanism.

All of these conditions exist to some degree at this site.

Methods of Analysis: Liquefaction potential at the project site was evaluated using the 1997 NCEER Liquefaction Workshop methods. The 1997 NCEER methods utilize direct SPT blow counts or CPT cone readings from site exploration and earthquake magnitude/PGA estimates from the seismic hazard analysis. The resistance to liquefaction is plotted on a chart of cyclic shear stress ratio (CSR) versus a corrected blow count $N_{1(60)}$ or Qc_{1N} . A PGA_M value of 0.88g was used in the analysis with a 7-foot groundwater depth and a threshold factor of safety (FS) of 1.3.

The fines content of liquefiable sands and silts increases the liquefaction resistance in that more ground motion cycles are required to fully develop increased pore pressures. Prior to calculating the settlements, the field SPT blow counts were corrected to account for the type of hammer, borehole diameter, overburden pressure and rod length $N_{1(60)}$ in accordance with Robertson and Wride (1997). The corrected blow counts were then converted to equivalent clean sand blow counts ($N_{1(60)cs}$).

The soil encountered at the points of exploration included saturated silts and silty sands that could liquefy during a Maximum Considered Earthquake. Liquefaction can occur within a 20-foot thick silty sand and silt layer at a depth of 30 to 50 feet below ground surface. The likely triggering mechanism for liquefaction appears to be strong groundshaking associated with the rupture of the San Andreas fault.

<u>Liquefaction Induced Settlements</u>: Based on empirical relationships, total induced settlements are estimated to be about 3½ inches should liquefaction occur. The magnitude of potential liquefaction induced differential settlement is estimated at be two-thirds of the total potential settlement in accordance with California Special Publication 117; therefore, there is a potential for 2½ inches of liquefaction induced differential settlement at the project site.

The differential settlement based on seismic settlements is estimated at 1 inch over a distance of 100 feet. Foundations should be designed for a maximum deflection of L/720.

Because of the depth of the liquefiable layer, the 30-foot thick non-liquefiable layer may act as a bridge over the liquefiable layer resulting in a fairly uniform ground surface settlement; therefore, wide area subsidence of the soil overburden would be the expected effect of liquefaction rather than bearing capacity failure of the proposed structures.

<u>Mitigation:</u> Ground improvement methods are available to mitigate liquefaction such as deep soil mixing (cement), vibro-compaction, vibro-replacement, geopiers, stone columns, compaction grouting, or deep dynamic compaction. Other means to mitigate liquefaction damage include either a deep foundation system, rigid mat foundations and grade-beam reinforced foundations that can withstand some differential movement or tilting, but may not protect fracturing of buried utilities.

Because of the potential for differential settlement upon liquefaction, the designer should consider the structures be either founded on:

- 1) Foundations that use grade-beam footings to tie floor slabs and isolated columns to continuous footings (conventional or post-tensioned).
- 2) Structural flat-plate mats, either conventionally reinforced or tied with posttensioned tendons.

These alternatives reduce the potential for structural damage due to settlement by increasing the structural resistance to differential settlement. They do not eliminate the potential for settlement. The structural engineer is directed to CDMG Special Publication 117 for design on liquefiable sites.

3.9 Regional Subsidence

The project is located in the Coachella Valley which has experienced up to 12 inches of regional subsidence between 1996 and 2005 (USGS, 2007). The risk of regional subsidence at the project site is considered moderate. The project site is located in Riverside County designated area of active subsidence (Plate A-7).

Section 4 **DESIGN CRITERIA**

4.1 Site Preparation

<u>Pre-grade Meeting:</u> Prior to site preparation, a meeting should be held at the site with as a minimum, the owner's representative, grading contractor and geotechnical engineer in attendance.

Clearing and Grubbing: All surface improvements, debris and/or vegetation including grass, trees, and weeds on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic stripping should be hauled from the site and not used as fill. Any trash, construction debris, concrete slabs, old pavement, landfill, and buried obstructions such as old foundations and utility lines exposed during rough grading should be traced to the limits of the foreign materials and removed. Abandoned pipes should be traced and removed or filled with concrete. Any excavations resulting from site clearing and grubbing should be dish-shaped to the lowest depth of disturbance and backfilled with engineered fill.

The site is underlain by tile drain lines at a depth of approximately 5.0 to 6.0 feet below ground surface (see Plate A-9 in Appendix A). Tile lines should be cut and plugged at the street crossings. The pipelines are likely full of water and may temporarily flood excavations if not capped promptly. Base lines (6 to 8 inches diameter) should be located and crushed in-place with the backfill compacted to a minimum 90% of ASTM D1557 maximum density.

Mass Grading: Prior to placing any fills, the surface 12 inches of soil should be removed, the exposed surface uniformly moisture conditioned to a depth of 8 inches by discing and wetting to $\pm 2\%$ of the optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density. Native soils may be used for mass grading, placed in 6 to 8 inches maximum lifts, uniformly moisture conditioned to a depth of 8 inches by discing and wetting to $\pm 2\%$ of the optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density.

<u>Building Pad Preparation</u>: The existing surface soil within the building pad area(s) should be removed to 24 inches below the lowest foundation grade or 42 inches below the original grade (whichever is deeper), extending five feet beyond all exterior wall/column lines (including adjacent concreted areas).

The exposed sub-grade should be scarified to a depth of 6 to 8 inches, uniformly moisture conditioned to $\pm 2\%$ of the optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density.

<u>Auxiliary Structures Foundation Preparation:</u> Auxiliary structures such as free standing or retaining walls should have footings extended to a minimum of 18 inches below grade. The existing soil beneath the structure foundation prepared in the manner described for the building pad except the preparation needs only to extend 18 inches below and beyond the footing.

Street Subgrade Preparation: The native soils in street areas should be removed and recompacted to 12 inches below the design subgrade elevation. Engineered fill in street areas should be uniformly moisture conditioned to $\pm 2\%$ of the optimum moisture, placed in layers not more than 6 to 8 inches in thickness and mechanically compacted to a minimum of 90% of the ASTM D1557 maximum dry density.

Sidewalk and Concrete Hardscape Areas: In areas other than the building pad which are to receive concrete slabs, the ground surface should be over-excavated to a depth of 12 inches, uniformly moisture conditioned to $\pm 2\%$ of the optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density.

The on-site soils are suitable for use as compacted fill and utility trench backfill. Imported fill soil (if required) should be similar to onsite soil or non-expansive, granular soil meeting the USCS classifications of SM, SP-SM, or SW-SM with a maximum rock size of 6 inches and no less than 5% passing the No. 200 sieve. *The geotechnical engineer should approve imported fill soil sources before hauling material to the site*. Native and imported materials should be placed in lifts no greater than 8 inches in loose thickness, uniformly moisture conditioned to $\pm 2\%$ of optimum moisture, and re-compacted to at least 90% of ASTM D1557 maximum density.

<u>Moisture Control and Drainage</u>: The moisture condition of the building pad should be maintained during trenching and utility installation until concrete is placed or should be rewetted before initiating delayed construction.

Adequate site drainage is essential to future performance of the project. Infiltration of excess irrigation water and stormwaters can adversely affect the performance of the subsurface soil at the site. Positive drainage should be maintained away from all structures (5% for 5 feet minimum across unpaved areas) to prevent ponding and subsequent saturation of the native soil. Gutters and downspouts may be considered as a means to convey water away from foundations. If landscape irrigation is allowed next to the building, drip irrigation systems or lined planter boxes should be used. The subgrade soil should be maintained in a moist, but not saturated state, and not allowed to dry out. Drainage should be maintained without ponding.

Observation and Density Testing: All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "geotechnical engineer of record" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the geotechnical parameters for site development.

4.2 Utility Trench Backfill

On-site soil free of debris, vegetation, and other deleterious matter may be suitable for use as utility trench backfill. Backfill within roadway should, at a minimum, conform to County of Riverside Standard No. 818 – Utility Trench Backfill (Appendix E).

Pipe envelope/bedding should either be clean sand (Sand Equivalent SE>30) or crushed rock when encountering groundwater. A geotextile filter fabric (Mirafi 140N or equivalent) should be used to encapsulate the crushed rock to reduce the potential for in-washing of fines into the gravel void space. Precautions should be taken in the compaction of the backfill to avoid damage to the pipes and structures.

4.3 Foundations and Settlements

Shallow column footings and continuous wall footings are suitable to support the structures provided they are founded on a layer of properly prepared and compacted soil as described in Section 4.1. The foundations may be designed using an allowable soil bearing pressure of 1,800 psf. The allowable soil pressure may be increased by 20% for each foot of embedment depth in excess of 18 inches and by one-third for short term loads induced by winds or seismic events. The maximum allowable soil pressure at increased embedment depths shall not exceed 2,800 psf. Structures with grade beam reinforced foundations placed on the native soils shall have a maximum grade beam spacing of 25 feet. As an alternative to shallow column foundations, flat plate structural mats or grade-beam reinforced foundations may be used to mitigate liquefaction related movement.

Flat Plate Structural Mats: Flat plate structural mats may be used to mitigate liquefaction at the project site. The structural mat shall have a double mat of steel (minimum No. 4's @ 12" O.C. each way – top and bottom) and a minimum thickness of 10 inches. Mat edges shall have a minimum edge footing of 12 inches width and 18 inches depth (below the building pad surface). Structural mats may be designed for a modulus of subgrade reaction (Ks) of 200 pci when placed on compacted native soil. Mats shall overlay 2 inches of sand and a 10-mil vapor barrier. The building support pad shall be moisture conditioned and re-compacted as specified in Section 4.1 of this report.

Grade-beam Reinforced Foundations: Grade-beam reinforced foundations placed on the native soils should have a maximum grade-beam spacing of 25 feet. All exterior and interior foundations should be embedded a minimum of 18 inches below the building support pad or lowest adjacent final grade, whichever is deeper. Continuous wall footings should have a minimum width of 18 inches. Spread footings should have a minimum width of 24 inches and should not be structurally isolated. Recommended concrete reinforcement and sizing for all footings should be provided by the structural engineer.

Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement.

An allowable friction coefficient of 0.40 may also be used at the base of the footings to resist lateral loading.

<u>Settlements:</u> Foundation movement under the estimated static (non-seismic) loadings and static site conditions are estimated to not exceed ³/₄ inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed. Seismically induced liquefaction settlement may be on the order of 3 ¹/₄ inch.

4.4 Light Pole Foundations and Settlements

Individual piers should be adequate to support the lighting pole foundations. Embedment depth and diameter for the lighting pole piers to resist lateral loads where non constraint is provided at ground surface may be determined using the following formula per 2019 CBC Section 1807.3.2.1:

$$d = 0.5A \left[1 + (1+4.36h/A)^{1/2}\right]$$
 (Equation 18-1)

where:

 $A = 2.34P/S_1b$

b = Pier diameter in feet

d = Embedment depth in feet (but not over 12 feet for purpose of computing lateral pressure)

h = Distance in feet from ground surface to point of application of "P"

P = Applied lateral force in pounds

S₁ = Allowable lateral soil bearing pressure (basic value of 100 psf/f (see 2015 IBC Table 1806.2). Isolated piers that are not adversely affected by a 0.5 inch motion at the ground surface due to short-term lateral loads are permitted to be designed using lateral soil bearing pressures equal to two times the basic soil bearing value.

Installation: Drilled piers shall be placed in conformance to ACI 336 guidelines. Excavation for piers should be inspected by the geotechnical consultant. The bottom of the excavation for piers should be reasonably free of loose or slough material. Due to the presence of granular soils, all drilled piers shall be cased in its entire depth to prevent caving or lateral deformation. Groundwater may be expected to be encountered at a depth of approximately 7 feet below ground surface. The structural steel and concrete should be placed immediately after drilling. Prior to placing any structural steel or concrete, loose soil or slough material should be removed from the bottom of the drilled pier excavation. A tremie pipe should be used to pour concrete from the bottom up and to ensure less than five feet of free fall.

4.5 Slabs-On-Grade

Concrete slabs and flatwork should be a minimum of 5 inches thick. Concrete floor slabs may either be monolithically placed with the foundation or dowelled after footing placement. The concrete slabs may be placed on granular subgrade that has been compacted at least 90% relative compaction (ASTM D1557).

American Concrete Institute (ACI) guidelines (ACI 302.1R-04 Chapter 3, Section 3.2.3) provide recommendations regarding the use of moisture barriers beneath concrete slabs. The concrete floor slabs should be underlain by a 10-mil polyethylene vapor retarder that works as a capillary break to reduce moisture migration into the slab section. All laps and seams should be overlapped 6-inches or as recommended by the manufacturer. The vapor retarder should be protected from puncture. The joints and penetrations should be sealed with the manufacturer's recommended adhesive, pressure-sensitive tape, or both. The vapor retarder should extend a minimum of 12 inches into the footing excavations. The vapor retarder should be covered by 4 inches of clean sand (Sand Equivalent SE>30) unless placed on 2.5 feet of granular fill, in which case, the vapor retarder may lie directly on the granular fill with 2 inches of clean sand cover.

Placing sand over the vapor retarder may increase moisture transmission through the slab, because it provides a reservoir for bleed water from the concrete to collect. The sand placed over the vapor retarder may also move and mound prior to concrete placement, resulting in an irregular slab thickness. For areas with moisture sensitive flooring materials, ACI recommends that concrete slabs be placed without a sand cover directly over the vapor retarder, provided that the concrete mix uses a low-water cement ratio and concrete curing methods are employed to compensate for release of bleed water through the top of the slab. The vapor retarder should have a minimum thickness of 15-mil (Stego-Wrap or equivalent).

Concrete slab and flatwork reinforcement should consist of chaired rebar slab reinforcement (minimum of No. 4 bars at 18-inch centers, both horizontal directions) placed at slab mid-height to resist potential swell forces and cracking. Slab thickness and steel reinforcement are minimums only and should be verified by the structural engineer/designer knowing the actual project loadings. The construction joint between the foundation and any mowstrips/sidewalks placed adjacent to foundations should be sealed with a polyurethane based non-hardening sealant to prevent moisture migration between the joint.

Control joints should be provided in all concrete slabs-on-grade at a maximum spacing (in feet) of 2 to 3 times the slab thickness (in inches) as recommended by American Concrete Institute (ACI) guidelines. All joints should form approximately square patterns to reduce randomly oriented contraction cracks. Contraction joints in the slabs should be tooled at the time of the pour or sawcut (¼ of slab depth) within 6 to 8 hours of concrete placement. Construction (cold) joints in foundations and area flatwork should either be thickened butt-joints with dowels or a thickened keyed-joint designed to resist vertical deflection at the joint. All joints in flatwork should be sealed to prevent moisture, vermin, or foreign material intrusion. Precautions should be taken to prevent curling of slabs in this arid desert region (refer to ACI guidelines).

4.5 Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Plate C-3). The native soils were found to have S2 (severe) levels of sulfate ion concentration (5,600 to 6,522 ppm). Sulfate ions in high concentrations can attack the cementitious material in concrete, causing weakening of the cement matrix and eventual deterioration by raveling. The following table provides American Concrete Institute (ACI) recommended cement types, water-cement ratio and minimum compressive strengths for concrete in contact with soils:

Table 4. Concrete Mix Design Criteria due to Soluble Sulfate Exposure

Sulfate Exposure Class	Water-soluble Sulfate (SO ₄) in soil, ppm	Cement Type	Maximum Water- Cement Ratio by weight	Minimum Strength f'c (psi)
S0	0-1,000	-		
S1	1,000-2,000	II	0.50	4,000
S2	2,000-20,000	V	0.45	4,500
S3	Over 20,000	V (plus Pozzolon)	0.45	4,500

Note: From ACI 318-14 Table 19.3.1.1 and Table 19.3.2.1

A minimum of 6.0 sacks per cubic yard of concrete (4,500 psi) of Type V Portland Cement with a maximum water/cement ratio of 0.45 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including streets, sidewalks, hardscape, and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete. Thorough concrete consolidation and hard trowel finishes should be used due to the aggressive soil exposure.

The native soil has moderate to severe levels of chloride ion concentration (600 to 830 ppm). Chloride ions can cause corrosion of reinforcing steel, anchor bolts and other buried metallic conduits. Resistivity determinations on the soil indicate very severe potential for metal loss because of electrochemical corrosion processes. Mitigation of the corrosion of steel can be achieved by using steel pipes coated with epoxy corrosion inhibitors, asphaltic and epoxy coatings, cathodic protection or by encapsulating the portion of the pipe lying above groundwater with a minimum of 3 inches of densely consolidated concrete. *No metallic water pipes or conduits should be placed below foundations.*

Foundation designs shall provide a minimum concrete cover of three (3) inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil or landscape water (to 18 inches above grade). If the 3-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy coated for corrosion protection (in accordance with ASTM D3963/A934) or a corrosion inhibitor and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. *Hold-down straps should not be used at foundation edges due to corrosion of metal at its protrusion from the slab edge.* Additionally, the concrete should be thoroughly vibrated at footings during placement to decrease the permeability of the concrete.

Exterior foundation faces exposed to native soils (without adjacent mowstrips, sidewalks, or patios) should be coated with a permanent waterproofing membrane to prevent salt migration into concrete. *Copper water piping (except for trap primers) should not be placed under floor slabs.* All copper piping within 18 inches of ground surface shall be wrapped with two layers of 10 mil plumbers tape or sleeved with PVC piping to prevent contact with soil. The trap primer pipe shall be completely encapsulated in a PVC sleeve and Type K copper should be utilized if polyethylene tubing cannot be used. Pressurized waterlines are not allowed under the floor slab. Fire protection piping (risers) should be placed outside of the building foundation.

Landmark does not practice corrosion engineering. We recommend that a qualified corrosion engineer evaluate the corrosion potential on metal construction materials and concrete at the site to obtain final design recommendations.

4.6 Excavations

All site excavations should conform to CalOSHA requirements for Type C soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less may be cut nearly vertical for short duration. Excavations deeper than 4 feet will require shoring or slope inclinations in conformance to CAL/OSHA regulations for Type C soil. Surcharge loads of stockpiled soil or construction materials should be set back from the top of the slope a minimum distance equal to the height of the slope. All permanent slopes should not be steeper than 3:1 to reduce wind and rain erosion. Protected slopes with ground cover may be as steep as 2:1. However, maintenance with motorized equipment may not be possible at this inclination.

Groundwater is anticipated to be encountered at a depth of approximately 7 feet at the project site. The contractor is cautioned to evaluate soil moisture and groundwater conditions at the time of bidding. Dewatering (by well points) will be necessary (prior to trenching) to install utilities in trenches greater than 7 feet below ground surface.

4.7 Lateral Earth Pressures

Earth retaining structures, such as retaining walls, should be designed to resist the soil pressure imposed by the retained soil mass. Walls without granular drained backfill may be designed for an assumed static earth pressure equivalent to that exerted by a fluid weighing 35 pcf for unrestrained (active) conditions (able to rotate 0.1% of wall height), and 50 pcf for restrained (atrest) conditions. These values should be verified at the actual wall locations during construction.

4.8 Seismic Design

This site is located in the seismically active southern California area and the site structures are subject to strong ground shaking due to potential fault movements along the San Andreas fault. Engineered design and earthquake-resistant construction are the common solutions to increase safety and development of seismic areas. Designs should comply with the latest edition of the CBC for Site Class D using the seismic coefficients given in Section 3.6 and Table 2 of this report.

4.9 Pavements

Pavements should be designed according to the 2017 Caltrans Highway Design Manual or other acceptable methods. Traffic indices were not provided by the project engineer or owner; therefore, we have provided structural sections for several traffic indices for comparative evaluation. The public agency or design engineer should decide the appropriate traffic index for the site. Maintenance of proper drainage is necessary to prolong the service life of the pavements.

Based on the current Caltrans method, an estimated R-value of 40 for the subgrade soil and assumed traffic indices, the following table provides our estimates for asphaltic concrete (AC) and Portland Cement Concrete (PCC) pavement sections.

PAVEMENT STUCTURAL SECTIONS

R-Value of Su	ibgrade Soil - 40 (estimated)	Design Method - CALTRANS 2017		
	Flexible Pavements		Rigid (PCC) Pavements		
Traffic Index (assumed)	Asphaltic Concrete Thickness (in.)	Aggregate Base Thickness (in.)	Concrete Thickness (in.)	Aggregate Base Thickness (in.)	
5.0	3.0	4.0	6.0	6.0	
6.0	3.5	5.5	8.0	8.0	
7.0	4.5	6.0	10.0	10.0	
8.0	5.0	7.5	10.0	12.0	

Notes:

- 1) Asphaltic concrete shall be Caltrans, Type A HMA (Hot Mix Asphalt), ¾ inch maximum (½ inch maximum for parking areas), with PG70-10 asphalt concrete, compacted to a minimum of 95% of the Hveem density (CAL 308) or a minimum of 92% of the Maximum Theoretical Density (ASTM D2041).
- 2) Aggregate base shall conform to Caltrans Class 2 (¾ in. maximum), compacted to a minimum of 95% of ASTM D1557 maximum dry density.
- Place pavements on 12 inches of moisture conditioned (minimum 2 below to 4% above optimum) native soil compacted to a minimum of 90% (95% if sand subgrade) of the maximum dry density determined by ASTM D1557.
- 4) Portland cement concrete for pavements should have Type V cement, a minimum compressive strength of 4,500 psi at 28 days, and a maximum water-cement ratio of 0.45.

Final pavement sections may need to be determined by sampling and R-Value testing during grading operations when actual subgrade soils are exposed.

Section 5 LIMITATIONS AND ADDITIONAL SERVICES

5.1 Limitations

The findings and professional opinions within this report are based on current information regarding the proposed sports park located on the southwest corner of 66th Avenue (State Highway 195) and Dale Kiler Road in Mecca, County of Riverside, California. The conclusions and professional opinions of this report are invalid if:

- < Structural loads change from those stated or the structures are relocated.
- < The Additional Services section of this report is not followed.
- < This report is used for adjacent or other property.
- < Changes of grade or groundwater occur between the issuance of this report and construction other than those anticipated in this report.
- < Any other change that materially alters the project from that proposed at the time this report was prepared.

This report was prepared according to the generally accepted *geotechnical engineering standards* of practice that existed in Riverside County at the time the report was prepared. No express or implied warranties are made in connection with our services.

Findings and professional opinions in this report are based on selected points of field exploration, geologic literature, limited laboratory testing, and our understanding of the proposed project. Our analysis of data and professional opinions presented herein are based on the assumption that soil conditions do not vary significantly from those found at specific exploratory locations. Variations in soil conditions can exist between and beyond the exploration points or groundwater elevations may change. The nature and extend of such variations may not become evident until, during or after construction. If variations are detected, we should immediately be notified as these conditions may require additional studies, consultation, and possible design revisions.

Environmental or hazardous materials evaluations were not performed by *LandMark Consultants*, *Inc.* for this project. *LandMark Consultants*, *Inc.* will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

The client has responsibility to see that all parties to the project including designer, contractor, and subcontractor are made aware of this entire report within a reasonable time from its issuance. This report should be considered invalid for periods after two years from the date of report issuance without a review of the validity of the findings and professional opinions by our firm, because of potential changes in the Geotechnical Engineering Standards of Practice.

This report is based upon government regulations in effect at the time of preparation of this report. Future changes or modifications to these regulations may require modification of this report. Land or facility use, on and off-site conditions, regulations, design criteria, procedures, or other factors may change over time, which may require additional work. Any party other than the client who wishes to use this report shall notify *LandMark Consultants*, *Inc.* of such intended use. Based on the intended use of the report, *LandMark Consultants*, *Inc.* may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release *LandMark Consultants*, *Inc.* from any liability resulting from the use of this report by any unauthorized party and client agrees to defend, indemnify, and hold *LandMark Consultants*, *Inc.* harmless from any claim or liability associated with such unauthorized use or non-compliance.

This report contains information that may be useful in the preparation of contract specifications. However, the report is not worded is such a manner that we recommend its use as a construction specification document without proper modification. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

5.2 Plan Review

Landmark Consultants, Inc. should be retained during development of design and construction documents to check that the geotechnical professional opinions are appropriate for the proposed project and that the geotechnical professional opinions are properly interpreted and incorporated into the documents. Landmark Consultants, Inc. should have the opportunity to review the final design plans and specifications for the project prior to the issuance of such for bidding.

Governmental agencies may require review of the plans by the geotechnical engineer of record for compliance to the geotechnical report.

5.3 Additional Services

We recommend that Landmark Consultants, Inc. be retained to provide the tests and observations services during construction. The geotechnical engineering firm providing such tests and observations shall become the geotechnical engineer of record and assume responsibility for the project.

Landmark Consultants, Inc. recommendations for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the findings and professional opinions in this report are made contingent upon the opportunity for Landmark Consultants, Inc. to observe grading operations and foundation excavations for the proposed construction.

If parties other than Landmark Consultants, Inc. are engaged to provide observation and testing services during construction, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the recommendations in this report and/or by providing alternative recommendations.

Additional information concerning the scope and cost of these services can be obtained from our office.

TABLES

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
San Andreas - Coachella	3.9	6.3	7.2	96 ± 10	25 ± 5
Indio Hills *	12.3	19.7			
San Andreas - San Bernardino (South)	17.4	27.8	7.4	103 ± 10	30 ± 7
San Andreas - San Bernardino (North)	17.4	27.9	7.5	103 ± 10	24 ± 6
Hot Springs *	17.6	28.1			
San Jacinto - Anza	19.1	30.5	7.2	91 ± 9	12 ± 6
San Jacinto - Coyote Creek	23.3	37.3	6.8	41 ± 4	4 ± 2
Blue Cut *	23.8	38.1			
San Jacinto - Borrego	26.2	41.9	6.6	29 ± 3	4 ± 2
Garnet Hill *	29.3	46.8			
Eureka Peak	30.6	48.9	6.4	19 ± 2	0.6 ± 0.4
Elmore Ranch	33.3	53.3	6.6	29 ± 3	1 ± 0.5
Pisgah Mtn Mesquite Lake	37.6	60.2	7.3	89 ± 9	0.6 ± 0.4
Pinto Mtn.	37.9	60.6	7.2	74 ± 7	2.5 ± 2
Earthquake Valley	38.8	62.0	6.5	20 ± 2	2 ± 1
Burnt Mtn.	39.1	62.5	6.5	21 ± 2	0.6 ± 0.4
Superstition Mountain	40.0	64.1	6.6	24 ± 2	5 ± 3
Superstition Hills	40.0	64.1	6.6	23 ± 2	4 ± 2
Morongo *	43.4	69.4			
Elsinore - Julian	44.1	70.5	7.1	76 ± 8	5 ± 2
Elsinore - Coyote Mountain	44.2	70.7	6.8	39 ± 4	4 ± 2
Landers	45.8	73.3	7.3	83 ± 8	0.6 ± 0.4

^{*} Note: Faults not included in CGS database.

Table 2 2019 California Building Code (CBC) and ASCE 7-16 Seismic Parameters

ASCE 7-16 Reference

Soil Site Class:

D

Table 20.3-1

Latitude: 33.5682 N

Longitude: -116.0714 W

II

Risk Category:

Seismic Design Category:

Maximum Considered Earthquake (MCE) Ground Motion

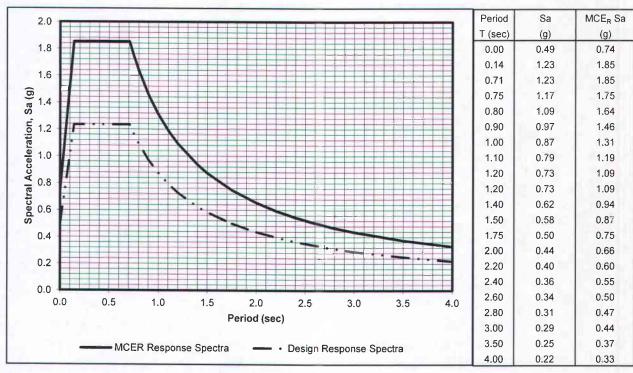
Mapped MCE _R Short Period Spectral Response	S_s	1.852 g	ASCE Figure 22-1	
Mapped MCE _R 1 second Spectral Response	\mathbf{S}_1	0.771 g	ASCE Figure 22-2	
Short Period (0.2 s) Site Coefficient	$\mathbf{F}_{\mathbf{a}}$	1.00	ASCE Table 11.4-1	
Long Period (1.0 s) Site Coefficient	$\mathbf{F_v}$	1.70	ASCE Table 11.4-2	

MCE_R Spectral Response Acceleration Parameter (0.2 s) 1.852 g = Fa * S_s ASCE Equation 11.4-1 S_{MS} MCE_R Spectral Response Acceleration Parameter (1.0 s) $= F_{\mathbf{V}} * S_{\mathbf{I}}$ ASCE Equation 11.4-2 1.311 g S_{M1}

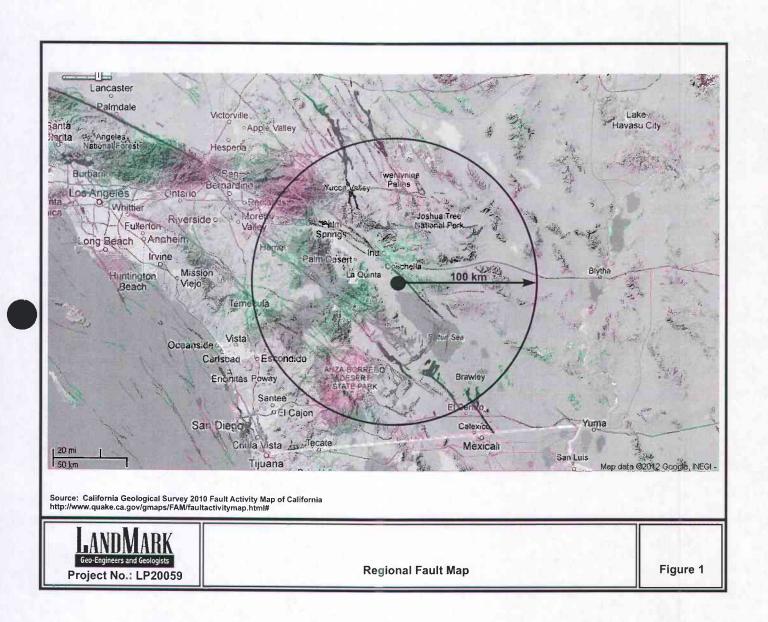
Design Earthquake Ground Motion

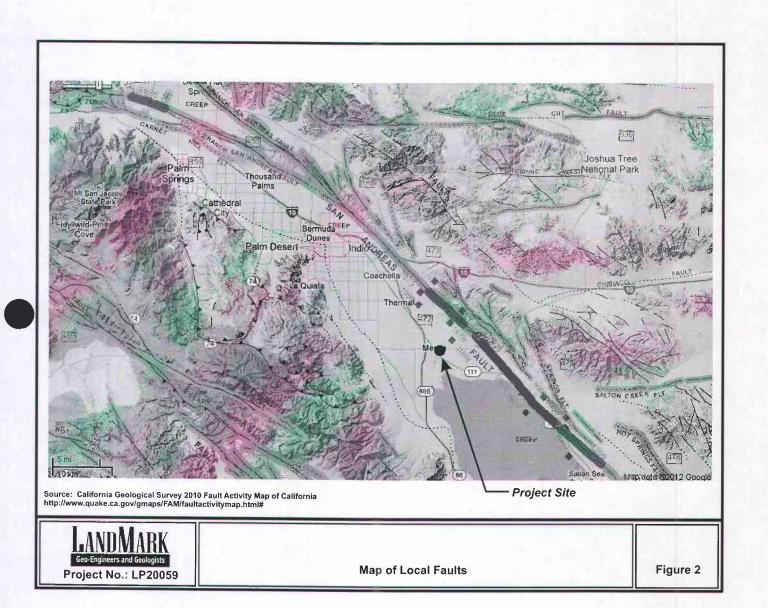
Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.235 g	$= 2/3*S_{MS}$	ASCE Equation 11.4-3
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.874 g	$= 2/3*S_{M1}$	ASCE Equation 11.4-4
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.886		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.876		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_{0}	0.14 sec	$=0.2*S_{D1}/S_{DS}$	
	T_S	0.71 sec	$=S_{D1}/S_{DS}$	

Peak Ground Acceleration ASCE Equation 11.8-1 PGA_M 0.88 g



FIGURES





EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuat on or existence is unordain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE (Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following

(a) a recorded earthquake with suiface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachap earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface uptures on the same fault have occurred, only the date of the latest movement may be indicated, expensitly if carrier reports are not well documented as to location of ground. breaks

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines

A triungle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point, Open black triangle indicates uncertain or estimated location of rupture termination point.

Date bracketed by triangles indicates local fault break

No triangle by date indicates an intermediate point along fault breille.

Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.

Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage hall occurred (creep either continuous or intermittent between these end points).

Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: or offset stream courses, linear scarps, shutter ridges and triangular faceted typus. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting

Late Quaternary fault displacement (during past 700,000 years), Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement some-time during the past 1.5 miltion years; possible exceptions are faults which displace rocks of undifferenti-ated Pito-Pisitocene lage. Unumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201. Appendix D for source data.

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissone nature or was not ulone with the object of dating fault displacements. Faults in this category are not necessarily inactive.

ADDITIONAL FAULT SYMBOLS

Bar and ball on downthrown side (relative or apparent)

Arrows along fault indicate relative or apparent direction of lateral movement.

Arrow on fault indicates direction of elip.

Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

OTHER SYMBOLS

Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Carthquake Fault Zo. e maps where a fault has been zoned by the Alquist-Prioto Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.

Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks

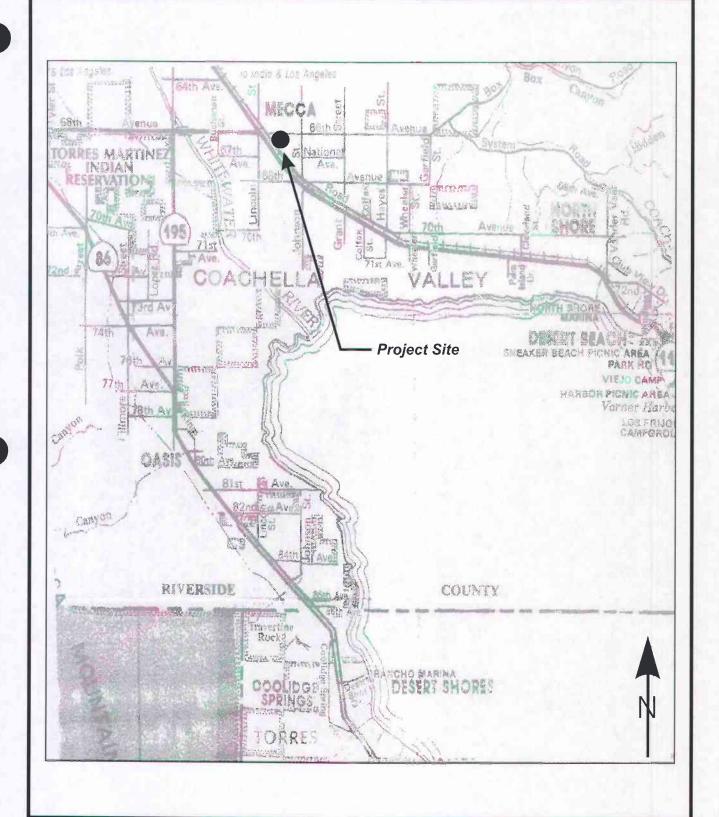
1/11/11/11/11/11/11

Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

	ologi	c	Years Before	Fault	Recency	DESCR	RIPTION
	lime cale		Present (Approx.)	Symbol	of Movement	ON LAND	OFFSHORE
	4	Pistone				Displacement during historic time (includes areas of killowin fault oree	
	Late Quaternary	riolocene	200	-	2 - 1	Day and American Reserved	Paulitinese's routeour watercents or attack of Floroverse again.
Quaternary	Late Q	u	11,700 —			S III shown (ndence of dish tener to the ille	Feut outs illand of Lave Plansk of the legs
Quate	Early Quaternary	P etstocene	700,000 —		33.0	Undersed Outermany facet - most finise in the Jack-gony stops of the Sacregony stops of the	Fault cirls blinks of Abilateroscy
Pre-Quaternary			1.600,000°			Faults without racognized Ouaternary displacement or showing evidence of no displacement during Qualernary time. Not necessarily inactive.	Fault cuts strata of Phocene or older age

^{*} Quaternary now recognized as extending to 2.6 Ma (Walker and Gessman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criteriol

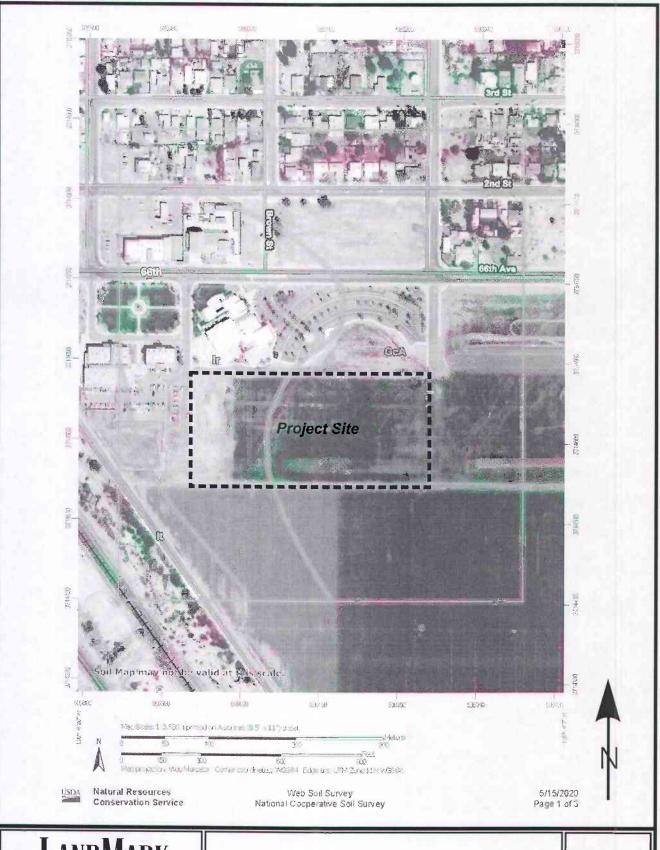
APPENDIX A



Geo-Engineers and Geologists
Project No.: LP20059

Vicinity Map





Geo-Engineers and Geologists

Project No.: LP20059

USDA Soil Conservation Soil Service Map

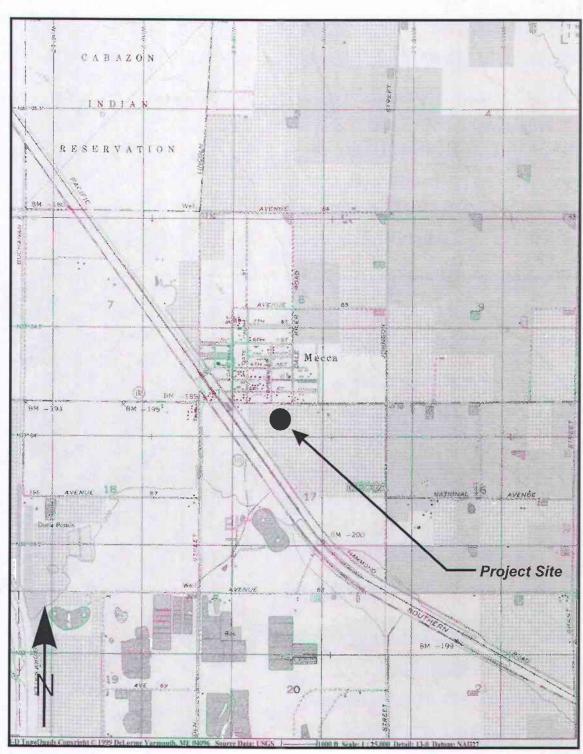
MAP LEGEND MAP INFORMATION Area of Interest (AOI) Spoil Area The soil surveys that comprise your AOI were mapped at Lami Area of Interest (AOI) 1:24,000. Stony Spot Warning: Soil Map may not be valid at this scale. Very Stony Spot Soil Map Unit Polygons Enlargement of maps beyond the scale of mapping can cause Wet Spot de Soil Map Unit Lines misunderstanding of the detail of mapping and accuracy of soil Other 0 line placement. The maps do not show the small areas of 388 Soil Map Unit Points contrasting soils that could have been shown at a more detailed ** Special Line Features Special Point Features Blowout Water Features (0) Please rely on the bar scale on each map sheet for map Streams and Canals 8 Borrow Pit measurements. Transportation × Clay Spot Source of Map Natural Resources Conservation Service Rails 1-1-1 Web Soil Survey URL: 0 Closed Depression ~ Interstate Highways Coordinate System: Web Mercator (EPSG:3857) Gravel Pit × US Routes Maps from the Web Soil Survey are based on the Web Mercator Gravelly Spot projection, which preserves direction and shape but distorts Major Roads 00 distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more Landfill 0 Local Roads Lava Flow accurate calculations of distance or area are required. 1 Background This product is generated from the USDA-NRCS certified data as 4 Marsh or swamp Aerial Photography of the version date(s) listed below. D. Mine or Quarry Soll Survey Area: Riverside County, Coachella Valley Area, 0 Miscellaneous Water Survey Area Data: Version 11, Sep 16, 2019 0 Perennial Water Soil map units are labeled (as space allows) for map scales Rock Outcrop 1:50,000 or larger. Saline Spot Date(s) aerial images were photographed: Dec 31, 2009—Oct Sandy Spot 14, 2017 Severely Eroded Spot The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor Ò Sinkhole Slide or Slip shifting of map unit boundaries may be evident. ò Sodic Spot 26



Web Soil Survey National Cooperative Soil Survey 5/15/2020 Page 2 of 3

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GcA	Gilman fine sandy loam, wet, 0 to 2 percent slopes	36.7	60.4%
Ir	Indio fine sandy loam, wet	20.3	33.4%
It	Indio very fine sandy loam, wet	3.8	6.2%
Totals for Area of Interest		60.7	100.0%

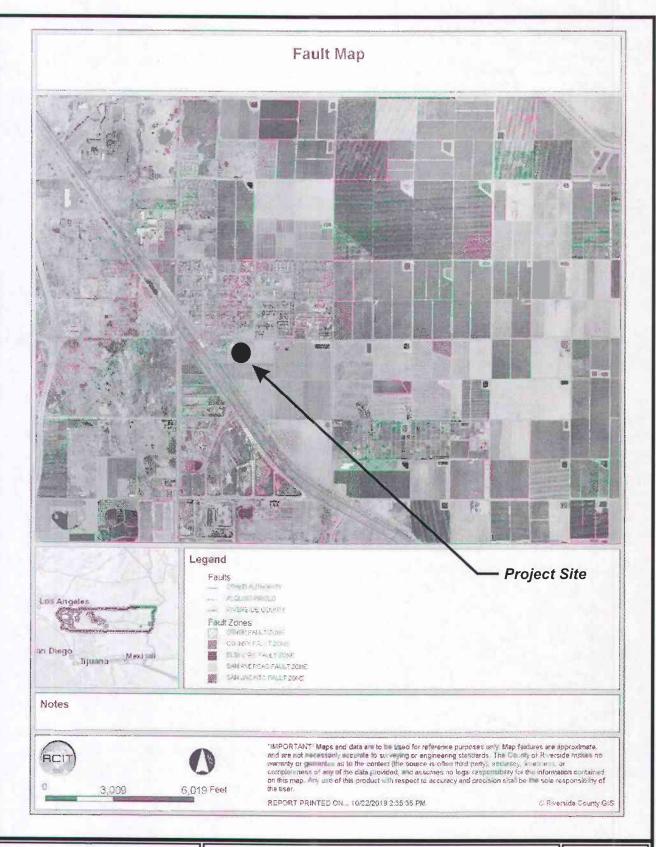


Reference: USGS Topographic Map Mecca, CA Quadrangle Scale 1:25,000



Project No.: LP20059

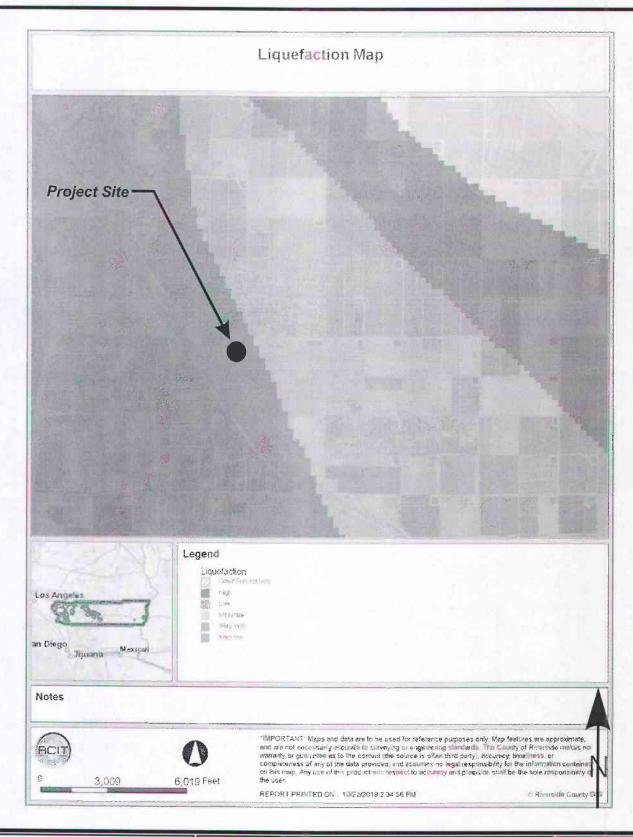
Topographic Map





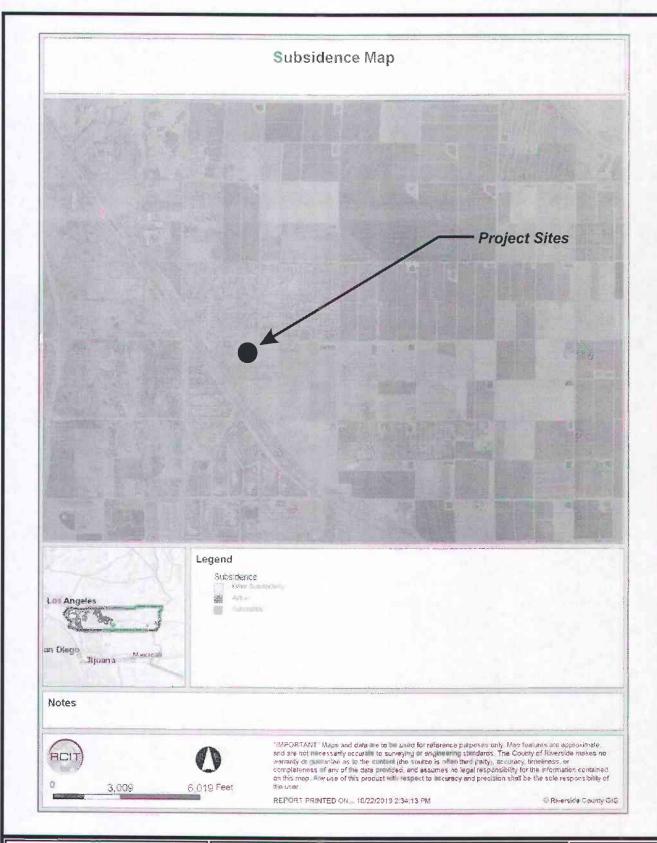
Project No.: LP20059

Riverside County Geographic Information System (GIS) Fault Map



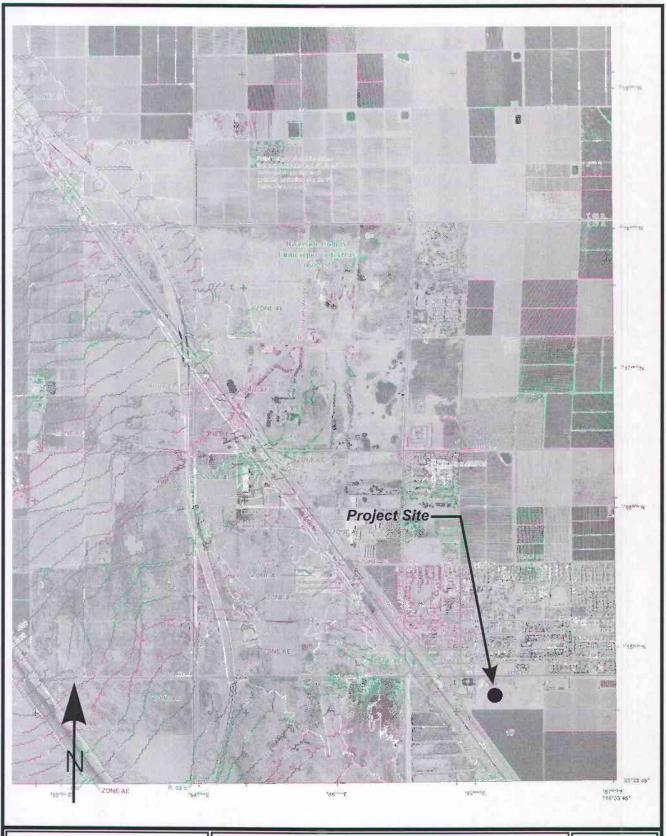


Riverside County Geographic Information System (GIS) Liquefaction Zones





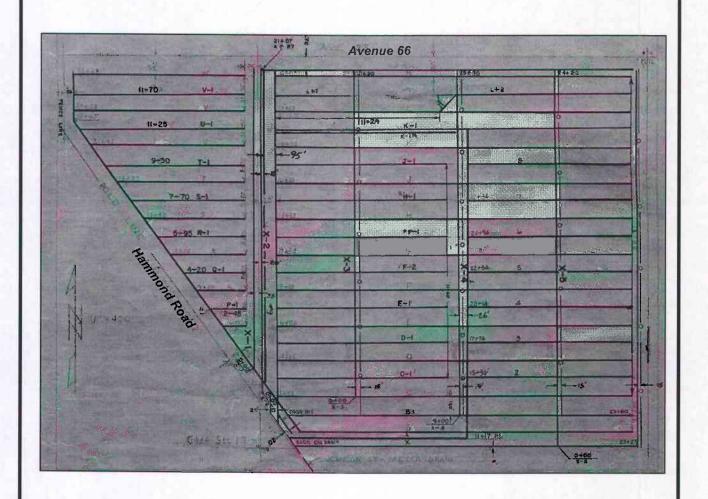
Riverside County
Geographic Information System (GIS)
Subsidence



Geo-Engineers and Geologists

Project No.: LP20059

FEMA Flood Zones







Project NO.: LP20059

Coachella Valley Water District Tile Drainage System Plan

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		0,0060	0.0026		0,0036	0,0002	0,0036	0,0020	0,000,0	0,0000		0,0027	0,0000	0,000,0	0,0020		0,0000	0,0020		0,0160	0,0020		0,0155	020000		0.0145	0.0020		0,0150	0,0000									
		8	16+00	25+30	00+9	20+00	248	20+00	248	72,400	24+30	3+00	18400	2400	13+00	24+30	8	13+00	24+30	2400	13+00	24.30	2400	13+00	24+30	2400	13+00	24+30	5400	13+00	24-30	3 ×m	The state of the s				Separate and the separa		
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	- 201.10	00 TO			the state of	- 200,50	- 199.60	- 197.60	- 195,10	- 200.55	- 199.90	- 189.65	- 199.00	- 197.85	- 197.40	- 196,00	- 195.65	- 201-19	- 201.00	- 199.75	- 198,60	- 197.20	- 195.75	- 194-15	- 192.55		130,73	- 167,20		Co. In July 1977 K- 173	1	
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	aa						ij	T)	9 ;	I :	Ţ) ;		7:		7 0				*	1						1					9	

APPENDIX B

I		FI	ELD		LOG OF BORING No. B-1			RATORY
DEPTH	SAMPLE	USCS CLASS.	BLOW	POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
	M		шО		SILTY SAND (SM): Brown, very moist, medium dense, very fine to fine grained		200	Passing #200 = 46.0%
5 -	1		28		Anticipated GW depth	105.5	17.2	
10 -	7		13	H	SILT (ML): Dark brown, saturated, medium dense to dense, trace clay and sand	93.0	27.1	Passing #200 = 64.1%
15 -	7	,,,,,,,,	50/5"			107.2	23.5	
20 -	7		22		SILTY CLAY (CL): Dark brown, saturated, stiff, trace sand GW measured at time of drilling	98.1	30.9	LL=42% PI=21% Passing #200 = 85.2%
25 -								
30 -								
35 -								
40 -								
45 -								
50 -								
55 -					Total Depth = 21.5' Groundwater encountered at 19.8 feet at time of drilling Backfilled with excavated soil			
60 -	DPII	I ED:	A/12/	20	TOTAL DESTINATION OF SERVICE AND SERVICE A	D	2TU TO 14	/ATED: 75#
LOG	GED B	Y:	4/13/: L. Ja	ckson	TOTAL DEPTH: 21.5 Feet TYPE OF BIT: Hollow Stem Auger	DIA	METER:	
		JECT	NO.		059 HAMMER WT.: 140 lbs. Geo-Engineers and Geologists	DR		30 in. ATE B-1

ī		FI	ELD		LOG OF BORING No. B-2			RATORY
DEPTH	SAMPLE	USCS CLASS.	BLOW	POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
5 —			24		SILTY SAND (SM): Brown, very moist, medium dense, very fine to fine grained	109.8	16.9	Passing #200 = 37.1%
10 —	N		22		Anticipated GW depth SANDY SILT (ML): Dark brown, saturated, medium dense, trace clay	109.8	30.9	Passing #200 = 53.6%
15 —								
20 —								
25 —								
30 —								
35 —								
40 —								
45 —								
-								
50 -								
55 -					Total Depth = 11.5' Groundwater not encountered at time of drilling Backfilled with excavated soil			
60 DATE	DRILL	I ED:	4/13/2	20	TOTAL DEDTIL	D.E.	DTU TO '	/ATER: 7.5 ft.
			L. Ja		TOTAL DEPTH: 11.5 Feet TYPE OF BIT: Hollow Stem Auger		METER:	
		ELEVAT			oximately -185' HAMMER WT.: 140 lbs.		OP:	
P	RO.	JECT	NO.	LP20	D59 LANDWARK Geo-Engineers and Geologists		PL/	ATE B-2

Ŧ		FI	ELD		LOG OF BORING No. B-	-3			RATORY
DEPTH	SAMPLE	USCS CLASS.	BLOW	POCKET PEN. (tsf)	SHEET 1 OF 1 DESCRIPTION OF MATE		DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
5 -	X		85/11"		SILT (ML): Dark brown, dry to saturated, medium de to very dense, trace clay and sand Anticipate	ense Ed GW depth	109.3	5.0	Passing #200 = 76.9%
10 -	A		17					27.3	Passing #200 = 81,8%
15 -									
20 -						4.,			
25 -									
30 -									
35 -									
40 -									
45 -									
50 -									
55 -					Total Depth = 11.5' Groundwater not encountered at time of drilling Backfilled with excavated soil				
60 -	DRIL	LED:	4/13/:	20	TOTAL DEPTH: 11.5 F	eet	DEF	TH TO W	/ATER: 7.5 ft.
LOG	GED B	Y:	L. Ja	ckson	TYPE OF BIT: Hollow	Stem Auger		METER:	
			ΓNO.		059 HAMMER WT.: 140 lb Geo-Engineers and Geologist	K	DRO		30 in.

Ŧ		F	IELD		LOG OF BORING No. B-4			RATORY
DEPTH	SAMPLE	USCS CLASS.	BLOW	POCKET PEN. (tsf)	SHEET 1 OF 1 DESCRIPTION OF MATERIAL	DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
5 -			23		SILT (ML): Dark brown, saturated, medium dense to dense, trace clay and sand Anticipated GW depth	105.0	7.1	Passing #200 = 55.1%
10 -	3		15			105.7	23.1	
15 -	1		32		GW measured at time of drilling	93.1	31.1	Passing #200 = 97.1%
20 -			48					
25 -								
30 -								i ir
35 -								
40 -								
45 -								
50 -								
55 -					Total Depth = 21.5' Groundwater encountered at 15.3 feet at time of drilling Backfilled with excavated soil			
LOG			4/13/: L. Ja	ckson	TOTAL DEPTH: 21.5 Feet TYPE OF BIT: Hollow Stem Auger oximately -185' HAMMER WT.: 140 lbs.	DIA	METER:	/ATER:
F	PRO	JEC	ΓNO.	LP20	059 LANDWARK Geo-Engineers and Geologists		PL/	ATE B-4

I		F	ELD			LOG OF BORING No. B-5					ABORATORY		
DEPTH	SAMPLE	USCS CLASS.	BLOW	POCKET PEN. (tsf)			SHEET	1 OF 1			DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
5 — 10 — 15 — 20 — 30 —	SAS	SN CT	30 21 34 18 41	PC PE	SILTY S medium	AND (SM): dense to de	Brown, very nse, very fin wn, saturate and sand	moist to see to fine g	Anticipated GW de	ppth	97.7 98.2 99.5	27.5 26.7 28.3 29.9	Passing #200 = 45.9% Passing #200 = 96.1% Passing #200 = 36.7%
35 —			10 8 13		loose to	AND (SM): medium der medium der -): Dark bro ay and sand	nse, very fine	e to fine gr	ained medium dense				Passing #200 = 36.7% Passing #200 = 86.9%
55 -			47		fine grai	AND (SM): ned oth = 51.5' vater encoun d with excava	tered at 17.						Passing #200 = 23.9%
DATE	GED B		4/13/: L. Ja FION:	ckson	roximately	-185'	TOTAL D TYPE OF HAMMEF		51.5 Feet Hollow Stem A 140 lbs.	uger	DIA	PTH TO W METER: OP:	
F	PRO	JEC ⁻	ΓNO.	LP20	059		Geo-	NIDA Engineers a	ARK and Geologists			PL/	ATE B-5

DEFINITION OF TERMS

PRIMARY DIVISIONS

SYMBOLS

SECONDARY DIVISIONS

					0200110711111 011110110110
	Gravels	Clean gravels (less	0.0	GW	Well graded gravels, gravel-sand mixtures, little or no fines
	More than half of	than 5% fines)		GP	Poorly graded gravels, or gravel-sand mixtures, little or no fines
	coarse fraction is larger than No. 4	Gravel with fines	HH	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
Coarse grained soils More	sieve		1//	GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
that No. 200 sieve	Sands	Clean sands (less		sw	Well graded sands, gravelly sands, little or no fines
	More than half of coarse fraction is smaller than No. 4	than 5% fines)		SP	Poorly graded sands or gravelly sands, little or no fines
		Sands with fines		SM	Silty sands, sand-silt mixtures, non-plastic fines
	sieve		1/2	sc	Clayey sands, sand-clay mixtures, plastic fines
	Silts an		ML	Inorganic silts, clayey silts with slight plasticity	
	Liquid limit is I		CL	Inorganic clays of low to medium plasticity, gravely, sandy, or lean clays	
Fine grained soils More than half of material is smaller	Elquid (IIIII 15)		OL	Organic silts and organic clays of low plasticity	
than No. 200 sieve	Silts an	d clays		мн	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts
	Liquid limit is n	ore than 50%	11/1	СН	Inorganic clays of high plasticity, fat clays
	Eigald Mill Is II	iore trian 3076	11/1	ОН	Organic clays of medium to high plasticity, organic silts
Highly organic soils			***	РТ	Peat and other highly organic soils

GRAIN SIZES

Silts and Clays	Sand			Gravel		Cobbles	Pouldora
One and Clays	Fine	Medium	Coarse	Fine	Coarse	Coubles	Boulders

US Standard Series Sieve

Clear Square Openings

Sands, Gravels, etc.	Blows/ft,
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Clays & Plastic Silts	Strength **	Blows/ft, *
Very Soft	0-0.25	0-2
Soft	0.25-0.5	2-4
Firm	0.5-1.0	4-8
Stiff	1.0-2.0	8-16
Very Stiff	2.0-4.0	16-32
Hard	Over 4.0	Over 32

- * Number of blows of 140 lb. hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 in. I.D.) split spoon (ASTM D1586).
- ** Unconfined compressive strength in tons/s.f. as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D1586), Pocket Penetrometer, Torvane, or visual observation.

Type of Samples:

Ring Sample

Standard Penetration Test

I Shelby Tube

Bulk (Bag) Sample

Drilling Notes:

1. Sampling and Blow Counts

Ring Sampler - Number of blows per foot of a 140 lb, hammer falling 30 inches. Standard Penetration Test - Number of blows per foot.

Shelby Tube - Three (3) inch nominal diameter tube hydraulically pushed.

- 2. P. P. = Pocket Penetrometer (tons/s.f.).
- 3. NR = No recovery.
- 4. GWT = Ground Water Table observed @ specified time.



Key to Logs

Plate B-6

APPENDIX C

LANDMARK CONSULTANTS, INC.

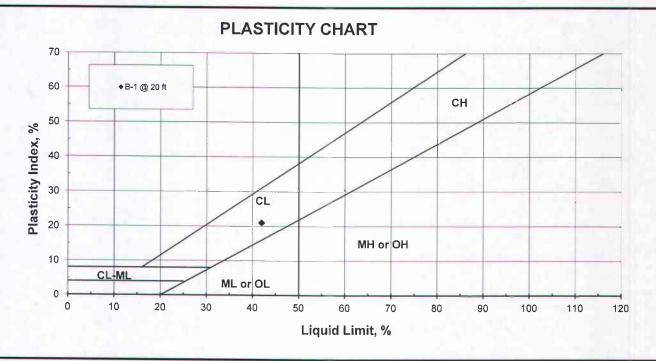
CLIENT: Riverside County EDA

PROJECT: Mecca Sports Park - Mecca, CA

JOB No.: LP20059 DATE: 05/13/20

ATTERBERG LIMITS (ASTM D4318)

Sample Location	Sample Depth (ft)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	USCS Classification	
B-1	20	42	21	21	CL	

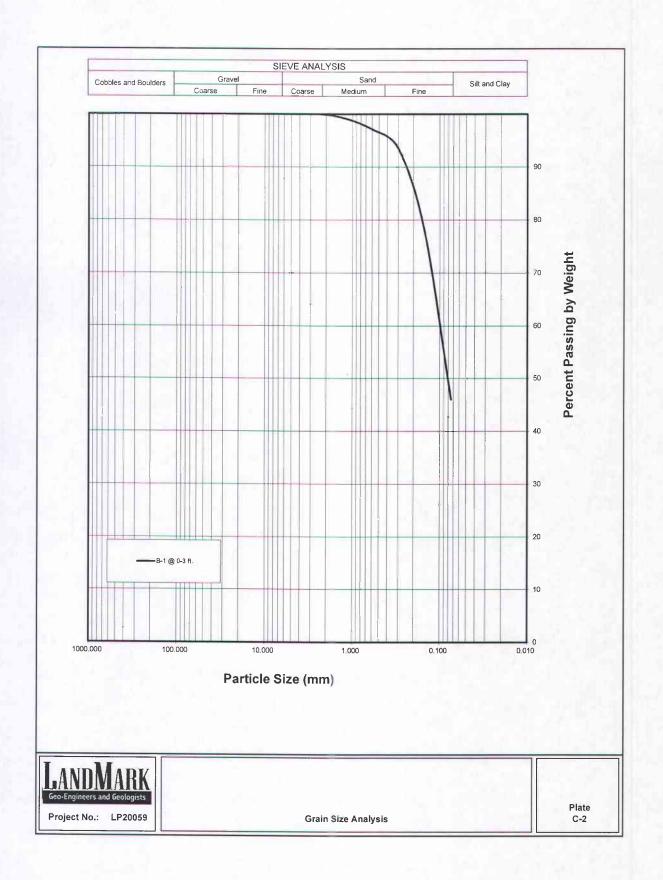


LANDWARK
Geo-Engineers and Geologists

Project No.: LP20059

Atterberg Limits
Test Results

Plate C-1



LANDMARK CONSULTANTS, INC.

CLIENT: Riverside County EDA

PROJECT: Mecca Sports Park - Mecca, CA

JOB No.: LP20059 DATE: 05/13/20

CHEN	ЛІС	ΛI	$\Lambda \Lambda$	IAI	VQI	2
CHEN		~ _	\sim 13		_ 0	

Boring: Sample Depth, ft:	B-1 0-3	B-3 0-3	Caltrans Method
pH:	7.8	7.5	643
Electrical Conductivity (mmhos):		1	424
Resistivity (ohm-cm):	510	500	643
Chloride (CI), ppm:	600	830	422
Sulfate (SO4), ppm:	6,522	5,600	417

General Guidelines for Soil Corrosivity

Material Affected	Chemical Agent	Amount in Soil (ppm)	Degree of Corrosivity
Concrete	Soluble Sulfates	0 - 1,000 1,000 - 2,000 2,000 - 20,000 > 20,000	Low Moderate Severe Very Severe
Normal Grade Steel	Soluble Chlorides	0 - 200 200 - 700 700 - 1,500 > 1,500	Low Moderate Severe Very Severe
Normal Grade Steel	Resistivity	1 - 1,000 1,000 - 2,000 2,000 - 10,000	Very Severe Severe Moderate



Project No.: LP20059

Selected Chemical Test Results Plate C-3

APPENDIX D

Liquefaction Evaluation and Settlement Calculation

Project Name: Mecca Sports Park - Mecca, CA Project No.: LP20059 Location: B-5

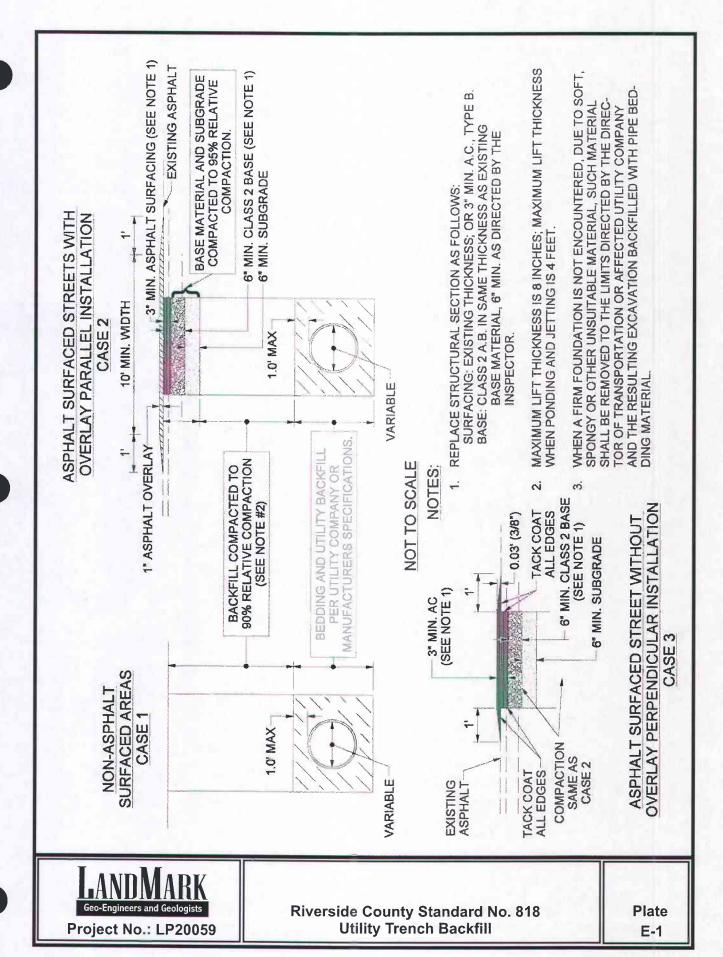
Maximum Crediole Earthquake	7.4		Borehole Diameter	8	in.
Design Ground Motion	0.88	9	Rod Length	3	ft.
Total Unit Weight,	110	pcf	Rod Length	0.91	m.
Water Unit Weight,	62.4	pcf	Liners	N	
Depth to Groundwater	7	ft	K aging	1	
Depth to Groundwater	2.13	m		3	
Hammer Effenciency	90		Percentile of Liquefaction	84	
Required Factor of Safety	1.3				

Boring Data					Sampling Corrections							Corrected	Fines	Compute Deterministic Vertical Strain				Individual Layer	
Depth		Blow Counts		Liquefiable		Sampler	SPT	Energy	Borehole	Rod	Liner	Overburden	SPT	Content					Subsidence
(ft)	(m)	SPT	Mod. Cat.	Soil (0 / 1)	σ, (kPa)	Diameter	N _m	C _e	C ₁₁	G _N	Cu	C _N	(N ₁) ₆₀		(N1)60.0s site	CRR(Nste)	CSRsite	FS; ste	(inches)
5	1.52		30	5	26.33	1	30	1.50	1 15	0.75	1.0	1,36	53	46	58.28	10.00		10.00	0.00
10	3.05		21	-1	43.70	1	21	1.50	1,15	0.80	1.0	1,30	38	46	43.30	10.00	0.52	10.00	0.00
15	4.57		34	1	55.10	1	34	1.50	1.15	0.85	1.0	1,13	57	95	62.04	10.00	1.56	10.00	0.00
20	6,10		18	1	66.50	1	18	1.50	1,15	0.95	1.0	1.15	34	96	39.48	3.03	0.73	4,15	0.00
25	7.62	41		1	77_89	1	41	1,50	1,15	0.95	1.0	1.04	70	95	75.26	10,00	0.94	10.00	0.00
30	9,14	10		1	89.29	1	10	1.50	1.15	1,00	1,0	1.06	18	37	23 81	0,23	0.88	0,26	1,07
35	10.67	8		1	100.68	1	8	1.50	1,15	1.00	1.0	1.00	14	37	19.38	0.17	0.91	0.19	1.06
40	12.19	13		1	112.08	1	13	1.50	1 15	1.00	1.0	0.96	21	87	27 00	0.30	0.91	0.33	0.54
45	13.72	9		1	123.47	1	9	1.50	1.15	1.00	1.0	0.91	14	87	19.60	0.17	0.92	0.19	0.61
50	15.24	47		1	134.87	1	47	1.50	1.15	1.00	1.0	0.97	79	24	83.72	10.00	0.82	10.00	0 00
											_			_					

Based on Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils , Technical Report NCEER-97-0022, December 31, 1997. Sampling Corrections from Idras and Boulanger (2010)

Total Settlement (in.) 3.28

APPENDIX E



APPENDIX F

REFERENCES

- American Concrete Institute (ACI), 2013, ACI Manual of Concrete Practice 302.1R-04.
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SECTION 01 23 00

ALTERNATES

PART 1 -- GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Provide alternative bid proposals, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.

B. Procedures:

- 1. Provide alternative proposals to be added to or deducted from the amount of the Base Bid if the Owner accepts the corresponding change in scope.
- 2. Include within the alternative bid prices all costs, including labor, materials, installations, and fees.
- 3. Show the proposed alternative amounts opposite their proper description on the Contractor's Proposal.

C. Acceptance or Rejection:

Acceptance or rejection of Alternate Bids is subject to Owner's discretion. The Owner reserves the right to award any or none of the Alternate Proposal items as the Owner may deem to be in its best interests and without regard to the order in which such items are listed in the Proposal.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

*** END OF SECTION ***

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for product substitutions.
- B. These procedures do not apply to section(s) that are marked NO SUBSTITUTIONS.

1.03 STANDARDS AND REFERENCES

A. Definition: A substitution is a proposed change by the Contractor in products, materials, equipment and/or methods of construction from those required by the Contract Documents.

B. Requirements:

- Comply with the Industry Standards and References as set forth in the specific Sections.
- For products specified by stating "or other approved" or "or approved equal" or other such wording on drawings or within specifications sections, submit a request for substitutions for any product or manufacturer which is not specifically named.

1.04 QUALITY ASSURANCE

- A. The Bidder represents that in making a legitimate, authorized formal request for substitution:
 - 1. A thorough investigation has transpired concerning the proposed product, and it has been determined that it is equal to or superior in all respects to that specified.
 - 2. The same warranties or bonds and guarantees will be provided as for that specified.
 - Installation of the accepted substitution will be coordinated into the work; and such
 changes to in-place work, ordered materials and products, or other work to be in
 progress prior to installation of the requested substitutions, will be performed without
 any additional cost to the OWNER.
- B. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00
- B. Deadlines:
 - 1. Pre-Bid: Submittals are due (14) Calendar Days prior to the Published Bid Deadline.
 - 2. After Award of Contract:
 - a. Substitution requests will be considered to provide competition or only if the specified product or system has gone out of production prior to bidding, or specified product or system has been deemed illegal or dangerous by governing agencies having jurisdiction over this project.
 - b. Provide within thirty (30) calendar days after the Notice of Award in accordance with Section 01 33 00; formal requests will be considered for substitutions of products in place of those specified.

- C. Substitution Requests: Submit three (3) hard copies and an electronic version of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use Section 01 25 01.
 - 2. Documentation: Show compliance with requirements for substitutions and the following is applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Included annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses or architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - Research reports evidencing compliance with current California Building Code.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 - 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

- a. Forms of Acceptance: Change Order.
- Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. Substitutions of Equipment and Materials During Bidding
 - Requests for Substitutions: The Bidder shall make Requests for Substitution on the County's Requests for Substitution form included in the Bidding Documents. Such requests shall comply with the requirements of the Bidding Documents, including without limitation, the Plans and the Specifications, without limitation to the other requirements of the Request for Substitution form, requests for Substitutions shall include:
 - A description of the material, equipment or other work that is to be replaced or eliminated by the Substitution;
 - A description of any other changes to the Work, Existing Improvements, the Site or the work of Separate Contractors that would be necessary if the proposed Substitution were incorporated as part of the Work;
 - c. A statement that the bidder accepts responsibility for the inclusion in its Bid of all of the costs of implementing the Substitution, including, without limitation, the costs of any related changes to the Work, Existing Improvements, the Site or the work of Separate Contractors;
 - All the drawings, performance and the test data and other information necessary for an evaluation of the Substitution by the County, Architect and County Consultants; and
 - e. A statement that the Bidder understands and agrees that if the Substitution is not approved and the Bidder submits a Bid, Bidder will provide the Work as specified in the Bidding Documents without such Substitution.
 - 2. The burden of proof of the merit of a proposed Substitution is entirely upon the Bidder requesting the Substitution.
- B. After award of Contract, Architect will consider formal requests from the Contractor for substitution of products in place of those specified only in case of product unavailability or other conditions beyond the control of Contractor.
 - Requests for Substitutions made after the award of Contract shall conform to the requirements for Substitutions of Equipment and Materials during Bidding.
- C. Should a substitution be approved under the foregoing provisions and subsequently prove to be defective or otherwise unsatisfactory for the intended use or function, Contractor shall, without cost to Owner and without obligation on the part of the Architect replace the substitute with the product, material, or equipment originally specified, if available, or another substitution conforming to the above requirements.

PART - 3 EXECUTION

NOT USED

SECTION 01 25 01

SUBSTITUTION REQUEST FORM

Project:	Substitution Request Number:
	From:
То:	Date:
	A/E Project Number:
Re:	
Specification Title:	Description:
Section: Page:	Article/Paragraph:
Proposed Substitution:	
Mamufacturer: Address:	Phone:
	Model No.:
Installer: Address:	Phone:
☐ Point-by-point comparative data attached — REQUIRED	DBY A/E
Reason for not providing specified item:	
Similar Installation:	
Project:	Architect:
Address:	Owner:
	Date Installed:
Proposed substitution affects other parts of Work: No	☐ Yes; explain
Savings to Owner for accepting substitution:	(\$
Proposed substitution changes Contract Time: No	☐ Yes [Add] [Deduct]days.
Supporting Data Attached: Drawings Product	Data □ Samples □ Tests □ Reports □

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- · Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become
 apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- · Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:	
Signed by:	
Finn:	
Address:	
Telephone:	
Attachments:	
A/E's REVIEW AND RECOMMENDATION	
 □ Approve Substitution - Make submittals in accordance with □ Approve Substitution as noted - Make submittals in accordat □ Reject Substitution - Use specified materials. 	
 □ Reject substitution - Ose specified materials. □ Substitution Request received too late - Use specified materials. 	ials.
Signed by:	Date:
OWNER'S REVIEW AND ACTION	
☐ Substitution approved - Make submittals in accordance w.	ith Specification Section 01 33 00 Submittal Procedures. Prepare Change
	rdance with Specification Section 01 33 00 Submittal Procedures. Prepare
☐ Substitution rejected - Use specified materials.	
Signed by:	Date:
Additional Comments: Contractor Subcontractor Subcontractor Contractor Contractor	ractor

SECTION 01 31 00

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

A. Work Included: To assure adequate planning and execution of the Work so that the Work is completed within the number of Calendar days allowed in the Contract, and to assist the Architect in appraising the reasonableness of the proposed schedule and in evaluating progress of the Work, prepare and maintain the schedules and reports described in this Section.

B. Related work:

 Construction period: According to Form of Agreement between Owner and Contractor.

C. Definitions:

1. "Day," as used through the Contract unless otherwise stated, means "Calendar Day."

1.03 QUALITY ASSURANCE

- A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, and in preparing and issuing periodic reports as required below.
- B. Perform Data Preparation, Analysis, Charting, and updating in accordance with standards accepted by the Architect.
- C. Reliance upon the accepted schedule:
 - The construction schedule as accepted by the Architect will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
 - Should any activity not be completed within 15 days after the stated scheduled date, the Owner shall have the right to require the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.
 - 3. Should any activity be 30 days or more behind schedule, the Owner shall have the right to perform the activity or have the activity performed by whatever method the Owner deems appropriate.
 - 4. Contractor shall reimburse any costs incurred by the Owner and by the Architect in connection with expediting construction activity under this Article.
 - 5. If it is expressly understood and agreed that failure by the Owner to exercise the option either to order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered to set a precedent for any other activities.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 Substitution Procedures.

1.05 SUBMITTALS

A. Provide in accordance with Section 01 33 00 Submittal Procedures.

- B. Preliminary analysis: Within seven calendar days after the Contractor has received the Owner's Notice to Proceed, submit one reproducible copy and four prints of a preliminary construction schedule prepared in accordance with Part 3 of this Section. This Schedule shall be reviewed at the pre-construction meeting.
- C. Construction schedule: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit one reproducible copy and four prints of a construction schedule prepared in accordance with Part 3 of this Section.
- D. Periodic reports: At the time of Application for Payment for each month following the submittal described in Paragraph 1.03-C above, submit four prints of the construction schedule updated as described in Part 3 of this Section.

PART 2 - PRODUCTS

2.01 CONSTRUCTION ANALYSIS

- A. Graphically show by bar chart the order and interdependence of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is shown on the diagram.
- B. Include, but not necessarily limit indicated activities to:
 - 1. Project mobilization.
 - 2. Submittal and review of Shop Drawings and Samples.
 - 3. Procurement of equipment and critical materials.
 - 4. Fabrication of special material and equipment, and its installation and testing.
 - 5. Final clean up.
 - Final inspecting and testing.
 - 7. All activities by the Architect that effect progress, required dates for completion, or both, for all and each part of the Work.

PART 3 - EXECUTION

3.01 PRELIMINARY ANALYSIS

A. Contents:

- Show all activities of the Contractor under this Work for the period between receipt of Notice to Proceed and submittal of construction schedule required under Paragraph 1.03-C above.
- 2. Show the Contractor's general approach to remainder of the Work.
- 3. Show cost of all activities scheduled for performance before submittal and acceptance of the construction schedule.
- B. Submit in accordance with Paragraph 1.03-C above.

3.02 CONSTRUCTION SCHEDULE

- A. As soon as practicable after receipt of Notice to Proceed, complete the construction analysis in preliminary form, meet with the Architect, review contents of the proposed construction schedule, and make all revisions agreed upon.
- B. Submit in accordance with Paragraph 1.03-C above.

3.03 PERIODIC REPORTS

- A. As required under Paragraph 1.03-D above, update the accepted construction schedule.
 - 1. Indicate "actual" progress in percent completion for each activity.
 - 2. Provide written narrative summary of revisions causing delay in the program, and an explanation of corrective actions taken or proposed.

3.04 REVISIONS

Make only those revisions to accepted construction schedule as are accepted in advance by the Architect.

SECTION 01 31 13

PROJECT COORDINATION

PART 1 -- GENERAL

1.01 <u>SUMMARY</u>

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

- A. Provide coordination required to ensure orderly progress and timely completion of the Work in conformance with the reviewed design and schedule.
- B. Interfacing: It shall be solely the responsibility of the Contractor to make sure that each Subcontractor completes in a timely manner the assigned Work and that interfaces are prepared, are connected, and function as required.

1.03 QUALITY ASSURANCE

- A. Familiarity with Contract Documents:
 - Contractor and Subcontractors shall conduct a study necessary to become completely familiar with requirements. Applicable requirements indicated or described in the Contract Documents, and the publications referred to, are a part of the Work required as though repeated in each such Section.
 - 2) In the event discrepancies or conflicts are encountered, notify the Architect immediately. Where there is a discrepancy between different parts of the Contract Documents, including referenced codes and standards, the documents requiring the higher quality, the greater quantity, or the more difficult Work shall govern, unless determined otherwise by the Architect.
 - 3) Promptly distribute required information to parties concerned and ensure the needed actions are taken.
- B. Reporting: The Contractor's data transmittals to the Architect for the Architect's review, unless otherwise noted by the Contractor in his transmittals, will be construed as stipulating that the Contractor has thoroughly and completely reviewed and coordinated the data prior to transmittal.

1.04 REQUEST FOR INFORMATION

- A. The General Contractor shall plan, schedule, coordinate and sequence Work so "Request for Information" (RFI's), if necessary, may be submitted to the Architect in a timely manner so as not to delay progress of Work. Submission of and responses to RFI's, with copies to Owner, shall be transmitted via FAX equipment.
- B. No RFI will be answered until Contractor submits a "Construction Schedule". The Construction Schedule shall be based on the Specification Sections. The Construction Schedule shall establish starting and ending dates for Work in each Section. The Construction Schedule shall be updated monthly and delivered to Architect and Owner at the "Request for Payment" meeting. If Architect and Owner do not receive the Construction Schedule by that date, Architect's response to pending RFI's will be delayed by the same number of days as the days the Construction Schedule is late.
- C. The Architect shall endeavor to respond to a RFI within five (5) working days after receipt of RFI. If RFI requires consultant's acknowledgment, an additional five days shall be allowed for review. The Contractor shall accommodate this time frame in his timely submission of RFI's.

D. No damages for delay due to RFI response beyond allotted time will be allowed, unless Contractor can show that RFI was not foreseeable with proper planning, scheduling, coordination, and sequencing and the Architect's late response delayed timely purchase or delivery of equipment or material, or limited construction personnel from proceeding with their task(s), within previously listed Construction Schedule activity period(s).

PART 2 -- PRODUCTS

NONE REQUIRED

PART 3 -- EXECUTION

3.01 PLANNING THE WORK

By thorough advance planning of activities, coordinate the following in addition to other coordination activities required:

- Materials, services, and equipment purchasing.
- 2. Shipping.
- Receipt and storage at the site.
- Installation, including interface with related items.
- 5. Inspection and testing, to the extent required under the Contract.
- 6. Assistance in initial start-up and operational tests.
- 7. Completion of the Work, including removal and disposal of Contractor's surplus material and equipment, and final cleaning of structures and sites.

3.02 METHODS

Coordination methods, means and techniques used by the Contractor are at the Contractor's option, except that the Architect may disapprove Work completed by the Contractor or data submitted by the Contractor when, in the Architect's judgment, coordination has been inadequate to ensure the specified quality.

*** END OF SECTION ***

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The County's Representative will schedule and administer a pre-construction meeting, regular progress meetings, and specifically called meetings throughout progress for the work and will:
 - Prepare agenda for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record the minutes; include significant proceedings and decisions.
 - 5. Reproduce and distribute copies of minutes after each meeting to participants in the meeting and to parties affected by decisions made at the meeting.

General Contractor representatives, subcontractors and suppliers attending meeting shall be qualified and authorized to act on behalf of entity each one represents.

1.02 PRE-CONSTRUCTION MEETING

- A. Timing: Prior to start of construction.
- B. Attendance: Architect and consultants as appropriate, County's Representative, General Contractor, Trade Contractors (including subcontractors, manufacturers and suppliers) as requested, and Inspector.
- C. Purpose: To discuss and familiarize contractors with project procedures, expectations and deliverables, schedule, safety procedures, labor compliance

1.03 COORDINATION MEETINGS

- A. Timing: Day and time to be determined by the County's Representative.
- B. Attendance: Architect and consultants as appropriate, County's Representative, General Contractor, Trade Contractors (including subcontractors, manufacturers and suppliers) as requested, and Inspector as needed.

C. Purpose:

- To provide a formal and regular forum for the General Contractor and Sub-Contractors to present: questions, problems or issues that need to be addressed safety concerns, review the progress on previous issues and action items, submittal and schedule review. All necessary coordination with dependent Trades.
- 2. To review the 4-week look ahead schedule produced by the General Contractor.
- 3. This shall <u>not</u> be the only or sole time that the items noted above shall be presented or addressed. Each Trade Contractor has a responsibility to address such items in a timely manner as not to impact dependent trades or the project schedule.

1.04 SPECIAL CALLED MEETINGS

The County's Representative may call a special meeting at any time during the course of the project. Special project meetings shall include representatives of any members of the project team requested in order to discuss problems and/or solutions that are common to the project.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedural requirements for non-administrative submittals including product data, shop drawings, samples and other miscellaneous work-related submittals required by Contract Documents.
- B. Refer to Division 00 and other Division 01 sections and other contract documents for specifications for administrative submittals; such submittals include, but are not limited to following items:
 - 1. Permits.
 - 2. Payment applications.
 - 3. Performance and payment bonds.
 - 4. Insurance certificates.
 - 5. Inspection and test reports.
 - 6. Schedule of values.
 - 7. Progress schedule.
 - 8. Listing or designation of subcontractors.
 - 9. Record drawings
- C. Designate in progress schedule, or in separate coordinated schedule, dates for submission and dates reviewed shop drawings, product data and samples will be needed for each product.
 - 1. Identify items requiring long lead times.
- D. The Contractor's submittal and Architect's acceptance of Product Data, Shop Drawings or Samples that relate to construction activities not complying with Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.
- E. Product Data, Shop Drawing and Sample Submittals containing substitutions for specified items will be rejected and returned as not in compliance with Contract Documents.

1.02 PRODUCT DATA

- A. Product Data includes standard printed information on manufactured products that has not been specially prepared for this Project, including but not limited to following items:
 - 1. Manufacturer's product specifications and installation instructions.
 - 2. Standard color charts.
 - 3. Catalog cuts.
 - 4. Roughing-in Diagram and templates.
 - 5. Standard wiring diagrams.
 - Printed performance curves.
 - 7. Operational range diagrams.
 - 8. Mill reports.
 - 9. Standard product operating and maintenance manuals.

- B. Modify standard drawings to delete information which is not applicable to the Project.
- C. Supplement standard information to provide additional information specifically applicable to Project.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show wiring or piping diagrams and controls.

1.03 SHOP DRAWINGS

- A. Shop drawings are technical drawings and data that have been specially prepared for Project, including but not limited to following items:
 - 1. Fabrication and installation drawings.
 - 2. Setting diagrams.
 - 3. Templates.
 - 4. Patterns.
 - 5. Coordination drawings (for use on-site).
 - 6. Schedules.
 - 7. Design mix formulas.
 - 8. Contractor's engineering calculations.
- B. Standard information prepared without specific reference to Project is not considered to be shop drawings.

1.04 SAMPLES

- A. Samples are physical examples of Work, including but not limited to following items:
 - 1. Partial sections of manufactured or fabricated work.
 - 2. Small cuts or containers of materials.
 - 3. Complete units of repetitively used materials.
 - 4. Swatches showing color, texture and pattern.
 - 5. Color range sets.
 - 6. Units of work to be used for independent inspection and testing.
- B. Office Samples:
 - 1. Provide in specified size and quantity to clearly illustrate:
 - a. Functional characteristics of product or material, with integrally related parts and attachment devices.
 - b. Full range of color, texture, and pattern.
 - 2. Where size and quantity is not specified, provide minimum of four samples, 12 inch by 12 inch minimum size, where samples are required.
- C. Field Samples and Mock-Ups:
 - 1. Erect at Project Site in location acceptable to Architect.
 - Construct each sample or mock-up complete, including work of trades required in finished work.

- 3. Size or area as specified in respective specification section.
- 4. Remove mock-ups at conclusion of Work or when acceptable to Architect and dispose legally.

1.05 <u>VERIFIED REPORTS</u>

A. Submit Verified Reports shall be submitted when required by the County, the Inspector of Record, the Architect and/or their Consultants, or as required by regulatory agencies, codes, laws, ordinances, etc.

1.06 <u>DEFERRED APPROVALS</u>

- A. Submit detailed plans, specifications and engineering calculations for Deferred Approval items.
- B. Calculations and drawings of structural nature shall be prepared and signed by registered Structural Engineer licensed in State of California.
- C. Submit 8 sets.
 - 1. If revisions are necessary, Architect will return one (1) set to contractor.
 - 2. Resubmit 8 sets with corrections.
- D. Fabrication and installation of Deferred Approval items shall not be started until detailed plans, specifications and engineering calculations have been accepted by Architect, Design Consultants, Building Officials, Regulatory Agencies, and/or County.

1.07 MISCELLANEOUS SUBMITTALS WORK-RELATED

- A. Include, but not limited to following types of submittals:
 - 1. Specially-prepared warranties (guarantees).
 - 2. Standard printed warranties.
 - 3. Maintenance agreements.
 - 4. Printed industry standards.
 - 5. Collected and bound operating/maintenance manuals.
 - 6. Keying schedule, keys and other security protection safety devices.
 - 7. Maintenance tools and spare parts.
 - 8. Maintenance materials and overrun stock.

1.08 CONTRACTOR RESPONSIBILITIES

- A. As defined in General Conditions.
- B. Review shop drawings, product data and samples for compliance with Contract Documents prior to submission.
- C. Determine and Verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - Conformance with Specifications and Drawings.
- D. Coordinate each submittal with requirements of Work and of Contract documents.
- E. Notify Architect in writing, at time of submission, of deviations in submittals from requirements of Contract Documents.
- F. Do not begin fabrication or work which requires submittals until return of submittals with

Architect's approval.

1.09 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in Work or in work of other contractor.
- B. Coordinate transmittal of different types of submittals for related elements of Work so processing will not be delayed by need to review submittals concurrently for coordination.
 - The Architect reserves right to withhold action on submittal requiring coordination with other submittals until related submittals are received.
- C. Accompany submittals with an accurately completed transmittal form.
 - 1. Submittals not accompanied by such form, or where applicable items on form are not completed, will be returned for resubmittal.
 - a. Sample of transmittal form is included at end of this section.
 - 2. Photo copy related specification section identifying submittal requirements and identify/bubble items that are being submitted.
- D. Use a separate transmittal form for each specific item or class of material or equipment for which submittal is required.
 - 1. Transmittal of submittals on various items using single transmittal form will be permitted only when items taken together constitute manufacturer's package or are so functionally related that expediency indicates review of group or package as whole.
- E. Schedule submissions per the deliverable timelines as specified in section 01 31 00.
 - No extension of Contract Time will be authorized because of failure to transmit submittals to Architect sufficiently in advance of Work to permit processing.
- F. Number of Submittals Required: Submit quantities as follows.
 - 1. Shop Drawings: Submit eight (8) full-sized/legible copies.
 - 2. Product Data: Submit eight (8) copies of manufacturer's product data.
 - 3. Samples: Submit number stated in each specification section, or, if not stated, submit as specified.
 - Warranties, Maintenance Agreements, Industry Standards, and Operating/Maintenance Manuals: Submit four (4) copies.
 - 5. Electronic Copies: Where deemed necessary or applicable to the project, electronic copies may be allowed to be provided in lieu of hard copies. Prior written approval must be granted before electronic copies shall be deemed acceptable. This clause does not apply to samples and/or mock-ups.
- G. Accompany submittals with transmittal form provided by Architect, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Number of each shop drawing, product data and sample submitted.
 - Notification of deviations from Contract Documents.
 - 6. Pertinent data.
- H. Submittals shall include:
 - Date and revision dates.

- 2. Project title and number.
- 3. Names of:
 - a. Architect/Engineer.
 - b. Contractor.
 - c. Subcontractor.
 - d. Supplier.
 - e. Manufacturer.
 - f. Separate detailer when pertinent.
- 4. Identification of product or material.
- 5. Relation to adjacent structure or materials.
- 6. Field dimensions, clearly identified as such.
- 7. Specification section number.
- 8. Applicable standards, such as ASTM number or Federal Specification.
- 9. A blank space, 8-inches by 3-inches, for Contractor and Architect stamps.
- 10. Identification of deviations from Contract Documents.
- On each sheet, provide contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
- 12. Submittals without Contractor's review stamp on each sheet will be returned, without action, for resubmittal.

1.10 RESUBMISSION REQUIREMENTS

- A. Shop Drawings:
 - 1. Revise initial drawings as required and resubmit as specified for initial submittal.
 - Indicate on drawings any changes which have been made or than those requested by Architect.
- B. Product Data and Samples: Submit new data and samples as required for initial submittal.

1.11 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

- A. Architect will distribute Shop Drawings and copies of Product Data and approved Deferred Approvals (if any), which carry Architect/Engineer stamp, with such reasonable promptness as to cause no delay in Work, but no later than three working days of receipt, to:
 - 1. Job site file.
 - 2. Record Documents file.
 - 3. Prime Contractor.
 - 4. Affected contractors.
 - Owner's Inspector.
- B. The General Contractor is responsible to coordinate distribution to their subcontractors and internal staff.
- C. Distribute samples which carry Architect's review stamp as directed by Architect.

1.12 ARCHITECT'S DUTIES

- A. As defined in the General Conditions.
- B. Architect will review submittals as originally submitted, as well as first resubmittal, at Architect's own cost.
 - 1. Architect's cost for reviewing additional resubmittals made or required, will be paid by Owner with reimbursement from Contractor by deductive change order.
- C. Action Stamp: Architect will stamp each submittal with uniform, self-explanatory stamp will be appropriately marked, as follows, to indicate action taken:
 - Final Unrestricted Release: Where submittals are marked "No Exception Taken", that part of Work covered by submittal may proceed provided it complies with requirements of Contract Documents; final acceptance will depend upon that compliance.
 - 2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted", that part of Work covered by submittal may proceed provided it complies with notations or corrections on submittal and requirements of Contract Documents; final acceptance will depend on that compliance.
 - 3. Returned for Resubmittal: When submittal is marked "Rejected" or "Revise and Resubmit", do not proceed with that part of Work covered by submittal, including purchasing, fabrication, delivery, or activity.
 - Revise or prepare new submittal in accordance with notations; resubmit without delay.
 - 1) Repeat if necessary to obtain different action mark.
 - 4. Do not permit submittals marked "Rejected" or "Revise and Resubmit" to be used at Project Site, or elsewhere Work is in progress.
- D. Unsolicited Submittals: Architect will return unsolicited submittals to sender without action.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

SECTION 01 45 29

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Work Included:

- 1. Cooperate with the Owner's selected testing agency and all others responsible for testing and inspecting the Work.
- The Contractor shall provide other testing and inspecting as in this Section and/or elsewhere in the Contract Documents.

B. Related Work:

- 1. Requirements for testing may be described in other Sections of the Project Manual.
- 2. Where no testing requirements are described, but the Owner decides that testing is required, the Owner may require the testing to be performed under current pertinent standards. Payment for testing will be made as described in this Section.

C. Work Not Included:

- 1. Selection of testing laboratory: The Owner will select a pre-qualified independent testing laboratory.
- 2. Payment for initial testing: The Owner will pay for all initial services of the testing laboratory except as further described in Article 2.01 of this Section.

1.03 QUALITY ASSURANCE

- A. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329.
- B. Testing will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

C. Owner's Inspector:

An inspector employed by the Owner in accordance with the requirements of California Building Code Amendments will be assigned to the Work. The work of construction in all stages of progress shall be subject to the personal continuous observation of the inspector. He shall have free access to any or all parts of the work at any time. The Contractor shall furnish the inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this contract. The inspector and/or Owner shall have authority to stop the work whenever the provisions of the Contract Documents are not being complied with and the Contractor shall instruct his employees accordingly.

1.04 OWNER NOTIFICATION

A. 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 be tested according to the terms of the Contract, in order that the Owner may arrange for the testing of same at the source of supply. B. 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 and shall not be incorporated in the job.

1.05 TEST REPORTS

A copy of all test reports shall be forwarded to both the Owner and the Architect by the testing agency. Such reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of the current California Building Code and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements of the Contract Documents.

PART 2 - PRODUCTS/SERVICES

2.01 PAYMENTS FOR TESTING INVOLVING NON-COMPLIANCE

When initial tests indicate non-compliance with the Contract Documents, the costs of initial tests as well as costs of subsequent retesting occasioned by the non-compliance will be paid by the Owner and the amount deducted from the Contract Sum.

2.02 SPECIFIC TESTS AND INSPECTIONS

- A. Provide all tests and inspections required by the current California Building Code, required by provisions of the Contract Documents, and such other tests and inspections as are dictated by the Architect.
- B. Tests include, but are not necessarily limited to, those described in detail in Part 3 of this Section.

PART 3 - EXECUTION

3.01 TAKING SPECIMENS

The testing personnel, unless otherwise provided in the Contract Documents, shall take all specimens and samples for testing. The testing laboratory will provide all sampling equipment and personnel. The testing laboratory will perform all deliveries of specimens and samples to the testing laboratory.

3.02 COOPERATION WITH TESTING LABORATORY

Provide access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.

3.03 SOIL INSPECTING AND TESTING

- A. Make required inspections and tests including, but not limited to:
 - 1. Visually inspect on-site and imported fill and backfill, making such tests and retests as are necessary to determine compliance with the Contract requirements and suitability for the proposed purpose.
 - 2. Make field density tests on samples from in-place material as required.
 - 3. As pertinent, inspect and test the scarifying and recompacting of cleaned subgrade; inspect the progress of excavating, filling, and grading; make 90% density tests at fills and backfills; and verify compliance with provisions of the Contract Documents and governmental agencies having jurisdiction.

B. Make and distribute necessary reports and certificates.

3.04 CONCRETE TESTING AND INSPECTIONS

A. General: Concrete testing and inspection shall comply with Chapter 19 requirements for "Testing and Inspection," California Building Code, Current Edition.

B. Portland cement:

- 1. Secure from the cement manufacturer Certificates of Compliance delivered directly to the concrete producer for further delivery directly to the testing laboratory.
- 2. Require the Certificates of Compliance to positively identify the cement as to production lot, bin or silo number, dating and routing of shipment, and compliance with specified standards.
- 3. If so required by the Architect, promptly provide such other specific physical and chemical data as requested.
- 4. One sample shall be taken for each 100 tons of cement except that when used in bulk loading ready-mix plants where separate bins for pre-tested cement are not available, grab samples shall be taken for each shipment of cement placed in the bin with not less than one sample being taken for each day's pour and such samples shall be subsequently tested if required by the Architect, Structural Engineer (or the Office of the State Architect.)

C. Aggregate:

- 1. Provide on test unless character of material changes, material is substituted, or additional test as requested by the Architect.
- 2. Sample from conveyor belts or batching gates at the ready-mix plant:
 - Sieve analysis to determine compliance with specified standards and grading;
 - b. Specific gravity test for compliance with specified standards.

D. Laboratory design mix:

- 1. Laboratory design mix shall comply with Structural Engineers requirements as stated in Section 32 13 13 and 03 30 00 as found in these specifications.
- 2. After acceptance of aggregate, and whenever character or source of materials is changed, provide mix design in accordance with ACI 613.
- Provide designs for all mixes prepared by a licensed Civil Engineer registered in the State of California.

E. Molded concrete cylinders:

- Provide four test cylinders for each 50 cubic yards, or fraction thereof, of each class of concrete of each day's placement.
- 2. Test one cylinder at seven days, one at 28 days, and one when so directed.
- 3. Report the mix, slump, gage, location of concrete in the structure, and test results.
- Take specimens and make tests in accordance with the applicable ASTM standard specifications.

F. Core tests:

 Provide only when specifically so directed by the Architect because of low cylinder test results.

- Cut from locations directed by the Architect, securing in accordance with ASTM C42, and prepare and test in accordance with ASTM C39.
- 3. Cores shall be of a diameter determined by the Testing Laboratory but no less than 4" in diameter.

G. Placement inspections:

- 1. The Owner's Inspector shall inspect placement of concrete.
- 2. Throughout progress of concrete placement, make slump tests to verify conformance with specified slump.
- Using all required personnel and equipment, throughout progress of concrete placement verify that finished concrete surfaces will have the level or slope that is required by the Contract Documents.
- 4. A project record shall be kept on the time and date of placing concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to inspection by the Owner and his Representatives.

H. Batch plant inspections:

The quality and quantity of materials used in transit mixed concrete and in batched aggregate shall be continuously inspected at the location where materials are measured by a specifically approved inspector.

3.05 MORTAR AND GROUT TESTS

- A. General: Mortar and grouts tests shall comply with Chapter 21 requirements of the California Building Code, Current Edition, for "Tests and Inspections."
- B. At the beginning of all masonry work, at least one test sample of the mortar and grout shall be taken on three successive working days and at least one-week intervals thereafter. The samples shall be continuously stored in moist air until tested. They shall meet the minimum strength requirement given in Section 04 05 13 of these Specifications.
- C. Additional samples shall be taken whenever any change in materials or job conditions occur, or whenever in the judgment of the Architect, Structural Engineer (or the Division of the State Architect), such tests are necessary to determine the quality of the material.

3.06 CONCRETE REINFORCEMENT INSPECTION AND TESTING

- A. General: Concrete reinforcement inspection and testing shall comply with Chapter 19 requirements for "Inspections of Welded Reinforcement Bars," California Building Code, Current Edition.
- B. Prior to use, test all reinforcement steel bars for compliance with the specified standards.
 - Where samples are taken from bundles delivered from the mill, with the bundles identified as to heat number, and provided the mill analysis accompanies the report, then, one tensile test and one bend test shall be made on a specimen from each 10 tons or fraction thereof for each size of reinforcing steel.
 - 2. Tag identified steel at the supplier's shop. When steel arrives at the job site without such tags, test it as unidentified steel.

C. Unidentified Steel:

- Unidentified steel is considered rejected material. It shall not be brought to the site nor incorporated into the Work. If the rejected material is discovered at the site, it shall be immediately removed from the site.
- D. Provide continuous inspection for all welding of reinforcement steel.

3.07 STRUCTURAL STEEL INSPECTING AND TESTING

- A. Prior to use, test all structural steel for compliance with the specified standards.
 - 1. Material identified by mill test reports, and certified by the testing laboratory, does not require additional testing. Require the supplier to furnish mill test reports to the laboratory for certification.
 - 2. Tag identified steel at the supplier's shop. When steel arrives at the job site without such tags, test it as unidentified steel.

B. Unidentified Steel:

 Unidentified steel is considered rejected material. It shall not be brought to the site nor incorporated into the Work. If the rejected material is discovered at the site, it shall be immediately removed from the site.

C. Shop Welding:

- 1. Provide qualified testing laboratory inspector. The jurisdictional authority shall approve inspector.
- 2. On single pass welds, inspect after completion of welding prior to painting.
- On multiple pass welds, and on butt welds with cover pass on the backside, provide continuous inspection.
- D. Field Welding: Provide continuous inspection by a qualified testing laboratory inspector. The jurisdictional authority shall approve inspector.

3.08 ROOFING AND WATERPROOFING INSPECTING AND TESTING

- A. Prior to start of membrane waterproofing and roofing installation, conduct a job site meeting attended by representatives of the installing subcontractors, the Contractor's field superintendent, the testing laboratory inspector, and the Architect, to agree upon procedures to be followed.
- B. Prior to start of installation, verify that the materials at the job site comply with the specified standards, that the subcontractor is qualified to the extent specified, and that the installing personnel are fully informed as to procedures to be followed.
- C. During installation, verify that materials are installed in strict accordance with the manufacturers' recommendations as accepted by the Architect.
- D. When so directed by the Architect, make test cuts to verify conformance with the specified requirements.

3.09 SCHEDULES FOR TESTING

- A. Establishing schedule:
 - 1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
 - 2. Provide all required time within the construction schedule.
- B. Adherence to schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

3.10 INSPECTION BY THE OWNER

The Owner or his representative shall at all times have access to the shops wherein Work is being fabricated or assembled and inspection is required. The Contractor shall provide safe access for such inspection.

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

- A. Work Included: Provide temporary facilities and controls needed for the Work including, but not necessarily limited to:
 - 1. Temporary utilities such as heat and air conditioning, water, electricity, and telephone.
 - 2. Field offices for the Contractor's personnel.
 - 3. Sanitary facilities.
 - 4. Enclosures such as tarpaulins, barricades, and canopies.
 - 5. Temporary fencing of the construction site.
 - 6. Project sign.

B. Related Work:

- 1. Documents affecting work of this Section include, but are not necessarily limited to, Special Conditions, and Sections in Division 1 of these Specifications.
- 2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their portions of the Work is not part of this Section.
- Permanent installation and hook-up of the various utility lines are described in other Sections.

1.03 PRODUCT HANDLING

Maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

PART 2 -- PRODUCTS

2.01 <u>UTILITIES</u>

- A. Water: Provide necessary temporary piping and water supply connections to existing systems on site so as not to disrupt current users and, upon completion of the Work, remove such temporary facilities.
- B. Electricity:
 - 1. Provide necessary temporary wiring and, upon completion of the Work, remove such temporary facility.
 - 2. Provide area distribution boxes so located that the individual trades may furnish and use 100 ft. maximum length extension cords to obtain power and lighting at points where needed for work, inspection and safety.
 - 3. Provide for separate metering and pay for electricity used in construction.
- C. Heating or Air Conditioning: Provide and maintain heat or air conditioning necessary for proper conduct of operations needed in the Work.

D. Telephone:

- 1. Make necessary arrangements and pay costs for installation and operation of telephone service to the Contractor's offices at the site.
- 2. Make the telephone available to the Architect for use in connection with the Work.

2.02 FIELD OFFICES AND SHEDS

A. Contractor's Facilities:

- 1. Provide field office within the existing building construction areas adequate in size and accommodation for Contractor's offices, supply, and storage.
- 2. Within the Contractor's facilities, provide enclosed space adequate for holding project meeting. Furnish with table, chairs, and utilities.

2.03 ENCLOSURES

Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

2.04 TEMPORARY FENCING

Provide and maintain for the duration of construction a temporary fence of design and type needed to prevent entry onto the Work by the public.

2.05 PROJECT SIGNS

- A. Provide a 4 foot x 8 foot project sign of exterior plywood mounted on two 4" x 4" posts. See Drawings for location and depiction of the Project Sign.
- B. Except as otherwise specifically accepted by the Architect, do not permit other signs or advertising on the job site.

PART 3 -- EXECUTION

3.01 MAINTENANCE AND REMOVAL

- A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.
- B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

*** END OF SECTION ***

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

Work Included: Provide products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

1.03 QUALITY ASSURANCE

Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.04 MANUFACTURERS' RECOMMENDATIONS

Except as otherwise accepted by the Architect, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.05 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with materials meeting the specified requirements, at no additional cost to the Owner.
- B. The Architect may reject as non-complying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.06 PROTECTION

- A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.
- B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.
- C. Maintain existing surfaces to remain and finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.07 REPAIRS AND REPLACEMENTS

- A. In event of damage, promptly make replacements and repairs to the acceptance of the Architect and at no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

SECTION 01055

FIELD ENGINEERING

PART 1 -- GENERAL

1.01 SUMMARY

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 <u>DESCRIPTION</u>

A. Work Included: Provide such field engineering services as are required for proper completion of the Work, including, but not necessarily limited to:

1. Layout.

- a. Contractor shall engage a licensed engineer to lay out and establish all construction and building lines and to establish finish floor elevations, finish grades, and all other construction grades.
- b. All benchmarks shall be substantially established by the Contractor, who shall protect and maintain them in place for the duration of the Contract, or until such time as the Architect authorizes the removal.
- 2. Establishing and maintaining lines and levels.
- 3. Structural design of shores, forms, and similar items provided by the Contractor as part of his means and methods of construction.

B. Related work:

- 1. Documents affecting work of this Section include, but are not necessarily limited to, Special Conditions, and Sections in Division 1 of these Specifications.
- Additional requirements for field engineering also may be described in other Sections of these Specifications.
- 3. As described in the General Conditions, the Owner will furnish survey describing the boundaries of the property.

1.03 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Upon request of the Architect, submit:
 - 1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
 - 2. Documentation verifying accuracy of field engineering work.
 - 3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or non-conformance with requirements of the Contract Documents.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01. PROCEDURES

In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:

- A. Locate and protect control points before starting work on the site.
- B. Preserve permanent reference points during progress of the Work.
- C. Do not change or relocate reference points or items of the Work without specific acceptance from the Architect.
- D. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
- E. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
- F. Locate such replacements according to the original survey control.

*** END OF SECTION ***

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1.03 DEFINITIONS

- Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or those results in increased maintenance or decreased operational life or safety.
 - 1. Primary operational systems and equipment.
 - 2. Air or smoke barriers.
 - Fire-protection systems.
 - Control systems.
 - 5. Communication systems.
 - 6. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Exterior curtain-wall construction.
 - 4. Equipment supports.
 - 5. Piping, ductwork, vessels, and equipment.
 - Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.05 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

3.03 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size

- required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
- Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
- Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
- 4. Excavating and Backfilling: Comply with requirements in the technical specifications where required by cutting and patching operations.
- Mechanical and Electrical Services: Where directed by drawings or specifications, cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
- 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

END OF SECTION

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 DESCRIPTION

Work Included: Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

1.03 QUALITY ASSURANCE

- A. Conduct daily inspection, and more if necessary, to verify that requirements for cleanliness are being met.
- B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

Use only the cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

A. General:

- 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
- 2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this work.
- 3. At least twice each month, and more often, if necessary, completely remove all scrap, debris, and waste material from the job site.
- 4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:

- 1. Daily, and more often, if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
- Weekly, and more often, if necessary, inspect all arrangements of materials stored on site. Re-stack, tidy, or otherwise service arrangements to meet the requirements above.
- 3. Maintain the site in a neat and orderly condition at all times.

C. Structures:

- Weekly, and more often, if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
- 2. Weekly, and more often, if necessary, sweep interior spaces clean.
 - a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom.
- As required preparatory to installation of succeeding materials, clean the structures
 or pertinent portions thereof to the degree of cleanliness recommended by the
 manufacturer of the succeeding material, using equipment and materials required to
 achieve the necessary cleanliness.
- 4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.
 - a. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material that, in the opinion of the Architect, may be injurious to the finish floor material.

3.02 FINAL CLEANING

- A. "Clean," for the purpose of this article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.01 above.

C. Site:

- 1. Unless otherwise specifically directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site.
- 2. Completely remove resultant debris.

D. Structures:

1. Exterior:

- Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
- b. Remove all traces of splashed materials from adjacent surfaces.
- c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
- d. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no cost to the Owner.

2. Interior:

- a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
- b. Remove all traces of splashed material from adjacent surfaces.
- c. Remove paint drippings, spots, stains, and dirt from finished surfaces.
- 3. Glass: Clean inside and outside.

- 4. Polished surfaces: To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.
- E. Schedule final cleaning as accepted by the Architect to enable the Owner to accept a completely clean Work.

3.03 CLEANING DURING OWNER'S OCCUPANCY

- A. Prior to the Owner occupying the Work or any portion thereof prior to the completion of the total project by the Contractor, the Contractor shall perform final cleaning for the area to be turned over in accordance with the General Requirements of the Contract.
- B. The Owner and Architect shall walk the limits of the area to be occupied and determine a punch list with expressly identified limits of area to be released. Once the area is accepted and occupied, the contractor shall be released from general cleaning except as required by the completion of the punch list items.

END OF SECTION

SECTION 01 77 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operating and maintenance manuals submittal.
 - 4. Submittal of warranties.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in the technical specification sections.

1.02 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Price.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - Obtain and submit releases enabling the District unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Deliver tools, spare parts, extra stock, and similar items.
 - 6. Complete start-up testing of systems, and instruction of the District's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mockups, and similar elements.
 - 7. Complete final clean up requirements.
- B. Inspection Procedures: On receipt of request for inspection, the Architect and/or Engineer will either proceed with inspection or advise the Contractor of unfulfilled requirements. The Architect and/or Engineer will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 - 1. The Architect and/or Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.03 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect and/or Engineer's reference during normal working hours.
- B. As-Built Drawings: Produce and maintain a clean, undamaged set of "E" size Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies from the Work as originally shown. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 1. Mark changes to the Documents caused by RFI responses with RFI designation.
 - 2. Mark changes to the Documents caused by Bulletins with Bulletin designation.
 - Mark new information that is important to the District, but was not shown on Contract Drawings or Shop Drawings.
 - 4. Note related Change Order numbers where applicable.
 - 5. Organize As-Built drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
 - 6. Per Riverside County Building Official Plan Check Requirements, "As- Built" drawing requirements are as follows:
 - As-built drawings are the final set of drawings produced at the completion of a
 construction project. They include all the changes that have been made to the
 original construction drawings, including notes, modifications, revisions and any
 other information that should be included. As-built drawings should not change
 the design intent but should depict the actual as-built conditions of the completed
 construction. While the original drawings are typically produced using computer
 aided design (CAD) software, the as-built drawings should contain handwritten
 notes, sketches, and changes.
 - When the construction phases of the project / contract are finished a complete set of marked-up redlined drawings will be turned over to the Owner for review and approval. All markings shall be on a previous approved set of drawings, signed and stamped by the EOR and Jurisdiction Enforcement Agency. No additional PE seal or signature is required on the as-built drawings. These drawings shall have AS-BUILT DRAWINGS indicated on the title sheet in the title block and on each sheet of submitted as-built drawings along with initial of responsible individual.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written Construction Documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
 - Upon completion of the Work, submit record Specifications to the District's Representative for approval and corrections. Upon acceptance, resubmit for the District's use.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation. Note related Changes Orders and markup of record drawings and

Specifications.

- Upon completion of markup, submit complete set of record Product Data to the District's Representative for approval and correction. Upon acceptance, resubmit for the District's use.
- E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous recordkeeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the District's Representative for approval and correction. Upon acceptance, resubmit for the District's use.
- F. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2 inch, 3-ring vinyl covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Submit one complete set of original manufacturer's maintenance and operational manuals to the District's Representative for approval and corrections. Upon acceptance, resubmit for the District's use a minimum of four (4) complete original manufacturer's sets. Include the following types of information:
 - 1. Emergency instructions.
 - 2. Spare parts list.
 - 3. Copies of warranties.
 - 4. Wiring diagrams.
 - 5. Recommended "turn around" cycles.
 - 6. Inspection procedures.
 - 7. Shop Drawings and Product Data.
 - 8. Manufacturer Contact Information
 - 9. Prime Contractor Contact Information

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - 1. Maintenance manuals.
 - 2. Record documents.
 - 3. Spare parts and materials.
 - 4. Tools.
 - 5. Lubricants.

- 6. Fuels.
- 7. Identification systems.
- 8. Control sequences.
- 9. Hazards.
- 10. Cleaning.
- 11. Warranties and bonds.

END OF SECTION

SECTION 01 78 36

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
- B. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
- C. Provide one (1) year warranty for workmanship, product and materials <u>unless</u> noted differently in the respective specification section.
- D. Certifications and other commitments and agreements for continuing services to the County are specified elsewhere in the Contract Documents.
- E. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- F. Further to Item E above, it is specifically required and acknowledged by this Contractor that warranty periods on all equipment commences from date of County's acceptance of the equipment and/or from the date of Substantial Completion, whichever is later. Therefore, startup of equipment and/or the use of equipment during construction shall not be construed as the qualifier for warranty period start.

1.02 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the County.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the County.

1.03 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the County has benefited from use of the Work through a portion of its anticipated useful service life.
- D. County's Recourse: Written warranties made to the County are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the County can enforce such other duties, obligations, rights, or remedies.

- Rejection of Warranties: The County reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The County reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entitles required to countersign such commitments are willing to do so.

1.04 SUBMITTALS

- A. Submit written warranties to the County's Representative prior to the date certified for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Engineer.
 - When a designated portion of the Work is completed and occupied or used by the County, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the County through the County's Representative for approval prior to final execution.
- C. Form of Submittal: At Final Completion compile four (4) copies of each required warranty and bond properly executed by the Contractor, or by the Contractor's subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual. Use a form acceptable to the County.
- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½ inch by 11-inch paper.
 - Provide heavy paper dividers with celluloid covered tabs for each separate warranty.
 Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
 - 2. 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. Refer to section 01 99 00 for an acceptable closeout cover page template.
 - 3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 03 10 00

CONCRETE FORMWORK AND ACCESORIES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

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

1.03 STANDARDS AND REFERENCES

- A. 2019 California Building Code (CBC).
- B. American Concrete Institute (ACI).
 - 1. ACI 303R "Guide to Cast-In-Place Architectural Concrete Practice"
 - 2. ACI 318 "Building Code Requirements for Structural Concrete"
 - 3. ACI 347 "Recommended Practice for Concrete Formwork"
- C. Standard Grading and Dressing Rules #17, West Coast Lumber Inspection Bureau (For Douglas Fir Form Lumber).
- D. U.S. Product Standard PS 1 (For Plywood Form Lumber).

1.04 QUALITY ASSURANCE

- A. Conform to all requirements of ACI 347 and ACI 318 Section 6.1 and 6.2.
- B. 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 to 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.
- C. 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.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00.
- B. Product Data. Provide manufacturers data and installation instructions for the following:
 - 1. Tie rods and spreaders.
 - 2. Formwork for exposed concrete.
 - 3. Form coatings and release agents.

1.07 <u>DELIVERY, STORAGE, AND HANDLING</u>

Comply with the requirements of Sections 01 60 00 and Section 01 66 00.

1.08 PROJECT CONDITIONS

Comply with the requirements of Sections 01 60 00 and 01 66 00.

1.09 OPERATION AND MAINTENANCE DATA

Not required.

1.10 EXTRA MATERIALS

Not required.

1.11 RECORD DRAWINGS

Comply with the requirements of Section 01 77 00.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Section 01 78 36.

PART 2 - PRODUCTS

2.01 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.
 - 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.
- Extruded Polystyrene Foam: ASTM C578 type IV. Dow Chemical Corp. "Styrofoam", UC Industries "Foamular", or approved equal.

PART 3 - EXECUTION

3.01 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.
 - 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.

3.02 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.

3.03 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 or formwork, bulkheads and shorings.

3.04 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

 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.

3.05 ADJUSTING AND CLEANING

- 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.
 - 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

SECTION 03 21 00

REINFORCING STEEL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

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.

1.03 STANDARDS AND REFERENCES

- A. 2019 California Building Code (CBC).
- B. American Concrete Institute (ACI):
 - 1. ACI 301 "Specifications for Structural Concrete for Buildings".
 - 2. ACI 315 "Details and Detailing of Concrete Reinforcing".
 - 3. ACI 318 "Building Code Requirements for Structural Concrete"
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM A82 "Cold Drawn Wire for Concrete Reinforcement".
 - 2. ASTM A185 "Welded Steel Wire Fabric for Concrete Reinforcement".
 - 3. ASTM A615 "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".
 - 4. ASTM A706 "Low Alloy Steel Deformed Bars for Concrete Reinforcement".
- D. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".
- E. American Welding Standard (AWS): AWS D1.4 "Structural Welding Code Reinforcing Steel".

1.04 QUALITY ASSURANCE

- Acceptable Manufacturers: Regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.
- B. 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
- C. Welding Qualifications: Welding procedures, welding operators and welders shall be qualified in accordance with AWS D1.4 "Structural Welding Code Reinforcing Steel".
 - Welders whose work fails to pass inspection shall be re-qualified before performing further welding
- D. Reinforcement Work shall conform to ACI 301 and ACI 318 Chapter 25, as minimum standards.
- E. Allowable Tolerances:
 - 1. Fabrication:
 - a. Sheared length: 1 inch.
 - b. Depth of truss bars: Plus or minus ½-inch.
 - c. Ties: Plus or minus 1/2-inch.

d. All other bends: Plus or minus 1 inch.

2. Placement:

- a. Concrete cover to form surfaces: Plus or minus 1/4-inch.
- b. Minimum spacing between bars: Plus or minus ¼-inch.
- c. Crosswise of members: Spaced evenly within 2 inches of stated separation.
- d. Lengthwise of members: Plus or minus 2 inches.
- Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00.
 - 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.
 - 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.
 - 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.
- B. Tests and Inspections:
 - 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.
- 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.
- 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.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements of Sections 01 60 00 and Section 01 66 00.
- B. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- C. Handle and store materials to prevent contamination.
- D. 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.
- E. Deliver and store welding electrodes in accordance with AWS D1.4.

1.08 PROJECT CONDITIONS

Comply with the requirements of Sections 01 66 00.

1.09 OPERATION AND MAINTENANCE DATA

Not required.

1.10 EXTRA MATERIALS

Not required.

1.11 RECORD DRAWINGS

Not required.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Section 01 78 36.

PART 2 - PRODUCTS

2.01 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.
 - 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

3.01 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.

3.02 CONDITION OF SURFACES

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

3.03 GENERAL

A. Concrete shown without reinforcing shall be reinforced as similar parts shown with reinforcing except where concrete is specifically noted to be unreinforced.

3.04 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.
 - 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.
- 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.
- 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 ***

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Furnish, place and finish cast in place concrete and related work as indicated on the Drawings and specified herein.
 - 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 herein.

1.03 STANDARDS AND REFERENCES

- A. 2019 California Building Code (CBC).
- B. American Concrete Institute (ACI)
 - 1. ACI 117 "Standard Tolerances for Concrete Construction and Materials"
 - ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete"
 - ACI 211.2 "Standard Practice for Selecting Proportions for Geotechnical Lightweight Concrete"
 - ACI 301 "Structural Concrete for Buildings"
 - 5. ACI 302 "Guide for Concrete Floor and Slab Construction"
 - 6. ACI 305R "Hot Weather Concreting"
 - 7. ACI 306R "Cold Weather Concreting"
 - 8. ACI 318 "Building Code Requirements for Structural Concrete"
 - 9. ACI 360 "Design of Slabs-On-Ground"
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM C31 "Making and Curing Concrete Test Specimens in the Field"
 - 2. ASTM C33 "Concrete Aggregates"
 - 3. ASTM C39 "Compressive Strength of Cylindrical Concrete Specimens"
 - ASTM C42 "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete"
 - ASTM C94 "Ready-Mixed Concrete"
 - 6. ASTM C109 "Test of Hydraulic Cement Concrete"
 - 7. ASTM C143 "Slump of Hydraulic Cement Concrete"
 - 8. ASTM C150 "Portland Cement"
 - 9. ASTM C172 "Sampling Freshly Mixed Concrete by the Volumetric Method"
 - 10. ASTM C192 "Making and Curing Concrete Test Specimens in the Laboratory"

- 11. ASTM C260 "Air-Entraining Admixtures for Concrete"
- 12. ASTM C330 "Lightweight Aggregates for Structural Concrete"
- 13. ASTM C494 "Chemical Admixtures for Concrete"
- 14. ASTM C618 "Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete"
- 15. ASTM C685 "Volumetric Batching and Continuous Mixing"
- 16. ASTM C1157 "Hydraulic-Cement"

1.04 QUALITY ASSURANCE

Tests and Inspections:

- A. Provide special inspections and testing as required by this section.
- B. 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.
- C. 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.
 - Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12.
 - A record shall be made of time and of locations of concrete from which samples were taken.
 - b. 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.
 - 2. Drying Shrinkage: (applies to lightweight concrete only unless noted otherwise)
 - a. A record shall be made of time cylinders and of locations of concrete from which samples were taken.
 - b. Three identical 4" x 4" x 11" specimens shall be made from same concrete as used in structure. Percent of shrinkage shall be reported at 21 days after 7 day moist curing period. Average results of 3 specimens shall be used as the accepted value. The value for laboratory cast specimens shall not exceed .075%. If field test specimens are used in lieu of laboratory specimens, a tolerance of +33% may be used.
 - c. Test specimens in accordance with ASTM C157.
 - 3. Concrete consistency (slump) shall be tested in accordance with ASTM C143.
- D. 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.
- E. Provide concrete batch plant inspections per ASTM C685.
- F. See Section 03 21 00 for reinforcing steel tests and inspections.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00.
- B. Concrete mix designs. See "Mix Design" below. Include results of test data used to establish proportions.
 - 1. Certificates of Compliance from Manufacturer
 - a. Cement certificates
 - b. Aggregates
 - c. Admixtures.
 - 2. Data regarding Curing process including any hardeners and/or sealers.
 - 3. Grout samples for sacked surface textures and colors.
 - 4. Layout drawings for construction, control and expansion joints.
 - 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.
 - 6. See Section 03 21 00 for reinforcing steel submittal requirements.
 - 7. Provide Records of Tests and Inspections from Article below.

1.07 <u>DELIVERY, STORAGE, AND HANDLING</u>

Comply with the requirements of Sections 01 60 00 and Section 01 66 00.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Sections 01 60 00 and 01 66 00.
- B. Comply with Manufacturer's Standard Requirements.

1.09 OPERATION AND MAINTENANCE DATA

Not required.

1.10 EXTRA MATERIALS

Not required.

1.11 RECORD DRAWINGS

Provide in accordance with Section 01 77 00.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Section 01 78 36.

PART 2 - PRODUCTS

2.01 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.
 - 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 115 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
- E. Slab on Grade Vapor Retarder
 - 1. Vapor Retarder must have the following qualities:
 - a. 15 mil thickness minimum
 - b. WVTR less than 0.008 as tested by ASTM E 96
 - c. ASTM E 1745 Class A (Plastics)
 - 2. Vapor Retarder Products
 - a. Stego Wrap Vapor Retarder by STEGO Industries LLC.
 - b. Perminator by W.R. Meadows.
 - 3. Vapor Retarder Tape
 - a. Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
 - a. 6-mils thick
 - b. Minimum 3 3/4 inches wide

- c. Minimum Manufactured from High Density Polyethylene
- d. Pressure Sensitive Adhesive
- 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:
 - 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.
- I. Bonding Agent: Sonneborn "Sonobond"; the Euclid Chemical Company "Euco-Weld"; Larsen Products Corp., "Weld-Crete" or approved equivalent.
- 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.

2.02 CONCRETE

- A. Concrete Mixes:
 - 1. Strength: 4,500 lbs. per square inch at 28 days.
 - 2. Type V Portland Cement.
 - 3. 6.0 sacks per yard minimum.
 - 4. Maximum Water to Cement Ratio: 0.45
 - 5. Maximum Aggregate Size: 1 inch.
 - 6. Minimum Cement Content: As required by mix design. (ACI 318 Section 26.4.3).
 - 7. Admixture: See Geotechnical Report.
 - 8. Consolidation: See Geotechnical Report.
 - 9. Use for building slab on grade, concrete foundation and concrete wall infill
- 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 plus or minus 1 inch.

- 2. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch +1 inch after dosing, 2 inch +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 Geotechnical engineer.

C. Mix Design:

- 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.

2.03 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

3.01 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.
 - 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.
 - 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 Inspector of Record. 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 Geotechnical Engineer 96 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 Geotechnical 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 Geotechnical 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.
 - 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.

 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 Geotechnical 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:

- 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.
- Vapor Retarder installation shall be in accordance with manufacturer's instructions and ASTM E 1643.
 - 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:
 - 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.
 - 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.

3.02 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 including Slab on Grade 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 including Slab on Grade:
 - 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 including Slab on Grade: 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.
- 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. If Curing Compound method is preferred, Contractor is required to submit Curing Compound product data confirming proposed product does not conflict with finish types and products listed above. 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. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.
- C. 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.
- 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.

3.03 FINISHES

A. Formed Surfaces:

- 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:
 - i. 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:
 - i. All surfaces above grade unless otherwise specified.
 - ii. 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:

- For tolerances not indicated, refer to ACI 117.
- b. Slabs on grade Comply with FF & FL 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.
- Concrete over metal deck Refer to Section 05 30 00 for minimum requirements.
- d. Elevated slabs Comply with Architectural requirements.
- e. Finished surfaces of exterior integral finished flatwork shall not vary more than 1/4 inch from a 10' long straightedge, except at grade changes.
- Sacked Surfaces: Exposed surfaces that are unacceptable in appearance to the Architect shall be sacked.
 - 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.
- Provide sufficient qualities 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.
- Alternate methods of application and materials shall be subject to the approval of the Architect.

3.04 PATCHING

A. Formed Surfaces:

- 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.
- 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.

3.05 DEFECTIVE CONCRETE

- A. Defective concrete shall mean any of the following:
 - 1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
 - 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:
 - 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.
 - 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 Geotechnical Engineer.

3.06 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.
 - 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.

3.07 <u>GROUTING</u>

- 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.

3.08 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 ***

SECTION 05 52 00

METAL RAILINGS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. General: Fabricate, supply and install site metal railings as shown in Drawings and as specified herein, including all accessories and hardware for a complete, timely and proper installation.

B. Additional:

- 1. Field measuring for weld plates, sleeves and insert locations.
- 2. Field measuring.
- 3. Anchors or inserts precast concrete.
- 4. Prime painting of galvanized materials

1.03 STANDARDS AND REFERENCES

- A. American Architectural Manufacturers Association (AAMA)
- B. American Concrete Institute (ACI): ACI 347 Recommended Practice for Concrete Formwork
- C. American Institute of Steel Construction (AISC)
- D. American Iron and Steel Institute (AISI)
- E. American National Standards Institute (ANSI)
 - ANSI A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
 - 2. ANSI A58.1 Minimum Design Loads in Buildings and Other Structures.
 - 3. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities.
- F. American Society for Testing and Materials (ASTM)
 - A 29 Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for.
 - 2. A 47 Specification for Ferritic Malleable Iron Castings.
 - 3. A 48 Specification for Gray Iron Castings.
 - 4. A 53 Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.
 - 5. A 108 Steel Bars, Carbon, Cold Finished, Standard Quality.
 - A 123 Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - A 500 Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 8. A 570 Specification for Steel, Sheet and Strip, Carbon, Hot Rolled, Structural Quality.
 - 9. A 575 Specification for Steel Bars, Carbon, Merchant Quality, M Grades.

- 10. A1264-1 Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems
- 11. C 595 Specification for Blended Hydraulic Cements.
- 12. E 84 Test Method for Surface Burning Characteristics of Building Materials.
- 13. E 894 Standard Test Methods for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
- 14. E 935 Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
- 15. E 985 Specification for Permanent Metal Railing Systems and Rails for Buildings.
- G. American Welding Society (AWS): Specifications for Welding Rods and Bare Electrodes.
- H. Americans With Disabilities Act Accessibility Guidelines (ADAAG)
- I. National Association of Architectural Metal Manufacturers (NAAMM) and National Ornamental and Miscellaneous Metals Association (NOMMA): Metal Finishes Manual
- J. National Association of Architectural Metal Manufacturers (NAAMM): Pipe Railing Manual and Metal Stair Manual
- K. National Fire Protection Association (NFPA): 101 Life Safety Code

1.04 QUALITY ASSURANCE

- Fabricator and Installer Qualifications: Furnish references listing projects of similar size and scope.
- B. Regulatory Requirements:
 - 1. Components and installation are to be in accordance with state and local code authorities
 - 2. Components and installation are to follow current ADA and ICC/ANSI A117.1 guidelines.
- C. Structural Requirements:
 - Railing assembly shall withstand a minimum concentrated load of 200 pounds applied vertically downward or horizontally in any direction, but not simultaneously, at any point on the top rail.
 - 2. Guard intermediate rails, balusters, panel fillers, posts or cables shall be designed for a uniform load of not less than 50 pounds per square foot applied horizontally over the gross area of the guard of which they are part. Reactions due to this loading need not be added to the loading specified for the main supporting members of the guard.
 - Railing frame components and cable hardware shall be designed to withstand loads
 encountered without excessive deflection or distortion when cables are tensioned to
 conform to building code requirements.

1.05 <u>SUBSTITUTIONS</u>

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 23 Submittals.
 - 1. Show sections and plans of stairs, dimensions and assembly of components.
 - a. Railings
 - b. Handrail

- c. Brackets
- d. Reinforcements
- e. Anchors
- f. Welded and bolted connections
- 2. Show all field connections
- 3. Provide setting diagrams for installation of anchors, location of pockets, weld plates for attachment of rails to structure, and blocking for attachment of wall rail.
- 4. Specify adequate back up support for anchoring handrail bracket.
- 5. Indicate all required field measurements.
- 6. Submit one set of digital files for approval.
- 7. Indicate component details, materials, finishes, connection and joining methods, and the relationship to adjoining work.
- B. Submit manufacturer's installation instructions under provisions of Section.

C. Certifications

- 1. Furnish certification that all components and fittings are furnished by the same manufacturer or approved by the primary component manufacturer.
- 2. Furnish certification that components were installed in accordance to the manufacturer's engineering data to meet the specified design loads.

D. Samples:

Submit duplicate samples of railing showing style and finish. One approved sample will be returned to contractor.

E. Pre-Installation Meeting

- 1. Prior to the beginning of work, conduct a pre-job conference at the job site.
- Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the fabricator, building owner's representative, architect and subcontractors whose work interfaces with the work of this section.
- Review the specifications to determine any potential problems, changes, scheduling, unique job site conditions, installation requirements and procedures and any other information pertinent to the installation.
- 4. Record the results of the conference and furnish copies to all participants.

1.07 <u>DELIVERY, STORAGE AND HANDLING</u>

- A. Comply with Section 01 60 00 Materials and Equipment.
- B. Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.
- C. Storage on site:
 - Store material in a location and in a manner to avoid damage. Stacking shall be done
 in a way, which will prevent bending.
 - Store material in a clean, dry location away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.

3. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of material.

1.08 PROJECT CONDITIONS

Comply with the requirements of Sections 01 50 00 Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 78 39 Contract Closeout.

1.10 EXTRA MATERIALS

Provide in accordance with Section 01 78 39 Contract Closeout.

1.11 RECORD DRAWINGS

Provide in accordance with Section 01 78 39 Contract Closeout.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Section 01 78 00 Warranties and Bonds.

PART 2 - PRODUCTS

2.01 MANUFACTURER

Basis of Design: Railing pipe and components shall be as manufactured or supplied by The Wagner Companies; P.O. Box 423; Butler, WI 53007. Phone: 888-243-6914. Fax: 414-214-0550. Web site: www.wagnercompanies.com. E-mail: info@mailwagner.com

2.02 MATERIALS AND FINISHES

Steel:

- A. Pipe: ASTM A 53
- B. Castings: Malleable, Ductile, Grey Iron meeting ASTM [A 47] [A 48]
- C. Finish (refer to NAAMM/NOMMA Metal Finishes Manual):
 - 1. Surface Preparation: Remove loose scale, rust, grease, oil, moisture or other foreign materials to properly prepare the surface for subsequent coating application.

Remove mill scale, rust and dirt following SSPC SP2 for hand cleaning and SSPC SP3 for power tool cleaning.

2. Galvanizing:

- a. Products fabricated from shapes, plates, bars and strips shall be galvanized in accordance with ASTM A 123.
- Sheet products shall be galvanized in accordance with ASTM A 653 and ASTM A 653M.
- c. Minimum coating weight 0.90 oz/sq. ft.

3. Paint:

- a. Minimum one coat of rust-inhibitive primer, FS-TT-P-641 Zinc Dust-Zinc Oxide Primer Coating (for Galvanized Surfaces) and FS-TT-P-645 Alkyd Type, Zinc Chromate, Paint Primer.
- b. Painted finish shall be as indicated in the Drawings.
- c. Touch up for Galvanized Surfaces: Use paint primer meeting FS-TT-P-645.

2.03 RAILING SYSTEM

- A. Material shall conform to 2.02 and be finished in accordance with 2.02.
- B. Railing system shall be permanently anchored].
- C. Rails and Posts: Fabricate rails and posts from steel pipe with nominal size of 1 1/2", (1.900" outside diameter) Schedule 40 (.140" wall).
- D. Pickets: .750" diameter, 0.050" wall steel tubing.
- E. Toe Board: Provide Toe Board of matching material as required.

2.04 FASTENERS

- A. All mechanical fasteners used in the assembly of stainless steel or aluminum railings shall be manufactured from stainless steel.
- B. Exposed mechanical fasteners for use with bronze materials shall be manufactured from yellow brass.
- C. Cement: Hydraulic, ASTM C 595, factory prepared with accelerator.

2.05 FABRICATION

- A. Form rail-to-end post connections and all changes in rail direction by miter elbows.
- B. Cut material square and remove burrs from all exposed edges, with no chamfer.
- C. Make exposed joints butt tight and flush.
- D. Close exposed ends of pipe and handrail by use of appropriate end cap.
- E. For posts set in concrete, furnish matching sleeves or inserts not less than 5 inches long.
- F. Locate intermediate rails equally spaced between top rail and finished floor or center line of tread.
- G. Verify dimensions on site prior to shop fabrication.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Construction Manager and Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

Supply items to be cast in concrete.

3.03 INSTALLATION

- A. Install in accordance with shop drawings and manufacturer's instructions at locations indicated on the drawings.
- B. Erect work square and level, horizontal or parallel to rake of steps or ramp, rigid, and free from distortion or defects detrimental to appearance or performance.
- C. Expansion joints shall be provided as needed to allow for thermal expansion or contraction.

3.04 CLEANING

- A. As installation is completed, wash thoroughly using clean water and soap; rinse with clean water.
- B. Do not use acid solution, steel wool or other harsh abrasives.
- C. If stain remains after washing, remove finish and restore in accordance with NAAMM/NOMMA Metal Finishes Manual.

3.05 REPAIR OF DEFECTIVE WORK

- A. Remove stained or otherwise defective work and replace with material that meets specification requirements.
- B. Repair damaged finish as directed by Architect
- C. Replace defective or damaged components as directed by Architect.

END OF SECTION

SECTION 07 10 00

DAMPROOFING AND WATERPROOFING

PART 1 -- GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract requirements and Division 1, General Conditions apply to this section.

1.02 SCOPE OF WORK SUMMARY

Work included: Provide and install membrane waterproofing where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.03 STANDARDS AND REFERENCES

Comply with the Industry Standards and References as established by Manufacturer.

1.04 QUALITY ASSURANCE

- A. This Contractor shall examine all surfaces before commencing work to see that they are in proper condition to receive his work. All surfaces shall be dry, smooth and clean. The Contractor shall immediately notify the Architect, in writing, of any defective work by others that might prevent him from properly performing his work in a first-class manner in accordance with these Specifications. He shall not proceed with any work until such defects are remedied and work approved by the Architect. This Contractor shall apply his work during normal working hours so that the project manager may have the opportunity to oversee the actual operation.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. The Contractor shall see that all sleeves, metal work, flashings and counter flashings, to be furnished and/or installed under other divisions of the Specifications, are properly installed and assume full responsibility for the water-tightness of all such work.
- D. Guarantee: Written guarantee is required from the applicator, guaranteeing this work against defective workmanship for a period of two years from date which the Owner records the Notice of Completion.
- E. Certification: Upon completion, issue to the Architect a Certificate of Inspection and Compliance indicating that the completed work meets all the requirements of these Specifications and the manufacturer's printed instructions.

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 3.10 of the General Conditions.

1.06 SUBMITTALS

- A. In accordance with Section 01 33 23 Submittal Procedures.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

 Provide approved written guarantee per system specified; refer to Application Specification of manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

Comply with Section 01 60 00 Materials and Equipment.

1.08 PROJECT CONDITIONS

Comply with the requirements of Section 01 50 00 Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 78 39 Contract Closeout.

1.10 EXTRA MATERIALS

Not required.

1.11 RECORD DRAWINGS

Not required.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Section 01 78 00 Warranties and Bonds.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Membrane or membrane assemblies for concrete walls behind berms shall be such as to provide a watertight condition for the life of the building and shall be a waterproofing Contractor approved by the manufacturer as manufactured by GCP Advanced Technologies. System shall apply Bituthene Waterproofing System 3000.
 - 1. Bituthene 3000 Waterproofing Membrane is a factory-made composite product with a minimum thickness of 60 mils (1.5 mm). It consists of 56 mils (1.4 mm) of rubberized asphalt and 4 mils (0.1 mm) of cross-laminated polyethylene film. Bituthene 3000 is supplied in rolls 36" (0.9m) wide and 60' (18.3 m) long. The rubberized asphalt is covered with release paper that is removed during installation. The membrane is self-adhesive and cold applied. No special adhesive or equipment is necessary to form laps.
 - 2. Physical Properties Bituthene Liquid Membrane LM-3000:

Property:	Typical Value:	Test Method:
Solids Content	100%	ASTM D-1644
Elongation	250%	ASTM D-412
Peel Adhesion	5 lb./inch width	See footnote 1
Pliability (180° bend over 1" mandrel)	Unaffected at -25°F	ASTM D-146
Hydrostatic head	75 ft. min.	See footnote 2

Footnotes:

 Liquid Membrane is applied to dry concrete blocks and cured for 7 days. Membrane is then peeled from the concrete blocks at a 90° angle.

- Hydrostatic head tests are performed by applying liquid membrane on primed concrete, then sealing the waterproofed concrete to a pressure chamber. Water is introduced under pressure equivalent to 75 head feet.
- 3. Elastomeric membrane 3000 and 3100:

Property:	Typical Value:	Test Method:
Color	Dark gray-black	
Pliability (180° bend over 1" mandrel)	Unaffected at -25°F (- 32°C)	ASTM D-146
Tensile strength: membrane	250 (psi) minimum	ASTM D-412
Tensile strength: film	4000 (psi) minimum	ASTM D-412 (Die C) modified
Elongation - ultimate failure of rubberized asphalt (%)	300 minimum	ASTM D-412 (Die C) modified
Cycling over crack	No effect after 100 cycles at 15°F (-26°C)	See footnote 1
Cycle over 1" joint	No effect after 1000 cycles at 15°F (-26°C)	See footnote 1
Puncture resistance-Bituthene Membrane (lb.)(stretched by blunt object)	40 minimum	ASTM E154
Puncture resistance: Polyethylene film	250 minimum (in. oz. tear)	ASTM D781 (Impact from sharp object)
Peel Adhesion	(Lb./in. width)	
Resistance to hydrostatic head	150 ft. of water minimum	See footnote 2
Exposure to fungi in soil 16 wks	Unaffected	GSA-PBS 07111
Permeance-perms	0.1 Maximum 0.2 (Grains/sq.ft./in.Hg)	ASTM E-96 Method B
Water Absorption: 72 hrs	0.25 maximum (% By weight)	ASTM D-1228

Footnotes:

- Membrane is applied across two primed blocks with no separation between blocks. At -15°F. blocks are pulled apart to 1/4", then returned to original position. Cycle is repeated 100 times. For joint cycling, the blocks are double covered with membrane, separated by 1", then cycled at -15°F between 3/4" and 1 1/4" a minimum of 1000 cycles.
- Hydrostatic head tests are performed by applying membrane on primed concrete, then sealing the waterproofed concrete to a pressure chamber. Water is introduced to 150 head feet.
- B. Bituthene Primer P-3000 is a rubber-based primer in solvent specifically formulated to provide good initial adhesion and excellent permanent adhesion of Bituthene Waterproofing Membranes.
- C. Bituthene Elastomeric Mastic EM-3000 is rubberized asphalt base mastic.
- D. Bituthene Liquid Membrane LM-3000 is a two-component, elastomeric cold-applied mastic grade material.
- E. Bituthene Protection Board PB-3000 is lightweight, expanded polystyrene having a nominal density of 1.0 lb./cu. ft.
 - 1. Bituthene PB-3000 shall have the following physical properties:

Property:	Typical Value:	Test Method:
Nominal Density	1.0 lb./cu. ft.	

Property:	Typical Value:	Test Method:
Thermal Conductivity K factor (BTU/Hr./Sq. Ft./F.In.)	.24 @ 40°F .26 @ 75°F	ASTM C-177
Thermal Resistance (R-Value)	1" thickness = 4 3/4" thickness = 3	ASTM C-177

- F. Bituthene Protection Board Adhesive PBA-3000 is a fast drying, rubber-based cement.
- G. All materials shall be furnished by the manufacturer whose specification is used to the extent of his standard and/or stock materials. Materials unable to be furnished by the manufacturer shall meet his reference specification requirements.
 - 1. Contractor shall furnish a statement signed by the manufacturer or his authorized representative that the materials to be supplied are proper for the use indicated and that the manufacturer is in agreement with the Contractor's use of these material systems as they are applicable to this installation.
 - 2. All materials shall be delivered to the site in the original unbroken manufacturer's wrapping material with the original labels thereon.

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Construction Manager and Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper completion of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Verify that surfaces are solid, free of frozen matter, loose particles, cracks, pits, rough projections, and foreign matter detrimental to adhesion and application of waterproofing.
- B. Do not apply waterproofing to damp, frozen, dirty, dusty, or deck surfaces unacceptable to manufacturer.
- C. The surface shall be inspected by a representative of the coatings manufacturer and by the waterproofing Contractor. A written notice to the prime Contractor shall be provided to indicate any substrate deficiencies that must be corrected prior to application of the waterproofing coatings. The start of the application work shall not commence until acceptance of the surface by the waterproofing Contractor and the representative of the manufacturer.
- D. Surface preparation: A smooth monolithic concrete surface is required. A broom surface is not acceptable. The concrete surface shall be dry, frost free, clean and cured a minimum of seven days prior to the application. The primer and membrane surface shall be free of voids, spalled areas, sharp projections, loose aggregate, and form release agents. Concrete curing compounds containing oil, wax or pigments shall not be used. Form release agents shall be the self-dissipating type that will not transfer to the concrete. Any surface defects such as cracks, holes or cavities shall be filled and finished flush with a Portland cement grout or concrete. Top surfaces of projecting ledges, below grade, except footings, shall be finished to a steep bevel with Portland cement mortar. Smooth concrete block walls shall be protected with membranes by striking off joints flush with surface.

3.03 INSTALLATION

- A. Foundation Walls and Vertical Surfaces
 - 1. General: The membrane, when in place, must withstand a minimum static ground water pressure of 150 feet (46 m).
 - 2. Priming: Application of primer shall be limited to what can be covered by Bituthene Waterproofing Membrane in a given workday. Primed areas not covered by membrane during the workday will be re-primed. Apply primer by spray, roller or brush at a rate of 250-350 square feet per gallon. Roller should be a natural material such as lamb's wool, having a nap of approximately one inch. Primer shall be applied to a clean, dry, frost-free and dust-free surface. Sufficient primer must be used on the dry surface to condition it to a dust-free state suitable for the application of Bituthene Waterproofing Membranes. Coverage of primer will vary due to the texture and porosity of the surface to receive the primer.
 - a. Bituthene Primer P-3000 should not be applied below 40°F (5°C) on vertical surfaces. At temperatures below 40°F (5°C), Bituthene P-3100 Primer must be used and it may be used up to 90°F (32°C). Allow P-3000 to dry one hour or until tack-free. Allow P-3100 to dry 30 minutes.
 - 3. Membrane Installation: Apply Bituthene Waterproofing Membrane vertically in sections of 8 feet in length or less. On higher walls apply two or more sections with the upper overlapping the lower by at least 2-1/2" (64 mm). Press all membrane in place with heavy hand pressure or rollers during application. Two piles of Bituthene Membrane are recommended for below grade or earth shelter applications on any wood surfaces.
 - 4. Sealing Edges: Bituthene Waterproofing Membrane shall be applied over the edge of the slab or over the top of the foundation or parapet wall. If the membranes are terminated on the vertical surface, a reglet or counter flashing may be used or the membrane may be terminated directly on the vertical surface by pressing very firmly to the wall. Press the edges with a metal or hardwood tool such as a hammer or knife handle. Apply a troweled bead of Bituthene EM-3000 to all vertical and horizontal terminations. Bituthene Liquid Membrane LM-3000 can be used as an alternative method.
 - 5. Sealing Seams: All edges and seams must be overlapped at least 2-1/2" (64 mm). Apply succeeding sheets with a minimum 2-1/2" (64 mm) overlap and stagger end laps. Roll or press the entire membrane firmly and completely as soon as possible. Patch misaligned or inadequately lapped seams with Bituthene Membrane. Slit any fish mouths, overlap the flaps, and repair with a patch of Bituthene and press or roll in place. The edges of the patch shall be sealed with a troweling of EM-3000. Laps within 12" (300 mm) of all corners shall be sealed with a troweling of EM-3000.
 - 6. Corner Forming: Outside corners must be free of sharp edges. Inside corners should receive a fillet formed with Liquid Membrane LM-3000, latex modified cement mortar (such as Daraweld C mixed with cement mortar) or epoxy mortar. Do not use fiber or wood cants. One of two methods may be used for treating corners:
 - a. Apply Bituthene Liquid Membrane LM-3000 six inches (150 mm) in each direction from the corner and form a fillet with a minimum 3/4" (19 mm) face.
 - b. Install an 11" (280 mm) minimum strip of Bituthene membrane centered on the corner. Install Bituthene Membrane over the treated inside and outside corners.

7. Protection of Membrane: The Bituthene Protection System shall be used on foundation walls and vertical surfaces subject to damage from other trades.

B. Horizontal Surfaces

1. Priming: Application of primer shall be limited to what can be covered with Bituthene Waterproofing Membrane in a given workday. Primed areas not covered by membrane during the workday shall be re-primed. Apply by spray, roller or brush at a rate of 250 to 350 square feet per gallon. Roller should be a natural material such as lamb's wool, having a nap of approximately one inch (25 mm). Primer shall be applied to a clean, dry, frost-free and dust-free surface. Rollers should be dipped into pans to avoid pouring primer directly on the deck and creating puddles. Sufficient primer must be used to condition the surface to a dry, dust-free stale suitable for the application of Bituthene Waterproofing Membranes. Coverage of primer will vary due to the texture and porosity of the surface to receive the primer.

Bituthene P-3000 Primer should not be applied below 25°F (-4°C) on horizontal surfaces.

2. Membrane Installation: Bituthene Waterproofing Membrane shall be applied to the primed surface starting at the low point. Successive sheets should overlap preceding ones by 2-1/2" (64 mm). Two plies of Bituthene Membrane are recommended for below grade or earth shelter applications on any wood surfaces. All membrane shall be firmly rolled as soon as possible to minimize bubbles. Roller shall be a linoleum roller or standard water filled garden roller less than 30" (760 mm) wide, weighing approximately 75 pounds (34 kg) when filled. Cover the face of the roller with a resilient material such as 1/2" (13 mm) plastic foam or two wraps of indoor-outdoor carpet to allow the membrane to fully contact the primed substrate. Apply a double layer of Bituthene Membrane around posts or projections at least 6" (150 mm) in all directions and seal all terminations with Bituthene EM-3000. At drains, apply a bead of EM-3000 over a double layer of membrane under clamping rings. Apply EM-3000 at all terminations and at all "T" joints at the end of each workday.

An alternate method is to apply Bituthene Liquid Membrane LM-3000 around posts and protrusions, overlapping the sheet membrane a minimum of 2" (50 mm). At drains, apply LM-3000 from the center of the drain out to the sheet membrane overlapping it by a minimum of 2" (50 mm).

- 3. Sealing Edges: Bituthene Waterproofing Membrane shall be turned up on surrounding walls and terminated into a reglet or under counter flashing, or the membrane may be terminated directly on the vertical surface by pressing very firmly to the wall. Press edges with a metal or hardwood tool such as a hammer or knife handle. Apply a troweled bead of Bituthene Em-003000 to all vertical and horizontal terminations.
- 4. Sealing Seams: All edges and end seams must be overlapped at least 2-1/2" (64 mm). Apply succeeding sheets with a minimum 2-1/2" (64 mm) overlap and stagger end laps. Roll the entire membrane firmly and completely as soon as possible. Patch misaligned or inadequately lapped seams with Bituthene Waterproofing Membrane. Slit any fishmouths, overlap the flaps, and repair with a patch and press or roll in place. The edges of the patch shall be sealed with a troweling of EM-3000. Laps within 12" (300 mm) of all corners shall be sealed with a troweling of EM-3000.
- 5. Corner Forming: Outside corners must be free of sharp edges. Inside corners should receive a fillet formed with Liquid Membrane LM-3000, latex modified cement mortar (such as Daraweld C mixed with cement mortar) or epoxy mortar. Do not use fiber or wood cants. One of two methods may be used for treating corners:
 - a. Apply Bituthene Liquid Membrane LM-3000 6" (150 mm) in each direction from the corner and form a fillet with a minimum 3/4" (19 mm) face.

- Install an 11" (280 mm) minimum strip of Bituthene Membrane centered on the corner. Install Bituthene waterproofing membrane over the treated inside and outside corners.
- 6. Testing of horizontal waterproofing shall be by flooding the entire waterproofed area with a minimum 2" (50 mm) head of water for 24 hours. Mark any leaks and repair when the membrane is dry. Before flood testing, ascertain from the structural engineer that the structure will withstand the dead load of the water.
- 7. Protection of Membrane: After testing the horizontal surfaces and allowing for the membrane to dry, apply the Bituthene Protection System to the entire horizontal surface.

END OF SECTION

SECTION 13 00 00

PREFABRICATED RESTROOM BUILDING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

Supply and install a Pre-Fabricated Building System, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturer.
- B. See Part 2 of this Section for additional requirements.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. See Part 2 of this Section for additional requirements

1.05 SUBSTITUTIONS

- A. Substitutions will be considered per Section 01 25 00 Substitution Procedures.
- B. See Part 2 of this Section for additional requirements

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. See Part 2 of this Section for additional requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements.
- B. See Part 2 of this Section for additional requirements.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities.
- B. See Part 2 of this Section for additional requirements.

1.09 OPERATION AND MAINTENANCE DATA

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. See Part 2 of this Section for additional requirements.

1.10 EXTRA MATERIALS

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. See Part 2 of this Section for additional requirements.

1.11 RECORD DRAWINGS

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. See Part 2 of this Section for additional requirements.

1.12 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout
- B. See Part 2 of this Section for additional requirements.

1.13 <u>LEED™ CERTIFICATION</u>

Not applicable.

PART 2 - PRODUCTS

2.01 <u>GENERAL, SPECIFICATIONS AND CLARIFICATION OF PREFABRICATED BUILDING AND SITE INSTALLATION</u>

- A. This portion of the bid specifications does not follow the CSI standard format as the prefabricated structure in this bid is an <u>off-site constructed "product"</u> and not "typical" general construction.
- B. The <u>installation of the product on-site is general construction</u> which must be coordinated with general contractor and the supplier. Specifications for the building foundation/pad shall be provided herein by the specified design/build supplier. Due to the responsibility of the specified building supplier for architecture, engineering and a five-year warranty, the site pad/foundation must meet the suppliers design so the pad and building can be considered from a single source for warranty purposes. The supplier must accept the pad and compactions tests before they take responsibility for the entire system under their warranty.
- C. The Pre-Fabricated building design/build supplier shall check the Geotechnical Report for additional requirements that exceed the requirements listed in this Section

2.02 ARCHITECTURAL DESIGN/ENGINEERING AND INSURANCE RESPONSIBILITY

A. While the Owner has provided bid specifications and a design for the building, the building design/build supplier remains legally responsible for architecture, engineering, and all applicable building, safety, health, fire, and accessibility code compliance. Since they hold professional design responsibility to the Owner, the building supplier must furnish certification that they provide product liability insurance in the amounts required by the general specifications to cover property damage and personal injury. Final drawings shall be stamped by a licensed engineer, suitable for local permitting.

2.03 ERRORS AND OMISSIONS INSURANCE

A. The building design/build supplier must also provide an additional Professional Architectural and Engineering Errors and Omissions insurance, in the minimum amount of \$2,000,000, to cover claims against the Owner or their general contractor for State and Federal ADA handicapped accessibility and other design/engineering code issues. This Errors and Omission Policy must remain in effect for 5 years from the completion and Owner acceptance of the project. Products liability insurance (since it does not cover professional design responsibility only) will be insufficient for this bid and will be cause for rejection of the bidder.

2.04 <u>INSURANCE FOR THE BUILDING OFFSITE, WHILE IN TRANSIT, AND/OR ON SITE UNTIL TURN OVER AND FINAL OWNER ACCEPTANCE</u>

A. The supplier may request invoicing for a percentage of building completion in-plant, monthly. Under UCC law, this means that the supplier is turning over responsibility for the portion invoiced to the Owner yet the building will not be on the Owner's property and may not be covered by the Owner's insurance. Therefore, the building supplier must provide a separate insurance policy insuring the Owner and their general contractor as additionally insured for liability, damage and/or vandalism to the building while in the manufacturing facility, while in transit, and/or while in storage at a certified bonded storage facility or at the final project site for up to \$200,000 for each prefabricated building module, until the building is final accepted by Owner.

2.05 GENERAL CONTRACTOR COORDINATION WITH DESIGN/BUILD SUPPLIER

- A. The specified prefabricated public restroom building requires coordination between the General Contractor (who prepares the site pad and delivery access for the prefabricated storage building) and the prefabricated restroom building supplier (who completes the architectural design, engineering, off-site building construction, delivery and installation on site.) The specified prefabricated restroom building specifications include unique components/systems which are custom to the restroom building supplier. Since the restroom supplier is responsible for design, additional insurance requirements for errors and omissions are required.
- B. General Contractor shall check the Geotechnical Report for additional requirements that exceed the requirements listed in this Section.

2.06 GENERAL CONTRACTOR GENERAL SCOPE OF WORK

- A. The General Contractor for this project is responsible for the site survey and staking the building location, finished slab survey elevations and marking on site, construction and compaction of the required building pad; access to the site for a large crane and tractor trailers delivering the prefabricated building; providing water, sewer, and power at a point of connection (POC) within 6 feet of the building and at the depth required by the building subcontractor and local code; and the installation of any sidewalks outside the building footprint.
- B. The General Contractor for this project is responsible for verification to the building subcontractor design/build firm that there are no unanticipated site delivery issues such as overhead wires, trees, tree roots, or existing grade changes and that prevent a clear path of travel between a roadway and the final site exists for a tractor trailer and crane to expedite delivery. The design/build supplier requires that the General Contractor certify that the required delivery crane must be able to set the building module/modules within 35' distance from the center of the building to the center of the crane hoist.

2.07 <u>SUPPLIER/PREFABRICATED RESTROOM BUILDING, GENERAL SCOPE OF WORK</u>

A. The prefabricated restroom building specialist will provide to the General Contractor final building design architectural drawings and engineering calculations under the responsibility of a licensed structural engineer, in compliance with all local, state and federal codes. The design/build supplier shall construct the building offsite as a permanently relocatable building, transport it to the final required destination, and install the building turnkey, (to 6' from the building footprint) on a General Contractor prepared pad per the drawings included in this bid.

2.08 LICENSING

A. The supplier must comply with all the State prefabricated Commercial Modular Requirements.

2.09 BID STANDARD FOR THE PREFABRICATED RESTROOM BUILDING

- A. The Owner understands that there are several firms who design and build various types of prefabricated public restroom buildings in varying quality and architectural styles, using similar or different construction methods and materials. For the purpose of this project, the Owner has selected:
 - Public Restroom Company, 2587 Business Parkway, Minden, Nevada, 89423 and specifies herein that this firm is the standard for architectural design, safety, green design, code compliance, and site-specific compatibility. Public Restroom Company is the standard of building performance and quality for the 50-year building design-life with low maintenance based upon the longevity of the materials selected.
 - 2. Contact: Chris Gaughan, Regional Sales Manager

3. Phone: 888-888-2060 extension 106

4. Fax: 888-888-1448

5. Email: ChrisG@PublicRestroomCompany.com

6. Web: www.publicrestroomcompany.com

2.10 "OR EQUAL RESTROOM DESIGN/BUILD SUPPLIERS"

A. The Owner may also allow other firms to become qualified to bid but any firms so authorized to bid must comply with the bid specifications and plans, or be subject to post bid rejection.

- B. In order to provide full and open competition, other firms may request approval as "or equal."

 The following items must be provided to the Owner in accordance with substitution requirements outlined in the project specifications. Failure to supply these items will result in bid rejection.
 - 1. Or Equal applicant shall provide with their bid submission, scaled floor plans and elevations, to show general architectural design criteria is met.
 - 2. Or Equal applicant shall provide with their bid submission, a written list of each and every deviation from the published bid specifications/plans. Lack of specificity to each deviation from the bid specifications will be cause for rejection.
 - 3. Or Equal applicant shall provide with their bid submission, manufacturer's certification of test compliance from a national independent testing laboratory to support the claim for absorption resistance of the slab type that will be used in their proposed restroom. Or Equal applicant must provide a list of every building they designed and built over the last 3 years utilizing the same building materials/systems design criteria as published in this bid. Provide date of building bid, date of completion, and most knowledgeable Owner contact.
 - 4. Or equal applicant shall provide certification of the special insurance required in this bid.
 - Or Equal applicant shall be responsible for and bear all cost for architecture, plan checks, design and structural engineering and all fees in obtaining approvals and permits from applicable agencies.
- C. Precast Concrete Structures will not be accepted.
- D. The Owner or their consultant will be solely responsible for the decision to accept or reject the "or equal" submission.

2.11 CERTIFICATE OF OFF-SITE INSPECTION AND CONSTRUCTION COMPLIANCE, PROVISION FOR MAINTENANCE MANUALS, AND WARRANTY

- A. The off-site restroom construction requires that a licensed third-party inspection firm provide the Owner and the local building official with certification and compliance for the building with the approved plans and specifications. A certificate of compliance shall be issued by this inspector to the local building official to provide certification that the building meets and or exceeds the approve plans and applicable codes.
- B. At the project conclusion, the building supplier shall furnish two sets of complete maintenance manuals including a trouble shooting guide, location of manufacturers of key components for replacement parts together with final as-built plans, and a **five (5) year warranty** to the Owner.

2.12 SITE SCOPE OF WORK BY THE GENERAL CONTRACTOR

The General Contractor shall prepare the restroom building sub grade pad to receive the prefabricated building in accordance with the bid drawings.

- A. The building pad shall be excavated to 14" deep from the final building concrete slab elevation in accordance with the drawing titled "foundation pad design."
- B. The building pad shall meet at least 90% compaction in lifts using class II base for the first four

- inches and coarse sand for the last two inches of the pad, leaving the finished sub grade pad elevation at finished floor, minus 8".
- C. The General Contractor shall provide water point of service at 30" below finished building slab; sewer at 24" below the finished building slab; and electrical at 36" below the finished building slab or other per bid plans.
- D. The General Contractor shall coordinate with restroom supplier to provide full site delivery access for a 70' tractor-trailer and hydro crane to the final building site.
- E. If the final site access is over existing sidewalks, utilities, or landscaping, the General Contractor shall be responsible for plating and or tree trimming, utility line removal, or other to protect any existing conditions.
- F. The hydro crane must be able to locate no greater than 35' from the center point of the building to the center point of the crane.
- G. The utilities shall be furnished per bid site plans at specified points of connection (POC) nominally 6' from the building line.
- H. The General Contractor shall furnish and install final grading, landscaping and sidewalks.

2.13 CONNECTION TO UTILITIES

A. The restroom subcontractor will furnish Electrical, Water, and Sewer at the proper POINT OF CONNECTION AND AT THE PROPER ELEVATION BELOW GRADE, for this project. Restroom subcontractor shall provide final hook up of the water from building to POC; sewer hookup to POC; and electrical sleeve from building panel to POC only. Final utility connections shall be the General Contractor. The General Contractor shall flush the water lines thoroughly before making final water connection to the building.

2.14 CONCRETE SLAB, REQUIRED INDEPENDENT TESTING LABORATORY CERTIFICATION

A. The prefabricated building slab special concrete technology claims to be water and urine resistant for life due to special additive technology. The building subcontractor must furnish a test certification of compliance from a national independent testing laboratory to support the claim for absorption resistance. The written report must state the concrete compressive and absorption per ASTM standard #C642 and #C39 respectively. Since this non-absorbency capability is so significant, the design/build subcontractor must provide a general certification of compliance with the above standards.

2.15 PREFABRICATED RESTROOM BUILDING

A. The Owner has evaluated several prefabricated restroom building suppliers. This bid requires such a building be used in lieu of site built traditional construction because of the unique built-in advantages guaranteed by the design/build firm. This technology includes many new innovations such as non-absorbent concrete; anti-microbial components to reduce health risks; built in vandal resistance design; lowered maintenance and long-term warranties that reduce Owner risk for failure. The specifications below are written around this new technology.

2.16 MAT ENGINEERED CONCRETE BUILDING SLAB/FOUNDATION

- A. The mat engineered 8" thick slab/foundation shall be engineered and constructed to withstand the transportation weight of the building without cracking and to resist absorption from any liquids deposited on the surface. The concrete slab shall be constructed inside a steel angle curb, reinforced with dual mats (tension and compression,) and poured with a custom concrete formula with special admixtures to create a finished slab that is water proof for life.
- B. Perimeter Steel Curb: 5/16" 50,000-kip steel 6" X 6" welded continuous angle.
- C. Rebar Steel Mat: Two layers of 40,000 tensile steel rebar in varying sizes per engineers' requirements, including a perimeter structural continuous grade beam design inside the exterior steel angle and at any other location deemed by the engineer of record as required for the use intended. In coastal locations or when required for corrosion resistance rebar shall be

- epoxy coated or fiberglass to resist permanent corrosion. Rebar mats shall be wire tied to code with a minimum of three turns of the wire and overlaps shall be minimum of 15 diameters for any connection.
- D. All slab openings shall be surrounded with two layers of steel collars as required by the engineer of record to stop corner cracking and to reinforce the openings for lifting.
- E. 1" thick by 3" minimum length threaded nuts shall be welded to the steel perimeter frame with continuous ¼" fillet welds. Nuts shall be welded to common steel plates per the engineer of records design and attached to the interior steel rebar structural mats.
- F. The engineer of record shall provide lifting locations with sufficient reinforcement to allow the safe lifting of the entire designed weight of the structure with dual 1" steel bolts and washers at each lifting location. The number of lifting locations with each location fitted with removable 3/4" 8" X 8" 50,000 tensile strength steel angles shall be determined by the engineer of record.
- G. The slab shall be poured over a 1" thick steel plate table. The concrete mix design shall not exceed a 3" slump and shall be stinger vibrated for maximum consolidation. All floors shall slope to any floor drains within each room and if no floor drain is present the floor should not slope. The surface shall be a very light broom that should meet a coefficient of friction on the surface of .06. Birdbaths shall be cause for rejection.
- H. The steel perimeter angle will remain below the concrete surface by nominal two inches to prevent corrosion. After the site concrete sidewalks are poured, the joint shall be full flow sealed with self-leveling grey urethane caulk to prevent penetration of water into the joint.
- I. The building shall be designed for future relocation and shall provide protection for the lifting openings in the mat slab so that the threaded openings will be available for future use if needed.
- J. The building system shall be designed for placement on General Contractor site prepared class 2 building pad/and or footings as required by code, per the bid drawings, suitable for 1500 pounds soil bearing capacity minimum. Any soils survey (if necessary) shall be by Owner.

2.17 EXTERIOR & INTERIOR MASONRY BLOCK WALLS

- A. The exterior walls shall be 4" thickness per code or engineering for wind and seismic. The interior walls shall be 4" block to ceiling height.
- B. The 8" mat engineered concrete slab shall be cured a minimum of 7 days. Holes for vertical dowels shall be drilled into the mat engineered slab avoiding any grade beams or other structural reinforcement. Once the holes are drilled, blow out the remaining material and using two-part structural epoxy, wet set the #3 or #4 vertical rebar (as specified on the engineering calculations into holes drilled to the depth per the engineer of record requirements. Each rebar shall be held vertical to allow equal epoxy support to each dowel during the drying period. Engineering calculations require that rebar shall be installed in each concrete block center void or every block hole. The engineered uplift on each rebar shall be sufficient to restrain any load imposed on the masonry block wall for vertical rebar pull out from the concrete mat engineered slab.
- C. The block walls shall be nominal 8" x 16" CMU. The building corners shall have special corner return block that matches the exterior finish and creates a uniform appearance. All 4" CMU shall be custom fabricated with an enlarged interior hole for placement of the grout and vertical rebar.

2.18 ROOF SYSTEM

- A. The roof structure shall be 2" x 6" wood rafters at 24" on center with 5/8" OSB sheathing, and ice and water shield membrane with 26 gauge standing seam metal roof panels, color selected by Owner. The rake and fascia shall be 14 gauge formed steel painted in a color selected by Owner. The rake and fascia shall be 14 gauge formed steel painted in a color selected by Owner.
- B. Roof shall be designed per plans to reduce vandals climbing on roof and to obtain proper

ventilation size openings for the gables to provide fan-free ventilation.

C. The restroom ventilation screens (described in a following section) shall be attached to the truss frames and non-removable by vandals. Roof color shall be determined by Owner.

2.19 INTERIOR WALL FINISH

A. Interior precision CMU block masonry walls shall be smoothed to a pebble grain finish with 2-4 mil layers of 7-day curing block fillers and painted with two additional 4 mil layers of industrial high solids (white) industrial grade enamel.

2.20 EXTERIOR WALL FINISH, MASONRY AND GABLE

A. The building exterior finish shall be of split face 8" x 16" CMU to wall height, per the exterior elevations in the bid plans. The block shall be coated with 2-4 mil layers of special 7-day curing block fillers and painted with two additional layers of industrial high solids, gloss enamel to a 4-mil thickness. Color to be selected by Owner.

2.21 GABLE VENTILATION SYSTEM

A. Shall be woven 1/4" X 1" X 1", 316T stainless-steel woven crimp-stop wire mesh set into grooved channels within the CMU block with a stainless-steel channel at the connection to roof structure.

2.22 DOORS AND GATES

- A. The restroom entry doors shall be 7'-0" high, custom fabricated, 14-gauge steel; reinforced with 14-gauge steel ribs welded at 6" intervals on each face, concealed; reinforced with a welded plate for door closer mounting; hung on a single continuous, 1 million cycle, aluminum gear hinge with stainless steel vandal resistant screws at nominal 4" on center. The doors shall weigh nominally 176 lbs each for a 36" X 84" door. Custom fabricated 14-gauge steel door jambs with 4" steel heads shall be welded to the steel cap beam and be solid filled with 3000 psi masonry grout mix.
- B. Doors shall be undercut per drawings.
- C. All entry doors shall have a 1/8" thick plate stainless steel "Z-shaped" anti-microbial pull handles with integral latch guard (latch guard on concession entry door and utility chase door only) and Schlage B-600 series commercial series dead bolts.
- D. The door closer (restroom entry doors only) shall be "LCN" heavy duty #4210 Series, fastened to a structural reinforced door plate per door manufacturer design. Stainless steel vandal resistant fasteners shall be used on all hardware.
- E. Stainless steel vandal resistant fasteners shall be used on all hardware.

2.23 SPECIALTIES

All specialty washroom equipment shall be commercial grade stainless steel fastened securely to walls with vandal resistant stainless-steel screws to avoid removal by vandals as follows:

- A. Toilet paper holder shall be a covered two-roll, 18-gauge stainless steel. Toilet paper holders shall be attached to block walls with 4 epoxy bedded vandal resistant stainless-steel fasteners.
- B. Stainless steel grab bars to code shall be 1-1/4" minimum exposed fastener vandal resistant design and installed at each accessible water closet.
- C. Cast Aluminum ADA compliant signs shall be recessed into block surface flush with masonry exterior. Signs shall have raised pointed Braille tips and shall be blind secured with epoxy adhesive and stainless-steel fasteners.
- D. Baby Changing Stations shall be the Foundations Horizontal Surface Mount W/ Polyethylene Body W/ Full Stainless Wrap, #5410339.
- E. Hand Dryer: Shall be remote HD03 model from Fastaire.

2.24 PLUMBING

- A. Building shall be fully compliant with the following codes:
 - 1. All applicable State Building Codes. Latest edition applicable.
 - 2. State Plumbing Code. Latest edition applicable.
- B. GENERAL: All components and fabrications shall be designed to reduce life cycle maintenance, be compatible with current maintenance spare parts, and shall be listed in a spare parts/maintenance manual (two copies) delivered in utility chase of building.
- C. WATER PIPING: Shall be type L copper above grade and type K with silver solder below grade. All water piping shall be designed and constructed with high and low point drain fittings. All piping shall be mounted on Uni-strut wall brackets with neoprene isolators, to code.
- D. WATER PRESSURE GAUGE/VALVE COMBO: install three commercial grade industrial water pressure gauges, isolation ball valves, 10-micron water filter with clear canister and check valve.
- E. PLUMBING FAUCETS, ISOLATION VALVES AND ACTUATORS: All fixtures except those with flush valves shall be isolated with ball valves for each fixture, concealed hydraulic button-type flush valves, and metered push-button type lavatory faucets.
- F. DWV PIPING: DWV piping shall be concealed behind the wall. DWV piping shall be PVC DWV, solvent welded, for all concealed piping. A cast iron no hub DWV vent pipe with a cast iron roof mounted vandal cap vent shall be required, through the roof.
- G. REMOVABLE PIPE TRAPS: All floor drain, sink drain, and waste traps shall be removable for maintenance. Floor drains shall be trapped behind the wall in the utility chase using a combination waste and vent system. Floor drains shall be increased two pipe sizes over standard to allow code use. All surface mounted utility chase piping shall be mounted on Unistrut with plastic isolators to code. Sink drain traps shall be concealed behind the utility chase walls where maintenance staff can access all plumbing.
- H. PLUMBING FIXTURES: Plumbing fixtures shall be 14-gauge 316 stainless steel manufactured by Acorn. Toilets shall be wall hung, rear discharge, with concealed lever flush valves. Toilet seats shall be black solid core plastic, non-flammable construction with continuous stainless steel concealed self-checking hinges. Lavatories shall have concealed remote traps behind the mechanical wall. Schedule of fixtures:
 - 1. Water Closets: Acorn Penal-Ware, 1675-W-1-HET-FVBO-ADA-PFS
 - 2. Water Closet Flush Valve: Zurn Z6143AV-HET-BG-7L
 - 3. Lavatories: Acorn Penal-ware 1652LRB-1-DMS-03-M
- I. FLOOR GRATES: Removable 350 lbs per square foot pultruded fiberglass non-skid floor grates shall be installed over every opening in the utility chase for OSHA protection/compliance.
- J. HOSE BIB: There shall be one Woodford 24-P hose bib provided in the utility chase.
- K. HOSE REEL: One commercial grade hose reel with capacity for 75' X 3/4" commercial heavy-duty hose and nozzle shall be hung in mechanical room for cleaning of restrooms. One 75' x 3/4" commercial hose shall be furnished.

2.25 ELECTRICAL

- A. GENERAL: Electrical system and components shall be commercial grade or better and piping conduits shall be installed on commercial Uni-strut wall hangers. Interior and exterior electrical lighting fixtures in public areas shall provide lifetime manufacturer's warranty.
- B. PANEL/WIRING: One 100 amp, three phase main industrial grade Panel Board, Square "D"

- QO series, shall be mounted in the utility chase in the restroom building. All breakers shall be plug-on type, minimum 10,000 A.I.C. RMS (Sym) at 120/240 vac. Wiring shall be stranded copper wire #12 min in EMT piping with screw fittings.
- C. PIPING: All piping shall be surface mounted to the masonry block walls with minimum of 2" fastener penetration. EMT conduit shall be compression type. Main panel shall maintain a 30" X 36" safety code required clear space, floor to 6' above finished floor.
- D. EXTERIOR LIGHTING: Luminaire AEL24, LED, vandal resistant, high-impact polycarbonate lens fixtures shall be installed per plans
- E. INTERIOR LIGHTING: Luminaire SWP1212, LED, vandal resistant high-impact polycarbonate lens fixtures shall be installed in the restrooms per plans The utility chase shall have one (1), 4' single-tube LED fixture, suitable for wet locations, with a single switch at door entry.
- F. LIGHTING CONTROL: All exterior restroom lighting shall be controlled by a photo cell mounted 8' high on the utility chase/restroom wall. Two (2) bypass switches shall be located in the utility chase (one for interior lighting and one for exterior lighting), so maintenance staff can check operation during daylight hours. Integral occupancy sensors shall control the interior lighting.
- G. ELECTRICAL OUTLETS: (1) commercial spec grade dedicated GFCI in the utility chase.
- H. WATER HEATER (Restroom Lavatories): Shall be a Stiebel DHC-E-12 tankless located in the utility chase

2.26 SHIPPING PROTECTION

A. The building, while traveling over roads to the destination may encounter inclement weather or road grime that could require substantial cleaning when it arrives on site. The building shall be shrink-wrapped before transportation and sufficiently strong to arrive at the Owner site intact for exterior finish protection. Materials removed on site shall be disposed of and recycled by restroom building install staff.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

END OF SECTION

SECTION 13 31 00

PRE-FABRICATED SITE SHELTERS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Design, fabrication, finishing, and delivery of pre-engineered, factory-fabricated site shelters.
- B. Site work related to installation, by Contractor, including:
 - 1. Unloading and temporary storage, if any.
 - 2. Soil testing, if necessary.
 - 3. Site preparation.
 - 4. Column foundations, rebar, anchor bolts, and anchor embedment.
 - 5. Concrete slab and embedment.
 - 6. Erection.
 - 7. Field touch up painting of factory finishes, if necessary.

1.03 STANDARDS AND REFERENCES

- A. Design shall meet or exceed applicable building code.
- B. Pre-fabricated package shall include structural steel framing members, pre-cut roof panels, trim, and fasteners.
- C. All bolts shall be hidden, concealed inside the steel tubes.
- Field labor required to install the pre-fabricated parts. Onsite welding shall not be required or permitted
- E. American Society of Testing Material (ASTM)
 - 1. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated
 - 2. ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - 3. ASTM A563 Standard Specification for Carbons and Alloy Steel Nuts
 - ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
 - ASTM F1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
- F. American Institute of Steel Construction (AISC)
- G. American Welding Society (AWS)
- H. Steel Structures Painting Council (SSPC); SSPC-SP10 Near-White Blast Cleaning
- I. Leadership in Energy and Environmental Design (LEED)
- J. OSHA Standards 29 CFR, Part 1926, Subpart R (Steel Erection), Standard Number 1926.755: Compliance requires a minimum of four anchor bolts per column.

1.04 QUALITY ASSURANCE

- A. Designer Qualifications: Design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State where the Project is located.
- B. Manufacturer Qualifications: Company experienced in design and manufacture of shelters of the type specified, and having the following:
 - Minimum five years of experience in design and fabrication of pre-fabricated steel shelters.
 - 2. Three references of similar shelters completed within the past year.
 - 3. Fabricator membership in American Institute of Steel Construction (AISC), requiring quality control documentation and procedures. Provide current AISC shop certification upon request.
 - 4. All welding to be performed to AWS standards by AWS certified welders. Provide welding certification upon request.
- C. Perform the work in accordance with applicable federal, State, and local building and safety codes and regulations.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Minimum 5 sets of shop drawings, showing all details of construction, including foundation sizes, reinforcement, and locations.
 - 1. Provide the licensed professional engineer's state stamp or seal on the shop drawings.
 - 2. Provide the licensed professional engineer's state stamp or seal on the structural calculations.
- C. Selection Samples: For each finish product specified, color charts representing manufacturer's full range of available colors.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements.
- B. Package factory-finished steel components in foam, cardboard, and stretch wrap to protect the finish during transit.
- C. Shipped knocked down for minimal shipping charges.
- D. Deliver products to project site in manufacturer's protective packaging.
- E. Follow shelter manufacturer's recommendations and instructions, including those printed on the shop drawings. To minimize damage during unloading, use only padded forks or nonmarring slings.
- F. Store products in manufacturer's unopened packaging well off the ground and covered out of weather until ready for installation

1.08 PROJECT CONDITIONS

Comply with the requirements of Section 01 50 00 - Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 77 00 - Project Closeout.

1.10 EXTRA MATERIALS

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. Touch up paint provided by manufacturer.

1.11 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Provide minimum five-year frame warranty against manufacturer defects.
- C. Provide roofing manufacturer's limited warranty.

1.12 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- Model: TS-OCT24-05 and TS-OCT40-05 (Bid Alternative) as manufactured by RCP Shelters, Inc.
- B. Size and dimensions
 - 1. Shape: Octagon
 - 2. Dimensions: Reference Preliminary Drawings
 - 3. Roof Style: 24-gauge exposed fastener metal roofing
 - 4. Roof Pitch: 4:12
 - 5. Eave Height: Minimum 7'-6"
 - 6. Quantity: Reference Bid Package
- C. Approved Manufacturer: RCP Shelters, Inc.
 - 1. 2100 SE Rays Way, Stuart, FL 34994.
 - 2. Toll Free: 800-525-0207
 - 3. Fax: 772-288-0207
 - 4. Website: www.rcpshelters.com
 - 5. Email: info@rcpshelters.com

2.02 SPECIFIC ITEM(S)

- A. Steel Structural Components
 - Structural Framing: fabricated for field assembly using bolted connections with no welding required or permitted; cold-formed shapes prohibited.
 - i. Columns & Beams: ASTM A500 Grade C structural steel tube. The following shapes are prohibited: I-beams, wide-flange beams, C-channels, Z-shapes.
 - ii. Plates: ASTM A572 Grade 50.
 - iii. Compression Ring: steel plate, ASTM A572 Grade 50.
 - iv. Fasteners
 - a. Bolts: ASTM A325 high strength bolts.

- b. Nuts: ASTM A563 high strength nuts.
- v. Column Anchors: ASTM F1554 Grade 36, provided by Contractor or Owner, attached to top of foundation, recessed below slab on grade.
- vi. Cap plates: factory bent and field installed with hidden fasteners on hip and ridge beams not normal to roof so that metal roof deck does not bear structurally on beam corner only
- vii. Finish: Powder Coat
 - a. Pre-blast inspection to catch and remove oil, grease, and other coatings impeding contaminants
 - b. Steel grit blasted to near white condition in accordance with SSPC-SP10, removing all oil residue, mil scale, weld spatter, and slag
 - Five stage phosphate wash (includes detergent, phosphate, rust protectant sealant)
 - d. Epoxy powder coat primer
 - e. Double topcoat TGIC polyester powder coat; color to be selected from manufacturer's standard color chart by Owner.
 - f. Primer plus finish coats shall be 7-12 mils thick
 - g. All materials inspected to meet 100% coating, proper cure, film thickness, and impact resistance
 - h. Wet-coat alternatives shall not be acceptable.
- B. Roof System: Galvalume® structural metal roof panels with exposed fasteners.
 - 1. Acceptable Panel Profiles:
 - i. Galvalume® panels with 1-3/16" high ribs, 12" on center.
 - ii. Galvalume® panels with 1-1/2" high ribs, 7.2" on center.
 - iii. Panel Gauge: minimum 24-gauge.
 - iv. Panel Width: 3'-0".
 - v. Panel Length: Precut to the length from the eave to the ridge; angles factory precut.
 - vi. Panel Orientation: Ribs shall run with the pitch of the roof for proper drainage.
 - vii. Trim: Provide matching roof trim and fasteners.
 - viii. Finish: Factory pre-finished with Kynar 500® paint system; color to be selected by Owner from standard color chart.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Verify that site earthwork has been performed as required for satisfactory installation.
- C. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- D. Correct conditions detrimental to timely and proper complete of the Work.
- E. Do not proceed until unsatisfactory conditions are corrected.

F. Beginning of installation means acceptance of conditions.

3.02 SPECIFIC ITEM(S)

A. Preparation

Install footings and column anchors of size, design, and location as specified by shelter manufacturer on approved shop drawings

B. Installation

- 1. Perform installation in accordance with applicable federal, State, and local building and safety codes.
- 2. Structural special inspections, if required, are to be arranged and paid for by the Contractor or Owner.
- Install shelter in accordance with manufacturer's approved shop drawing and good construction practices.
- 4. Install slab in accordance with shelter manufacturer's shop drawings. Slab perimeter dimensions determined by Owner.

C. Cleaning and Protection

- 1. Clean installed work to like-new condition.
- 2. Protect installed products until completion of project.
- 3. Touch-up, repair, or replace damaged finishes before Substantial Completion. Touch up paint provided by manufacturer.

*** END OF SECTION ***

SECTION 26 01 00

BAŞIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 <u>SCOPE OF WORK SUMMARY</u>

- A. This section supplements all sections of this division and shall apply to all phases of work hereinafter specified, shown on the contract documents and as required to provide a complete installation of electrical systems for this project. The work required under this division is not limited to the electrical specifications and drawings. Refer to all bid documents which may designate Work to be accomplished. The intent of the Specifications is to provide a complete and operable electrical system, which shall include all documents that are a part of the entire Project Contract.
 - 1. Work included: Furnish all labor, material, tools, equipment, facilities, transportation, skilled supervision necessary for, and incidental to, performing operations in connection with furnishing, delivery, and installation of the work in this division complete as shown or noted on the Drawings and specified herein.
 - 2. Coordinate the electrical service upgrades with Southern California Edison Company. The coordination is being done in conjunction with the City of Rialto.
 - Coordinate the telephone service upgrades with the serving telephone company. The coordination is being done in conjunction with the City of Rialto.
 - 4. Maintain power to all irrigation controllers and equipment throughout the entire construction period.
 - 5. All exterior equipment shall be provided with corrosion resistant tamperproof screws.
 - 6. All exterior covers for manholes, pullboxes, and handholes shall be provided with tamperproof corrosion resistant penta head bolts.

B. Work Installed but Furnished by Others:

1. The electrical work includes the installation or connection of certain materials and equipment furnished by others. Verify installation details.

1.03 STANDARDS AND REFERENCES

A. Codes and Regulations:

- Design, manufacturer, testing and method of installation of all apparatus and materials furnished under the requirements of these specifications shall conform to the latest publications or standard rules of the following:
 - a. Institute of Electrical and Electronic Engineers IEEE
 - b. National Electrical Manufacturers' Association NEMA
 - c. Underwriters' Laboratories, Inc. UL
 - d. National Fire Protection Association NFPA
 - e. American Society for Testing and Materials ASTM
 - f. American National Standards Institute ANS
 - g. State & Municipal Codes in Force in the Specific Project Area

- h. Occupational Safety & Health Administration OSHA
- i. California State Fire Marshal
- j. National Electrical Testing Association NETA
- k. 2019 California Administrative Code (CAC)
 - Part 1, Title 24, California Code of Regulations (CCR)
- I. 2019 California Building Code (CBC)
 - Part 2, Title 24, CCR, Based on the International Building Code (IBC)
- m. 2019 California Electrical Code (CEC)
 - Part 3, Title 24, CCR, Based on the National Electrical Code (NEC)
- n. 2019 California Mechanical Code (CMC)
 - Part 4, Title 24, CCR, Based on the Uniform Mechanical Code (UMC)
- o. 2019 California Plumbing Code (CPC)
 - Part 5, Title 24, CCR, Based on the Uniform Plumbing Code (UPC)
- p. 2016 California Fire Code (CFC)
 Part 9, Title 24, CCR, Based on the International Fire Code (IFC)
- 2. The term "Code", when used within the specifications, shall refer to the Publications, Standards, ordinances and codes, listed above. In the case where the codes have different levels of requirements the most stringent rules shall apply.
- B. Requirements of Regulatory Agencies:
 - Codes, Permits, and Fees: Where the Contract Documents exceed minimum requirements, the Contract Documents take precedence. Where code conflicts occur, the most stringent shall apply. The most stringent condition shall be as interpreted by the Engineer.
 - a. Comply with all requirements for permits, licenses, fees and Code. Permits, licenses, fees, inspections and arrangements required for the Contractor at his expense shall obtain the Work, unless otherwise specified.
 - b. Comply with the requirements of the applicable utility companies serving the Project. Make all arrangements with the utility companies for proper coordination of the Work.

1.04 QUALITY ASSURANCE

- A. Guarantee See General Conditions:
 - Except as may be specified under other Sections in the specification, guarantee
 equipment furnished under the specifications for a period of one year, except for
 equipment required to have a longer guarantee period, from date of final completion.
 Guarantee all work against defective workmanship, material, and improper installation.
 Upon notification of failure, correct deficiency immediately and without additional cost
 to the Owner.
 - Standard warranty of manufacturer shall apply for replacement of parts after expiration
 of the above period. Manufacturer shall furnish replacement parts to the Owner or his
 service agency as approved. Furnish to the Owner, through the Architect, printed
 manufacturer's warranties complete with material included and expiration dates, upon
 completion of project. Conform to Division 01.

- B. Equipment Safety: All electrical materials and equipment shall be new and shall be listed by Underwriter's Laboratories and bear their label, or listed and certified by a nationally recognized testing authority where UL does not have an approval. Custom made equipment must have complete test data submitted by the manufacturer attesting to its safety.
- C. Interpretations: The Contractor through the Architect must make Requests for interpretations of drawings and specifications. Any such requests made by equipment manufacturers or suppliers will be referred to the Contractor.

D. Standard of Quality

 The contract Drawings and Specifications establish the "MINIMUM STANDARD OF QUALITY" each product and/or system must meet to be considered acceptable. Products of other manufactures will be considered if the product and/or system meet or exceed the "MINIMUM STANDARD OF QUALITY" established by this Contract Document.

E. Work Responsibilities:

- 1. The drawings indicate diagrammatically the desired locations or arrangement of conduit runs, outlets, junction boxes and equipment and are to be followed. Execute the work so as to secure the best possible installation in the available space and to overcome local difficulties due to space limitations. The Contractor is responsible for the correct placing of his work. Where conflicts occur in plans and/or specifications, the most stringent application shall apply and shall be part of the base bid.
- 2. Locations shown on architectural plan or on wall elevations shall take precedence over electrical plan locations, but where a major conflict is evident, notify the Architect.
- In the event minor changes in the indicated locations or arrangement are necessary due to developed conditions in the building construction or rearrangement of furnishings or equipment or due to interference with other trades, such changes shall be made without extra cost.
- 4. Verify dimensions and the correct location of Owner-Furnished equipment before proceeding with the roughing-in of connections.
- 5. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with work carefully check and verify dimensions and sizes with the drawings to see that the furnished equipment will fit into the spaces provided without violation of applicable Codes.
- The Architect shall be notified should any changes to the work indicated on the drawings or described in the specifications be necessary in order to comply with the above requirements.
- Contractor shall be responsible for coordination of coordinated drawings when required by the Architect.
- 8. Replace or repair, without additional compensation any work which does not comply with or which is installed in violation of any of these requirements.
- F. Installation General: For special requirements, refer to specific equipment under these requirements.
 - 1. Unless otherwise specified elsewhere in the specifications, do all excavating necessary for the proper installation of the electrical work.
 - 2. Locations of Openings: Cutting or drilling in any structural member is prohibited without approval of the Architect. Furnish all access panels to make all boxes, connections and devices accessible as required by CEC.
 - Wherever conduit extends through roof, install flashings in accordance with drawings and details.

- 4. Contractor shall be responsible for cutting and patching which may be required for the proper installation of the electrical work.
- 5. Protect work, materials and equipment cause whatever and provide adequate and proper storage facilities during the progress of the work. Storage outdoors shall be weather protected and shall include space heaters to prevent condensation. Provide for the safety and good condition of all work until final acceptance of the work. Replace all damaged or defective work, materials and equipment before requesting final acceptance.
- 6. Conduit and Equipment to be installed: Clean thoroughly to remove plaster, spattered paint, cement and dirt on both exterior and interior.
- 7. Conduit and Equipment to be painted: Clean conduit exposed to view in completed structure by removing plaster and dirt. Remove grease, oil and similar material from conduit and equipment by wiping with clean rags and suitable solvents in preparation for paint.
- 8. Items with Factory Finish: Remove cement, plaster, grease and oil, and leave surfaces, including cracks and corners, clean and polished. Touch up scratched or bare spots to match finish.
- Site Cleaning: Remove from site all packing cartons, scrap materials and other rubbish
 on a weekly basis. Vacuum out all cabinets, switchgear and panels and junction boxes
 prior to pulling any conductors.
- 10. Electrical equipment and materials exposed to public and in finished areas shall be finish-painted after installation in accordance with the Painting Section. All exposed screw-type fasteners, exterior, or interior in restrooms, shall be vandal-resistant spanner type; include tool.

G. Tests

- Equipment and systems for which the National Electrical Testing Association (NETA)
 has an approved or recommended procedure, shall be tested in accordance with that
 procedure. Test values shall equal values recommended by NETA. Copies of test
 reports shall be submitted as required under shop drawing submittals.
- 2. Resistance to ground tests shall be accomplished by a qualified independent testing firm to measure resistance to ground at grounding electrodes. Make tests before slabs or affected areas are poured in order that corrective measures, if required, may be taken. Submit a report showing the results of these measurements. If the resistances exceed values specified elsewhere or NETA test procedure recommendations, perform corrective measures required to reduce resistance to acceptable values.
- 3. Prior to energizing any motor, measure the service voltage for phase balance and report if unbalance exceeds 1% from mean.
- 4. Measure the three-phase voltage at no load and at maximum load conditions and submit to the engineer a report showing the results of these measurements.
- 5. Upon completion of the work and adjustment of all equipment, conduct an operating test. Conduct the test in the presence of an authorized representative of the Architect. Demonstrate system and equipment to operate in accordance with requirements of the Contract Documents and to be free from electrical and mechanical defects. Provide systems free from short circuits and grounds and show an insulation resistance between phase conductors and ground not less than the requirements of the governing electric code. Test circuits for proper neutral connection.
- Complete tests prior to final inspection of project, including corrective work based on the results of the tests.

7. Perform special tests on systems and equipment as specified herein using personnel qualified to perform such tests.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 23 Submittals.
- B. Shop Drawings:
 - Time Schedules for Submission and Ordering: The Contractor shall prepare, review
 and coordinate his schedule of submissions carefully, determining the necessary lead
 time for preparing, submitting, checking, ordering and delivery of materials and
 equipment for timely arrival. The Contractor shall be responsible for conformance with
 the overall construction schedule.
 - 2. Submittals will be checked for general compliance with specifications only. The Contractor shall be responsible for deviations from the drawings or specifications and for errors or omissions of any sort in submittals.
 - 3. Submit a complete list of materials and equipment proposed for the job, including manufacturer's names and catalog numbers.
 - 4. Shop drawings shall be submitted in completed groups of materials (i.e., lighting fixtures or switchgear). The Contractor shall add and sign the following paragraph on equipment and materials submitted for review. "It is hereby certified that the (equipment) (material) shown and marked in this submittal is that proposed to be incorporated into the project; is in compliance with the Contract Drawings and specifications and can be installed in the allocated spaces". Failure to add the above written statement for compliance will result in return of submittals without review. Shop drawings shall be provided for all equipment and materials used on the project.
 - a. Bind catalog cuts, plate numbers, descriptive bulletins and drawings, 11" x 17" (275 mm x 435 mm) or smaller, in sets with covers neatly showing titles.
 - b. The Contractor shall verify dimensions of equipment and be satisfied as to Code compliance for fit prior to submitting shop drawings for approval.
 - c. Where current limiting devices are specified, submit technical data to substantiate adequate protection of equipment cascaded downstream. Submittals shall not be reviewed unless supporting calculations and data are submitted therewith.
 - d. Include complete catalog information such as construction, ratings, and insulation systems, as applicable.
 - e. For any material specified to meet UL or trade standards, furnish the manufacturers or vendor's certification that the material furnished for the work does in fact equal or exceed such specifications.
 - f. Reference listings to the specifications' Sections and Article to which each is applicable.
 - g. Equipment Floor Plans: After approval of material is secured prepare a floor plan of each electrical and communication equipment space, room or yard, drawn to scale at 1/2 inch equals 1 foot and submit for approval in the same manner as for shop drawings. The layout drawings shall be exact scale.
 - Contractor shall prepare coordinated drawings when required by Division 01 or where noted otherwise.

- C. Submit comprehensive material list, shop drawings and complete technical data for all systems, equipment and materials.
- D. Submittals for Change Orders: When changes are made during the construction phase, deletions and additions shall be presented in a manner that will indicate the cost of each item of material and corresponding labor. Markup shall be then added in accordance with the requirements of the General Conditions as modified by the Supplementary Conditions.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protection: Protect finish parts of the materials and equipment against damage during the progress of the work and until final completion and acceptance. Cover materials and equipment in storage and during construction in such a manner that no finished surfaces will be damaged or marred. Keep moving parts clean, dry and lubricated.

1.08 PROJECT CONDITIONS

A. Cleaning Up:

- Upon completion of the work and at various time during the progress of the work, remove from the building all surplus materials, rubbish and debris resulting from the work of this Division.
- 2. Thoroughly clean switchgear including busses, apparatus, exposed conduit, metal work including the exterior and interior, and accessories for the work of this Division, of cement, plaster and other deleterious materials; remove grease and oil spots with cleaning solvent; carefully wipe surfaces and scrape cracks and corners clean.
- 3. Thoroughly polish chromium or plated work. Remove dirt and stains from lighting fixtures.
- 4. Leave the entire installation in a clean condition.

1.09 OPERATION AND MAINTENANCE DATA

- A. Operating and Maintenance Data: Submit complete and at one time, prior to acceptance of the installation, 4 copies of manufacturer's instructions for operation and maintenance of electrical equipment, including replacement parts lists. As specified in Division 01.
- B. The Contractor at a time convenient to the Owner shall provide instruction to the Owner's operating personnel in the proper operation and maintenance of all equipment and systems. The instructors shall have received factory training and shall be thoroughly familiar with the equipment installed. The operating personnel shall receive the number of day's instruction as indicated in other sections.

1.010 RECORD DRAWINGS

- A. Record Drawings: CAD: Use a computer aided drafting (CAD) system in the preparation of record drawings for this Project. Acceptable CAD systems shall be capable of producing files in AutoCAD Version 2000 compatible DWG or DXF format.
- B. At all times when the work is in progress, maintain at the workplace, fabrication shop or Project Site as applies, a complete separate, clean, undamaged set of the latest stamped, actioned submittals. As work progresses, maintain records of "as installed" conditions on this set in suitable ink or chemical fluid. Update the set daily. After successful completion of Project Site testing specified herein, and after completion of Punch List corrections, copy all records of "as installed" conditions on to originals.

C. Quantity:

- 1. Review sets: As for Shop and Field Drawings.
- 2. Record set: Three (3) bond. One (1) DVD with CAD & PDF files.
- D. Format: Record Drawings:

- Disk copy of Record Drawings 1 copy of each drawing file in format noted above, DVD-ROM.
- E. Content: All drawings required under "Field and Shop Drawings". Show "as installed" condition. Where room designations according to Project permanent signage differ from construction designations in the Contract Documents, show both designations.

1.011 COMPLETION OF WORK

- A. Completion:
 - 1. The work will not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, panel directories and nameplates specified herein have been approved and properly posted or installed and final cleaning of equipment and premises has been completed.
 - 2. When the installation is complete and adjustments have been made, operate the system for a period of one week, during which time demonstrate that systems are completed and operating in conformance with the specifications.
- B. Inspection and Acceptance Procedures: The Architect will submit observation reports periodically during the construction phase detailing Contract deficiencies. The Contractor is responsible for making corrections immediately. Notice of Completion of the project will not be made until all items have been corrected.
- C. Final Completion of Electrical Systems:
 - 1. Prior to Final Completion of operating electrical systems, the Contractor shall:
 - a. Provide materials of the type and quality specified and as necessary for proper operation, tested and ready for use.
 - b. Deliver to the Architect, the Record Documents per 1.3 of this section.
 - c. Furnish the required Operating and Maintenance Data/Manuals.
 - d. Clean up of the project pertaining to this Division of the work.
 - e. After installation has been completed and adjustments made, operate the system for a period of one week, during which time, demonstrate to the Architect that systems are complete and operating in conformance with Contract Documents.
 - Conduct tests required and as specified in this Division and submit test reports and corrective actions taken.
 - g. Submission of warranties and guarantees.
 - 2. Final Completion of Work Shall be Contingent On:
 - a. Contractor replacing defective materials and workmanship.
 - b. Upon completion of work and adjustments made, Contractor shall conduct an operating test for each system for approval at such time as Architect directs. Conduct test in presence of authorized representative of Architect and demonstrate that systems and equipment do operate in accordance with requirements of the Contract Documents and are free from electrical and mechanical defects.
 - c. Contractor shall provide the necessary training programs and instructions to the Owner's representative. Number of hours shall be a minimum of four (4) hours for each system or days as required under separate Sections of these Specifications. Complete operation and maintenance manuals shall be provided at least two (2) weeks prior to training.

d. Submit copies of manufacturer's instructions and maintenance of electrical equipment including replacement parts lists. Each set shall include one set of shop drawings of equipment installed.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

B. Definitions

- 1. EPDM: Ethylene-propylene-diene terpolymer rubber.
- 2. NBR: Acrylonitrile-butadiene rubber.

1.03 QUALITY ASSURANCE

- A. Testing Qualifications: The contractor shall have the experience and capability to conduct the testing indicated that is acceptable to authorities having jurisdiction.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.04 <u>SUBSTITUTIONS</u>

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.05 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

PART 2 - PRODUCTS

2.01 CONDUCTORS AND CABLES

- A. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Alcan Products Corporation; Alcan Cable Division.
 - 2. American Insulated Wire Corp.; a Leviton Company.
 - 3. General Cable Corporation.
 - 4. Senator Wire & Cable Company.
 - 5. Southwire Company.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN or XHHW.

2.02 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.02 <u>CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS</u>

- A. Feeders: Type THHN-THWN or XHHW, single conductors in raceway.
- B. Branch Circuits: Type THHN-THWN or XHHW, single conductors in raceway.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.04 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torquetightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

3.05 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:

- 1. After installing conductors and cables and before electrical circuitry has been energized, test all conductors for insulation integrity.
- 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- 3. Infrared Scanning: After Substantial Completion, perform an infrared scan of each splice and termination. Remove box and equipment covers so splices are accessible to portable scanner.
 - Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - b. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- C. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- D. Remove and replace malfunctioning units and retest as specified above.

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK UMMARY

- A. Supply and install all grounding systems and equipment, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete and proper installation.
- B. Section Includes: Grounding systems and equipment.

1.03 STANDARDS AND REFERENCES

A. Comply with UL 467 for grounding and bonding materials and equipment.

1.04 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of product indicated.
- C. Qualification Data: For qualified testing agency and testing agency's field supervisor.
- D. Field quality-control reports.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

2.02 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel, 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

2.03 <u>CONNECTORS</u>

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless compression or exothermic-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

PART 3 - EXECUTION

3.01 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Conductor Terminations and Connections:
 - 1. Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Connections to Structural Steel: Bolted or Welded connectors.

3.02 **EQUIPMENT GROUNDING**

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.

3.03 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.04 LABELING

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.
- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed].
 - Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.05 FIELD QUALITY CONTROL

- Perform inspections.
 - 1. Inspect components, assemblies, and equipment installations, including connections.
- B. Inspections:
 - After installing grounding system but before permanent electrical circuits have been energized, inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
- C. Grounding system will be considered defective if it does not pass inspections.
- D. Prepare inspection reports.

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install raceways, fittings, boxes, enclosures and cabinets as shown on Drawings and as specified herein, including all materials and labor for a timely, complete and proper installation.
- B. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

C. DEFINITIONS

- 1. EMT: Electrical metallic tubing.
- 2. ENT: Electrical nonmetallic tubing.
- 3. EPDM: Ethylene-propylene-diene terpolymer rubber.
- 4. FMC: Flexible metal conduit.
- 5. IMC: Intermediate metal conduit.
- 6. LFMC: Liquidtight flexible metal conduit.
- 7. LFNC: Liquidtight flexible nonmetallic conduit.
- 8. NBR: Acrylonitrile-butadiene rubber.
- 9. RNC: Rigid nonmetallic conduit.

1.03 STANDARDS AND REFERENCES

A. Comply with NFPA 70.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For pull boxes and cabinets.

PART 2 - PRODUCTS

2.01 METAL CONDUIT AND TUBING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 3. Maverick Tube Corporation.
 - 4. O-Z Gedney; a unit of General Signal.
 - Wheatland Tube Company.

- B. Rigid Steel Conduit: ANSI C80.1.
- C. IMC: ANSI C80.6.
- D. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit or IMC.
 - 1. Comply with NEMA RN 1.
 - 2. Coating Thickness: 0.040 inch (1 mm), minimum.
- E. EMT: ANSI C80.3.
- F. LFMC: Flexible steel conduit with PVC jacket.
- G. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Fittings for EMT: Steel or die-cast, compression type.
 - 2. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
- H. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.02 BOXES, ENCLOSURES, AND CABINETS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 - 2. EGS/Appleton Electric.
 - 3. Erickson Electrical Equipment Company.
 - 4. Hoffman.
 - 5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 6. O-Z/Gedney; a unit of General Signal.
 - 7. RACO; a Hubbell Company.
 - 8. Robroy Industries, Inc.; Enclosure Division.
 - 9. Scott Fetzer Co.; Adalet Division.
 - 10. Spring City Electrical Manufacturing Company.
 - 11. Thomas & Betts Corporation.
 - 12. Walker Systems, Inc.; Wiremold Company (The).
 - 13. Woodhead, Daniel Company, Woodhead Industries, Inc. Subsidiary.
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.
- F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 - 1. Exposed Conduit: Rigid steel conduit or IMC.
 - 2. Concealed Conduit: Rigid steel conduit, IMC, or EMT.
 - 3. Connection to Vibrating Equipment (Including Transformers) LFMC.
 - 4. Boxes and Enclosures: NEMA 250, Type 3R.
- B. Comply with the following indoor applications, unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: Rigid steel conduit, IMC, or EMT.
 - 2. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 4. Connection to Vibrating Equipment (Including Transformers) LFMC.
 - 5. Damp or Wet Locations: Rigid steel conduit or IMC.
 - 6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch (21-mm) trade size for interior locations and above ground exterior locations.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

3.02 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hotwater pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run.
- F. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- G. Threaded Conduit Joints, exposed to Wet, Damp, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

- Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 24 inches (600 mm) of slack at each end of pull wire.
- J. Flexible Conduit Connections: Use maximum of 36 inches of flexible conduit for transformers.
 - 1. Use LFMC.

3.03 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor, roof, and wall assemblies to restore original fire-resistance rating of assembly.

3.04 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - Repair damage to paint finishes with matching touchup coating recommended by manufacturer.

SECTION 26 05 43

UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 <u>SCOPE OF WORK SUMMARY</u>

A. Section Includes:

- 1. Conduit, ducts, and duct accessories for direct-buried and concrete-encased or slurry encased duct banks, and in single duct runs.
- 2. Handholes and pull boxes.
- 3. Manholes.

B. Definition

1. RNC: Rigid nonmetallic conduit.

1.03 QUALITY ASSURANCE

- A. Comply with IEEE C2.
- B. Comply with NFPA 70.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures
- B. Product Data: For the following:
 - 1. Duct-bank materials, including separators and miscellaneous components.
 - Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
 - 3. Accessories for manholes, handholes, pull boxes, and other utility structures.
 - 4. Warning tape.
- C. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:
 - 1. Duct entry provisions, including locations and duct sizes.
 - 2. Reinforcement details.
 - 3. Frame and cover design and manhole frame support rings.
 - 4. Ladder & Step details.
 - Grounding details.
 - 6. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
 - 7. Joint details.

- D. Shop Drawings for Factory-Fabricated Handholes and Pull Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:
 - 1. Duct entry provisions, including locations and duct sizes.
 - 2. Cover design.
 - 3. Grounding details.
 - 4. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
- E. Duct-Bank Coordination Drawings: Show duct profiles and coordination with other utilities and underground structures.
 - 1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.
 - 2. Drawings shall be signed and sealed by a qualified professional engineer.
- F. Product Certificates: For concrete and steel used in precast concrete manholes, pull boxes and handholes, comply with ASTM C 858.
- G. Qualification Data: For qualified professional engineer and testing agency.
- H. Source quality-control reports.
- I. Field quality-control reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.
- B. Store precast concrete underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.
- C. Lift and support precast concrete units only at designated lifting or supporting points.

1.07 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
 - 1. Notify Architect no fewer than two weeks in advance of proposed interruption of electrical service. Maintain electrical power to irrigation controllers and irrigation equipment throughout the construction period.
 - 2. Do not proceed with interruption of electrical service without Architect's written permission.

1.08 PROJECT COORDINATION

- A. Coordinate layout and installation of ducts, manholes, handholes, and pull boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and pull boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Architect.

PART 2 - PRODUCTS

2.01 CONDUIT

- A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.
- B. RNC: NEMA TC 2, Type EPC-40-PVC and Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.02 NONMETALLIC DUCTS AND DUCT ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems.
 - 2. ARNCO Corporation.
 - Beck Manufacturing.
 - 4. Cantex, Inc.
 - 5. CertainTeed Corp.
 - 6. Condux International, Inc.
 - 7. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
 - 8. Electri-Flex Company.
 - 9. IPEX Inc.
 - 10. Lamson & Sessions; Carlon Electrical Products.
 - 11. Manhattan Wire Products; a Belden company.

B. Duct Accessories:

- 1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and retained to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
- 2. Warning Tape: Underground-line warning tape specified in Division 26 Section "Identification for Electrical Systems."
 - a. Color: Red dye added to concrete during batching.

2.03 PRECAST CONCRETE HANDHOLES AND PULL BOXES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Christy Concrete Products.
 - 2. Cretex Concrete Products West, Inc.; Riverton Division.
 - 3. Elmhurst-Chicago Stone Co.
 - 4. Oldcastle Precast Group.
 - 5. Oldcastle Precast Inc.; Utility Vault Division.
 - 6. Utility Concrete Products, LLC.
 - 7. Wausau Tile Inc.
- B. Comply with ASTM C 858 for design and manufacturing processes.

- C. Ferrous metal hardware shall be hot-dip galvanized in accordance with ASTM A153 (ASTM A153M) and ASTM A123 (ASTM A123M).
- D. Description: Factory-fabricated, reinforced-concrete, monolithically poured walls and bottom unless open-bottom enclosures are indicated. Frame and cover shall form top of enclosure and shall have load rating consistent with that of handhole or pull box.
 - 1. Frame and Cover: Weatherproof steel frame, with hinged steel access door assembly with tamper-resistant, captive, cover-securing stainless-steel bolts.
 - a. Cover Hinges: Concealed, with hold-open ratchet assembly.
 - b. Cover Handle: Recessed.
 - c. Traffic rated cover
 - d. Traffic rated handhole & pull box.
 - 2. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50,
 - 3. Cover Legend: Molded lettering, as indicated for each service.
 - 4. Configuration: Units shall be designed for flush burial and have integral closed bottom unless otherwise indicated.
 - Extensions and Slabs: Designed to mate with bottom of enclosure. Same material as enclosure.
 - 6. Windows: Precast or field drilled openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches (300 mm) vertically and horizontally to accommodate alignment variations.
 - a. Windows shall be located no less than 6 inches (150 mm) from interior surfaces of walls, floors, or frames and covers of handholes, but close enough to corners to facilitate racking of cables on walls.
 - 7. Duct Entrances in Handhole Walls: Cast end-bell or duct-terminating fitting in wall for each entering duct.
 - a. Type and size shall match fittings to duct or conduit to be terminated.
 - b. Fittings shall align with elevations of approaching ducts and be located near interior corners of handholes to facilitate racking of cable.
 - 8. Handholes 12 inches wide by 24 inches long (300 mm wide by 600 mm long) and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

2.04 PRECAST MANHOLES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Christy Concrete Products.
 - 2. Cretex Concrete Products West, Inc.; Riverton Division.
 - 3. Elmhurst-Chicago Stone Co.
 - 4. Oldcastle Precast Group.
 - 5. Oldcastle Precast Inc.; Utility Vault Division.
 - 6. Utility Concrete Products, LLC.
 - 7. Wausau Tile Inc.

- B. Comply with ASTM C 858, with structural design loading as specified in "Underground Enclosure Application" Article, and with interlocking mating sections, complete with accessories, hardware, and features.
 - 1. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches (300 mm) vertically and horizontally to accommodate alignment variations.
 - a. Windows shall be located no less than 6 inches (150 mm) from interior surfaces of walls, floors, or roofs of manholes, but close enough to corners to facilitate racking of cables on walls.
 - 2. Duct Entrances in Manhole Walls: Cast end-bell or duct-terminating fitting in wall for each entering duct.
 - a. Type and size shall match fittings to duct or conduit to be terminated.
 - b. Fittings shall align with elevations of approaching ducts and be located near interior corners of manholes to facilitate racking of cable.
- C. Concrete Knockout Panels: 1-1/2 to 2 inches (38 to 50 mm) thick, for future conduit entrance and sleeve for ground rod.
- D. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

2.05 UTILITY STRUCTURE ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Bilco Company (The).
 - 2. Campbell Foundry Company.
 - 3. Christy Concrete Products.
 - 4. Cretex Concrete Products West, Inc.; Riverton Division.
 - 5. East Jordan Iron Works.
 - 6. Elmhurst-Chicago Stone Co.
 - 7. Hubbell Power Systems; Lenoir City Division.
 - McKinley Iron Works.
 - 9. Neenah Foundry Company.
 - 10. NewBasis.
 - 11. Oldcastle Precast Group.
 - 12. Oldcastle Precast Inc.; Utility Vault Division.
 - 13. Osburn Associates, Inc.
 - Pennsylvania Insert Corporation.
 - 15. Underground Devices, Inc.
 - Utility Concrete Products, LLC.
 - 17. Wausau Tile Inc.
- B. Ferrous metal hardware, where indicated, shall be hot-dip galvanized complying with ASTM A 153 (A 153M) and A 123 (A 123M).

- C. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.
 - 1. Frame and Cover: Weatherproof, gray cast iron complying with ASTM A 48/A 48M, Class 30B with milled cover-to-frame bearing surfaces; diameter, 26 inches (660 mm).
 - Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - Special Covers: Recess in face of cover designed to accept finish material in paved areas.
 - c. Traffic rated cover
 - d. Traffic rated manhole
 - 2. Cover Legend: Cast in. Retained to suit system.
 - a. Legend: "ELECTRIC-LV" for duct systems with power wires and cables for systems operating at 600 V and less.
 - b. Legend: "ELECTRIC-HV" for duct systems with medium-voltage cables.
 - c. Legend: "SIGNAL" for communications, data, and telephone duct systems.
 - Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening.
 - a. Mortar for Chimney Ring and Frame and Cover Joints: Comply with ASTM C 270, Type M, except for quantities less than 2.0 cu. ft. (60 L) where packaged mix complying with ASTM C 387/C 387M, Type M, may be used.
- D. Manhole Sump Frame and Grate: ASTM A 48/A 48M, Class 30B, gray cast iron.
- E. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch- (50-mm) diameter eye, and 1-by-4-inch (25-by-100-mm) bolt.
 - Working Load Embedded in 6-Inch (150-mm), 4000-psi (27.6-MPa) Concrete: 13,000-lbf (58-kN) minimum tension.
- F. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- (22-mm-) diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening.
 - 1. Ultimate Yield Strength: 40,000-lbf (180-kN) shear and 60,000-lbf (270-kN) tension.
- G. Bolting Inserts for Concrete Utility Structure Cable Racks and Other Attachments: Flared, threaded inserts of noncorrosive, chemical-resistant, nonconductive thermoplastic material; 1/2-inch (13-mm) ID by 2-3/4 inches (69 mm) deep, flared to 1-1/4 inches (32 mm) minimum at base.
 - 1. Tested Ultimate Pullout Strength: 12,000 lbf (53 kN) minimum.
- H. Expansion Anchors for Installation after Concrete Is Cast: Zinc-plated, carbon-steel-wedge type with stainless-steel expander clip with 1/2-inch (13-mm) bolt, 5300-lbf (24-kN) rated pullout strength, and minimum 6800-lbf (30-kN) rated shear strength.
- I. Cable Rack Assembly: Steel, [hot-rolled] [hot-dip] galvanized except insulators.
 - 1. Stanchions: T-section or channel; 2-1/4-inch (57-mm) nominal size; punched with 14 holes on 1-1/2-inch (38-mm) centers for cable-arm attachment.
 - Arms: 1-1/2 inches (38 mm) wide, lengths ranging from 3 inches (75 mm) with 450-lb (204-kg) minimum capacity to 18 inches (460 mm) with 250-lb (114-kg) minimum capacity. Arms shall have slots along full length for cable ties and be arranged for secure mounting in horizontal position at any vertical location on stanchions.

- 3. Insulators: High-glaze, wet-process porcelain arranged for mounting on cable arms.
- J. Cable Rack Assembly: Nonmetallic. Components fabricated from nonconductive, fiberglass-reinforced polymer.
 - 1. Stanchions: Nominal 36 inches (900 mm) high by 4 inches (100 mm) wide, with minimum of 9 holes for arm attachment.
 - 2. Arms: Arranged for secure, drop-in attachment in horizontal position at any location on cable stanchions, and capable of being locked in position. Arms shall be available in lengths ranging from 3 inches (75 mm) with 450-lb (204-kg) minimum capacity to 20 inches (508 mm) with 250-lb (114-kg) minimum capacity. Top of arm shall be nominally 4 inches (100 mm) wide, and arm shall have slots along full length for cable ties.
- K. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F (2 deg C). Capable of withstanding temperature of 300 deg F (150 deg C) without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.
- L. Cover Hooks: Heavy duty, designed for lifts 60 lbf (270 N) and greater to.

2.06 SOURCE QUALITY CONTROL

A. Test and inspect precast concrete utility structures according to ASTM C 1037.

PART 3 - EXECUTION

3.01 CORROSION PROTECTION

A. Aluminum shall not be installed in contact with earth or concrete.

3.02 UNDERGROUND DUCT APPLICATION

A. NEMA Type EPC-40-PVC, 1" minimum size, in concrete or slurry encased duct bank unless otherwise indicated.

3.03 <u>UNDERGROUND ENCLOSURE APPLICATION</u>

- A. Handholes and Pull Boxes for 600 V and Less, Including Telephone, Communications, and Data Wiring:
 - 1. Precast concrete. AASHTO HB 17, H-20 structural load rating.
- B. Manholes: Precast concrete.
 - 1. H-20 structural load rating according to AASHTO HB 17.

3.04 EARTHWORK

- A. Excavation and Backfill: Comply with Division 31 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restore surface features at areas disturbed by excavation and reestablish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.
- C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Turf and Grasses" and "Plants."
- D. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 01 Section "Cutting and Patching."

3.05 **DUCT INSTALLATION**

- A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1220 mm) both horizontally and vertically, at other locations unless otherwise indicated.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches (250 mm) o.c. for 5-inch (125-mm) ducts, and vary proportionately for other duct sizes.
 - 1. Begin change from regular spacing to end-bell spacing 10 ft. (3 m) from the end bell without reducing duct line slope and without forming a trap in the line.
 - 2. Direct-Buried Duct Banks: Install an expansion and deflection fitting in each conduit in the area of disturbed earth adjacent to manhole or handhole.
 - 3. Grout end bells into structure walls from both sides to provide watertight entrances.
- E. Building Wall Penetrations: Make a transition from underground duct to rigid steel conduit at least 10 ft. (3 m) outside the building wall without reducing duct line slope away from the building and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Division 26 Section "Common Work Results for Electrical."
- F. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.
- G. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in ducts, including spares.
- H. Concrete-Encased Ducts: Support ducts on duct separators.
 - Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 ft. (6 m) of duct. Secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches (150 mm) between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
 - 2. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.
 - a. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations, or use other specific measures to prevent expansioncontraction damage.
 - b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch (19-mm) reinforcing rod dowels extending 18 inches (450 mm) into concrete on both sides of joint near corners of envelope.
 - 3. Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in

- middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
- 4. Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
- 5. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
- 6. Minimum Space between Ducts: 3 inches (75 mm) between ducts and exterior envelope wall, 2 inches (50 mm) between ducts for like services, and 4 inches (100 mm) between power and signal ducts.
- 7. Depth: Install top of duct bank at least 24 inches (600 mm) below finished grade in areas not subject to deliberate traffic, and at least 30 inches (750 mm) below finished grade in deliberate traffic paths for vehicles unless otherwise indicated.
- 8. Stub-Ups: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.
 - b. Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of base. Install insulated grounding bushings on terminations at equipment.
- 9. Warning Tape: Bury warning tape approximately 12 inches (300 mm) above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches (75 mm) of the centerline of duct bank. Provide an additional warning tape for each 12-inch (300-mm) increment of duct-bank width over a nominal 18 inches (450 mm). Space additional tapes 12 inches (300 mm) apart, horizontally.

3.06 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND PULL BOXES

- A. Precast Concrete Handhole and Manhole Installation:
 - Comply with ASTM C 891 unless otherwise indicated.
 - 2. Install units level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances.
 - 3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch (25-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

B. Elevations:

- 1. Manhole Roof: Install with rooftop at least 15 inches (380 mm) below finished grade.
- 2. Manhole Frame: Set manhole frames 1 inch (25 mm) above finished grade.
- 3. Handhole Covers: Set covers of handholes 1 inch (25 mm) above finished grade.
- C. Drainage: Install drains in bottom of manholes. Provide 24" of crushed rock at bottom of manholes and provide 12" of crushed rock at bottom of handholes and pullboxes.
- D. Manhole Access: Circular opening in manhole roof; sized to match cover size.
 - 1. Manholes with Fixed Ladders: Offset access opening from manhole centerlines to align with ladder.
 - 2. Install chimney, constructed of precast concrete collars and rings to support frame and cover and to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney.

- E. Waterproofing: Apply waterproofing to exterior surfaces of manholes and handholes. After ducts have been connected and grouted, and before backfilling, waterproof joints and connections and touch up abrasions and scars.
- F. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, as required for installation and support of cables and conductors and as indicated.
- G. Warning Sign: Install "Confined Space Hazard" warning sign on the inside surface of each manhole cover.

3.07 GROUNDING

A. Ground underground ducts and utility structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.08 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
 - Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
 - 3. Test manhole [and handhole] grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Correct deficiencies and retest as specified above to demonstrate compliance.
- C. Prepare test and inspection reports.

3.09 CLEANING

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump. Remove foreign material.

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Section Includes:

- 1. Identification for conductors.
- 2. Warning labels.
- 3. Equipment identification labels.

1.03 QUALITY ASSURANCE

- A. Comply with ANSI A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures
- B. Product Data: For each electrical identification product indicated.

1.06 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- Install identifying devices with permanent marker before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.01 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with
- D. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.02 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- C. Warning label and sign shall include, but are not limited to, the following legends:
 - Workspace Clearance Warning: "WARNING OSHA REGULATION AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."

2.03 EQUIPMENT IDENTIFICATION LABELS

A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

3.02 <u>IDENTIFICATION SCHEDULE</u>

- A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 - Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension

to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

- B. Warning Labels for Indoor and Outdoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels Baked-enamel warning signs Metal-backed, butyrate warning signs.
 - 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
- C. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with schedules. Apply labels to disconnect switches, panelboards, and transformers.
 - 1. Labeling Instructions:
 - a. Indoor and Outdoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch-(13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high. Include power supply/source and load/equipment served information.

SECTION 26 05 73

OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. This Section includes computer-based, arcing faults, fault-current and overcurrent protective device coordination studies. Protective devices shall be set based on results of the protective device coordination study.

1.03 QUALITY ASSURANCE

- A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are not acceptable.
- B. Study Specialist Qualifications: An entity experienced in the application of computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.
 - 1. Professional engineer, licensed in the state where Project is located, shall be responsible for the study. All elements of the study shall be performed under the direct supervision and control of engineer.
- C. Comply with IEEE 242 for short-circuit currents and coordination time intervals.
- D. Comply with IEEE 399 for general study procedures.
- E. The consultant shall provide all necessary material, equipment, labor, and technical supervision to perform the arc flash hazard analysis as described erein.
- F. The consultant shall utilize engineers and technicians that are experienced and regularly perform electrical power system testing.
- G. Personnel performing the arc flash analysis shall be trained and experienced in accordance with NETA Training Specifications concerning the apparatus and systems being evaluated. These individuals shall be capable of conducting the tasks of the analysis in a safe manner and with complete knowledge of the hazards involved.

1.04 SAFETY AND PROCEDURAL REQUIREMENTS

- A. The consultant must provide proof (written documentation) that its employees have been properly trained in the use and application of personal protective equipment (PPE) and the hazards of working on or near energized equipment. The consultant must provide its own PPE protection with a minimum arc thermal performance rating (ATPV) of 40 calories/cm².
- B. Safety practices that shall be followed include, but are not limited to, the following:
 - 1. Occupational Safety and Health Act.
 - 2. Accident Prevention Manual for Industrial Operations, National Safety Council.
 - 3. Applicable state and local safety operating procedures.
 - 4. Owner's safety practices.
- C. Perform all work in accordance with the applicable codes and standards of the following agencies except as provided otherwise herein:

- InterNational Electrical Testing Association NETA ATS latest Edition: Acceptance Testing Specifications, and/or NETA MTS latest Edition: Maintenance Testing Specifications.
- 2. National Fire Protection Association NFPA
 - a. ANSI/NFPA 70: National Electrical Code
 - b. ANSI/NFPA 70B: Recommended Practice for Electrical Equipment Maintenance
 - c. NFPA 70E: Electrical Safety Requirements for Employee Workplaces

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For computer software program to be used for studies.
- C. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399.
- D. Qualification Data: For coordination-study specialist.
- E. Other Action Submittals: The following submittals shall be made after the approval process for system protective devices has been completed. Submittals [shall] [may] be in digital form.
 - 1. Coordination-study input data, including completed computer program input data sheets.
 - 2. Study and Equipment Evaluation Reports.
 - 3. Coordination-Study Report.
 - 4. Short circuit study report
 - 5. Arc flash study report

PART 2 - PRODUCTS

2.01 COMPUTER SOFTWARE DEVELOPERS

- A. Available Computer Software Developers: Subject to compliance with requirements, companies offering computer software programs that may be used in the Work include, but are not limited to, the following:
 - 1. CGI CYME.
 - 2. EDSA Micro Corporation.
 - 3. ESA Inc.
 - 4. Operation Technology, Inc.
 - 5. SKM Systems Analysis, Inc.

2.02 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

- A. Comply with IEEE 399.
- B. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.
- C. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate selective

coordination by computer-generated, time-current coordination plots. Software shall include the following for this analysis.

- a. Arcing faults.
- b. Simultaneous faults.
- c. Explicit negative sequence.
- d. Mutual coupling in zero sequence.

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance. Devices to be coordinated are indicated on Drawings.
 - Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

3.02 POWER SYSTEM DATA

- A. Gather and tabulate the following input data to support coordination study:
 - 1. Product Data for overcurrent protective devices specified in other Division 26 Sections and involved in overcurrent protective device coordination studies and for existing devices to the existing main utility service switchboard and to the existing emergency generator. This study shall only include the portion of the electrical distribution serving the new electrical equipment. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
 - 2. Impedance of utility service entrance. Contact utility company.
 - 3. Electrical Distribution System Diagram: In hard-copy and electronic-copy formats, showing the following:
 - a. Circuit-breaker and fuse-current ratings and types.
 - b. Relays and associated power and current transformer ratings and ratios.
 - c. Transformer kilovolt amperes, primary and secondary voltages, connection type, impedance, and X/R ratios.
 - d. Generator kilovolt amperes, size, voltage, and source impedance.
 - e. Cables: Indicate conduit material, sizes of conductors, conductor material, insulation, and length.
 - f. Busway ampacity and impedance.
 - g. Motor horsepower and code letter designation according to NEMA MG 1.
 - 4. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram, showing the following:
 - Special load considerations, including starting inrush currents and frequent starting and stopping.
 - b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.

- c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
- d. Generator thermal-damage curve.
- e. Ratings, types, and settings of utility company's overcurrent protective devices.
- Special overcurrent protective device settings or types stipulated by utility company.
- g. Time-current-characteristic curves of devices indicated to be coordinated.
- h. Manufacturer, frame size, interrupting rating in amperes rms symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
- Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
- j. Panelboards, switchboards, motor-control center ampacity, and interrupting rating in amperes rms symmetrical.

3.03 FAULT-CURRENT STUDY

- A. Calculate the maximum available short-circuit current in amperes rms symmetrical at circuit-breaker positions of the electrical power distribution system. The calculation shall be for a current immediately after initiation and for a three-phase bolted short circuit at each of the following:
 - 1. Switchboard bus.
 - 2. Branch circuit panelboard.
- B. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Include studies of system-switching configurations and alternate operations that could result in maximum fault conditions.
- C. Calculate momentary and interrupting duties on the basis of maximum available fault current.
- D. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with IEEE 141, IEEE 241, and IEEE 242.
 - 1. Transformers:
 - a. ANSI C57.12.10.
 - b. ANSI C57.12.22.
 - c. ANSI C57.12.40.
 - d. IEEE C57.12.00.
 - e. IEEE C57.96.
 - 2. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.20.1.
 - Low-Voltage Fuses: IEEE C37 46.
- E. Study Report:
 - 1. Show calculated X/R ratios and equipment interrupting rating (1/2-cycle) fault currents on electrical distribution system diagram.
- F. Equipment Evaluation Report:

- 1. For 600-V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
- 2. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in the standards to 1/2-cycle symmetrical fault current.
- 3. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.

3.04 COORDINATION STUDY

- A. Perform coordination study using approved computer software program. Prepare a written report using results of fault-current study. Comply with IEEE 399.
 - 1. Calculate the maximum and minimum 1/2-cycle short-circuit currents.
 - Calculate the maximum and minimum interrupting duty (5 cycles to 2 seconds) shortcircuit currents.
 - 3. Calculate the maximum and minimum ground-fault currents.
- B. Comply with IEEE 141, IEEE 241, and IEEE 242 recommendations for fault currents and time intervals.
- C. Transformer Primary Overcurrent Protective Devices:
 - 1. Device shall not operate in response to the following:
 - a. Inrush current when first energized.
 - b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
 - c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.
 - Device settings shall protect transformers according to IEEE C57.12.00, for fault currents.
- D. Motors served by voltages more than 600 V shall be protected according to IEEE 620.
- E. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Demonstrate that equipment withstands the maximum short-circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.
- F. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:
 - 1. Tabular Format of Settings Selected for Overcurrent Protective Devices:
 - a. Device tag.
 - Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
 - c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
 - d. Fuse-current rating and type.
 - e. Ground-fault relay-pickup and time-delay settings.

- 2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:
 - a. Device tag.
 - b. Voltage and current ratio for curves.
 - c. Three-phase and single-phase damage points for each transformer.
 - d. No damage, melting, and clearing curves for fuses.
 - e. Cable damage curves.
 - f. Transformer inrush points.
 - g. Maximum fault-current cutoff point.
- G. Completed data sheets for setting of overcurrent protective devices.

3.05 Arc Flash Study:

A. System Data

- Provide an electrical system single-line diagram as required by NFPA 70E, 2004 Edition, "Standard for Electrical Safety in the Workplace", as referenced in OSHA 29 CFR 1910 Subpart S, Appendix A. This information shall include nameplate data for electrical components (e.g. transformers, panelboards, switchboards, motor control centers, etc.) for all portions of the electrical system from the utility intertie through the lowest rated panelboard in the scope of this project.
- 2. Cable sizes, types and lengths between electrical equipment components and up to date utility source data shall be provided for an accurate single-line representation of the electrical system. Unique characteristics of the equipment installation shall be provided which may impact the magnitude of the potential hazard (e.g. open space versus enclosure). Overcurrent device settings shall be verified.
- 3. Data collection may require removal of barriers, opening of front panels, etc. while equipment is energized. The consultant must provide proof (written documentation) that its employees working on the premises of have been properly trained in the use and application of personal protective equipment (PPE) and the hazards of working on or near energized equipment. The consultant must provide its own PPE protection with a minimum arc thermal performance rating (ATPV) of 40 calories/cm².
- B. System Analysis: A comprehensive analysis of the electrical system shall be performed for all equipment. This analysis shall include the following:
 - Short Circuit Study A short circuit analysis shall be performed in accordance with ANSI standard C37 and IEEE standard 141-1993 (Red Book) for each electrical component as defined in "Section A."
 - Coordination Study A coordination study shall be performed in accordance with IEEE 242-2001 "Buff" to determine the proper overcurrent device settings that will balance system reliability through selective coordination while minimizing the magnitude of an electrical arc flash hazard incident.
 - 3. Incident Energy Study An incident energy study shall be done in accordance with the IEEE 1584-2004a," IEEE Guide for Performing Arc Flash Hazard Calculations" as referenced in NFPA 70, "Standard for Electrical Safety in the Workplace", 2004 Revision, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE

selection are not acceptable. The consultant shall in selecting appropriate combinations of PPE prior to the final analysis and preparation of equipment labels.

- C. Design Review: The consultant shall assist with system design adjustments to optimize the results of the study as it relates to safety and reliable electrical system operation (e.g. over-current device settings, working distances, current limiting devices). This includes mitigation, where possible, of incident energy levels that exceed 40 calories/cm². A qualified engineer with power systems design experience shall provide this assistance.
- D. Study Report: The consultant shall supply a comprehensive report that includes:
 - 1. Report summary with analysis methodology, findings and recommendations
 - 2. Summary of input data for utility source, equipment and cables
 - 3. Available fault current at each equipment location with comparison to equipment rating
 - Overcurrent device settings (e.g. pick-up, time delay, curve), "as found" and "as recommended"
 - 5. Incident energy level (calories/cm²) for each equipment location and recommended PPE
 - 6. Overcurrent device coordination curves including related section of the single-line diagram
 - 7. Complete system single-line diagram for the system analyzed
- E. Labels: Based on the results of the incident energy study, the consultant shall produce and install a warning label (orange <40 cal/cm²) or danger label (red > 40 cal/cm²) for each piece of equipment as specified in "Section A" in accordance with ANSI Z535.4-2002. The label must be readable in both indoor and outdoor environments for at least 3 years and contain the following information:
 - Arc hazard boundary (inches)
 - 2. Working distance (inches)
 - 3. Arc flash incident energy at the working distance (calories/ cm²)
 - 4. PPE category and description including the glove rating
 - 5. Voltage rating of the equipment
 - 6. Limited approach distance (inches)
 - 7. Restricted approach distance (inches)
 - 8. Prohibited approach distance (inches)
 - 9. Equipment/bus name
 - 10. Date prepared
 - 11. Consultant name and address
- F. Equipment Verification/Operation: The validity of the arc flash study and incident energy readings is in part based on proper setting of overcurrent device trip times and the proper operation of the overcurrent devices and breakers themselves. The consultant shall verify proper operation of overcurrent devices and breakers at the request using InterNational Electrical Testing Association (NETA) qualified technicians.

The consultant shall be capable of adjustment, maintenance, repair or replacement of overcurrent devices or breakers as required to support the performance of the electrical system in line with the expectations of the system study.

- G. Safety Training: The consultant shall provide XYZ Company one day of arc flash safety training that contains the requirements referenced in OSHA 1910.269, OSHA 1910 Subpart S and NFPA 70E. This shall include:
 - 1. Proper use of the system analysis data
 - 2. Interpretation of hazard labels
 - 3. Selection and utilization of personal protective equipment
 - 4. Safe work practices and procedures

The consultant shall provide an outline of the one-day training course including training materials. The consultant shall be capable of developing and presenting customized training for approval as required. The consultant shall provide a training certificate to record satisfactory completion by XYZ Company employees for continuing education credits and re-licensing requirements. Satisfactory completion is defined as the student obtaining a minimum of 70% on the post training examination and the ability to work safely if a hands on performance evaluation is provided

H. Safety Documentation/Policy: The consultant shall integrate the results of the system study and design review into the safety manual in compliance with OSHA CFR 29 1910.333. The consultant shall assist at its request to develop a safety policy with corresponding documentation and procedures including information gained in the system analysis. This includes electrical safety, procedures for mitigation of arc hazards, PPE selection based on specific equipment, task and training requirements.

SECTION 26 24 13

SWITCHBOARDS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. This Section includes service and distribution switchboards rated 600 V and less.
- B. Definitions
 - 1. EMI: Electromagnetic interference.
 - 2. GFCI: Ground-fault circuit interrupter.
 - 3. RFI: Radio-frequency interference.
 - 4. RMS: Root mean square.
 - 5. SPDT: Single pole, double throw.

1.03 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
- C. Source Limitations: Obtain switchboards through one source from a single manufacturer.
- D. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Comply with NEMA PB 2, "Deadfront Distribution Switchboards."
- G. Comply with NFPA 70.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of switchboard, overcurrent protective device, transient voltage suppression device, ground-fault protector, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

- C. Shop Drawings: For each switchboard and related equipment.
 - 1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Enclosure types and details for types other than NEMA 250, Type 1.
 - b. Bus configuration, current, and voltage ratings.
 - Short-circuit current rating of switchboards and overcurrent protective devices.
 - d. Descriptive documentation of optional barriers specified for electrical insulation and isolation.
 - e. Utility company's metering provisions with indication of approval by utility company.
 - f. Mimic-bus diagram.
 - g. UL listing for series rating of installed devices.
 - h. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 2. Wiring Diagrams: Power, signal, and control wiring.
- D. Samples: Representative portion of mimic bus with specified finish, for color selection.
- E. Manufacturer Seismic Qualification Certification: Submit certification that switchboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Qualification Data: For testing agency.
- G. Field quality-control test reports including the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- H. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - Routine maintenance requirements for switchboards and all installed components.
 - Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

3. Time-current curves, including selectable ranges for each type of overcurrent protective device.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in sections or lengths that can be moved past obstructions in delivery path.
- B. Store indoors in clean dry space with uniform temperature to prevent condensation. Protect from exposure to dirt, fumes, water, corrosive substances, and physical damage.
- C. If stored in areas subjected to weather, cover switchboards to provide protection from weather, dirt, dust, corrosive substances, and physical damage. Remove loose packing and flammable materials from inside switchboards; install electric heating (250 W per section) to prevent condensation.
- D. Handle switchboards according to NEMA PB 2.1 and NECA 400.

1.07 PROJECT CONDITIONS

- A. Installation Pathway: Remove and replace access fencing, doors, lift-out panels, and structures to provide pathway for moving switchboards into place.
- B. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 - 1. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
 - 2. Altitude: Not exceeding 6600 feet (2000 m).
- C. Service Conditions: NEMA PB 2, usual service conditions, as follows:
 - 1. Ambient temperatures within limits specified.
 - 2. Altitude not exceeding 6600 feet (2000 m).
- D. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 - 1. Notify Architect and Owner no fewer than 14 days in advance of proposed interruption of electric service.
 - 2. Indicate method of providing temporary electric service.
 - 3. Do not proceed with interruption of electric service without the Architect's and Owners written permission.

1.08 <u>COORDINATION</u>

- A. Coordinate layout and installation of switchboards and components with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers:
 - 1. Eaton Corporation; Cutler-Hammer Products.
 - 2. General Electric Co.; Electrical Distribution & Protection Div.
 - 3. Siemens Energy & Automation, Inc.

4. Square D.

- B. Front-Connected, Front-Accessible Switchboard: Panel Mounted main device, panel-mounted branches, and sections rear aligned.
- C. Nominal System Voltage: As noted on drawings.
- D. Main-Bus Continuous: Ampere rating as noted on drawings.
- E. Fabricate and test switchboards according to IEEE 344 to withstand seismic forces.
- F. Enclosure: Steel, NEMA 250, Type 1 or NEMA 3R.
- G. Enclosure Finish for Outdoor Units: Factory-applied finish in manufacturer's standard color, undersurfaces treated with corrosion-resistant undercoating.
- H. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.
- Barriers: Between adjacent switchboard sections.
- J. Utility Metering Compartment: Fabricated compartment and section complying with utility company's requirements. If separate vertical section is required for utility metering, match and align with basic switchboard.
- K. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.
- L. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.
- M. Buses and Connections: Three phase, four wire, unless otherwise indicated.
 - 1. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity with feeder circuit-breaker line connections.
 - 2. Load Terminals: Insulated, rigidly braced, silver-plated, copper runback bus extensions equipped with pressure connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full ampere rating of circuit-breaker position.
 - 3. Ground Bus: 1/4-by-2-inch- (6-by-50-mm-) minimum-size, hard-drawn copper of 98 percent conductivity, equipped with pressure connectors for feeder and branch-circuit ground conductors. Contact Surfaces of Buses: Silver plated.
 - 4. Main Phase Buses, Neutral Buses, and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
 - 5. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.
 - 6. Neutral Buses: 100 percent of the ampacity of phase buses, unless otherwise indicated, equipped with pressure connectors for outgoing circuit neutral cables. Bus extensions for busway feeder neutral bus are braced.
- N. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

O. Accessories:

- Form-C contacts, one normally open and one normally closed, for remote monitoring of system operation. Contacts to reverse position on failure of any surge diversion module.
- 2. Audible alarm activated on failure of any surge diversion module.
- 3. Six-digit transient-counter set to total transient surges that deviate from the sine-wave envelope by more than 125 V.

2.02 OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker: NEMA AB 3, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 225 A and larger.
 - 2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting for circuit-breaker frame sizes 225 A and larger.
 - 3. Electronic trip-unit main circuit breakers shall have RMS sensing, field-replaceable rating plug, and the following field-adjustable settings:
 - a. Instantaneous trip.
 - b. Long- and short-time pickup levels.
 - c. Long- and short-time time adjustments.
 - d. Ground-fault pickup level, time delay, and I2t response.
 - 4. GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity.
- B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
 - Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
 - 2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
- C. Fungus Proofing: Permanent fungicidal treatment for switchboard interior, including instruments and instrument transformers.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install switchboards and accessories according to NEMA PB 2.1 and NECA 40.
- B. Install and anchor switchboards level on concrete bases, 8-inch nominal thickness minimum.
 - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to switchboards.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from switchboard units and components.
- D. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including control and key interlocking sequences and emergency procedures. Fabricate frame of finished wood or metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.

- E. Install overcurrent protective devices, transient voltage suppression devices, and instrumentation.
 - 1. Set field-adjustable switches and circuit-breaker trip ranges as indicated in the 260573 OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY.

3.03 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Identification for Electrical Systems."
- B. Switchboard Nameplates: Label each switchboard compartment with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

3.04 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:
- C. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Sections 7.1, 7.5, 7.6, 7.9, 7.10, 7.11, and 7.14 as appropriate. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 - 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a. Initial Infrared Scanning: Perform an infrared scan of each switchboard, panelboard, and transformer prior to Substantial Completion. Remove front panels so joints and connections are accessible to portable scanner.
 - b. Instruments, Equipment, and Reports:
 - Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - Prepare a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 <u>CLEANING</u>

A. On completion of installation, inspect interior and exterior of switchboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories. Refer to Division 01 Section "Demonstration and Training."

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Section Includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.03 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA PB 1.
- D. Comply with NFPA 70.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Include wiring diagrams for power, signal, and control wiring.
 - 8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

D. Field Quality-Control Reports:

- 1. Test procedures used.
- 2. Test results that comply with requirements.

- 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- E. Panelboard Schedules: Typed schedule for installation in panelboards.
- F. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 - 2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
- B. Handle and prepare panelboards for installation according to NECA 407 and NEMA PB 1.

1.07 <u>WARRANTY</u>

- A. Provide Manufacturer's Standard Warranty in accordance with Section 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Enclosures: Surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 4. Finishes:
 - Panels and Trim: Steel and galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - Back Boxes: Same finish as panels and trim.
 - 5. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.
- B. Phase, Neutral, and Ground Buses:
 - 1. Material: Hard-drawn copper, 98 percent conductivity.
 - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

- C. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Hard-drawn copper, 98 percent conductivity.
 - 2. Main and Neutral Lugs: Mechanical type.
 - 3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
- D. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- E. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.02 <u>LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS</u>

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: Circuit breaker or lugs only.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits.
 - 2. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - Lugs: Compression or Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.
 - d. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
 - e. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NECA 407 and NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.
- B. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- C. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- D. Install filler plates in unused spaces.
- E. Stub six 1-inch empty conduits from panelboard into ceiling space and to site pull box.
- F. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- G. Comply with NECA 1.

3.03 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.04 FIELD QUALITY CONTROL

- A. Testing: Perform tests and inspections.
- B. Acceptance Testing:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.

C. Tests and Inspections:

- 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- 3. Perform the following infrared scan tests and inspections and prepare reports:

- a. Initial Infrared Scanning: Perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
- b. Instruments and Equipment:
 - Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as indicated as specified in Division 26 Section "Overcurrent Protective Device Coordination Study."

END OF SECTION

SECTION 26 28 16

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Section Includes:

- 1. Fusible switches.
- 2. Non-fusible switches.
- 3. Enclosures.

B. Definitions

- 1. NC: Normally closed.
- 2. NO: Normally open.
- 3. SPDT: Single pole, double throw.

1.03 QUALITY ASSURANCE

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.

1.04 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of enclosed switch, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
 - 4. Include evidence of NRTL listing for series rating of installed devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
 - Include time-current coordination curves (average melt) for each type and rating of
 overcurrent protective device; include selectable ranges for each type of overcurrent
 protective device.

1.06 OPERATION AND MAINTENANCE DATA

- A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
 - 2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.07 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fuses: Nine of each size and type.
 - 2. Fuse Pullers: Two for each size and type.

1.08 PROJECT COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.01 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
- Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper neutral conductors.
- 3. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.02 NONFUSIBLE SWITCHES

- A. Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.

- 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
- Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper neutral conductors.
- 3. Lugs: Mechanical or Compression type, suitable for number, size, and conductor material.

2.03 **ENCLOSURES**

- A. Enclosed Switches: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
 - 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
 - 2. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Install fuses in fusible devices.
- C. Comply with NECA 1.

3.03 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with engraved laminated-plastic nameplate.

3.04 FIELD QUALITY CONTROL

- A. Testing: Perform inspections, tests, and adjustments.
- B. Perform tests and inspections.
 - 1. Inspect components, assemblies, and equipment installations, including connections.
- C. Acceptance Testing Preparation:
 - Test insulation resistance for each enclosed switch.
 - 2. Test continuity of each circuit.
- D. Tests and Inspections:

- 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- 3. Perform the following infrared scan tests and inspections and prepare reports:
 - Initial Infrared Scanning: Perform an infrared scan of each enclosed switch. Remove front panels so joints and connections are accessible to portable scanner.
 - Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- E. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports, including a report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION

SECTION 26 56 00

EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Section Includes:

- 1. Exterior luminaires with lamps and ballasts.
- 2. Luminaire-mounted photoelectric relays.
- 3. Poles and accessories.

B. Definitions

- 1. CCT: Correlated color temperature.
- 2. CRI: Color-rendering index.
- 3. HID: High-intensity discharge.
- 4. LER: Luminaire efficacy rating.
- 5. Luminaire: Complete lighting fixture, including ballast housing if provided.
- 6. Pole: Luminaire support structure, including tower used for large area illumination.
- 7. Standard: Same definition as "Pole" above.

1.03 STANDARDS AND REFERENCES

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with IEEE C2, "National Electrical Safety Code."
- D. Comply with NFPA 70.

1.04 QUALITY ASSURANCE: STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
- B. Live Load: Single load of 500 lbf (2224 N), distributed as stated in AASHTO LTS-4-M.
- C. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.
 - 1. Basic wind speed for calculating wind load for poles 50 feet (15 m) high or less is 120 mph.
 - a. Wind Importance Factor: 1.0.
 - b. Minimum Design Life: 25 years.
 - c. Velocity Conversion Factors: 1.0.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Lumen output of each lighting fixture shall be equal to or greater than indicated in the lighting fixture schedule.
 - Lighting fixture input watts shall be equal to or less than indicated in the lighting fixture schedule.
 - 4. Color temperature shall be as indicated in the lighting fixture schedule.
 - 5. Details of attaching luminaires and accessories.
 - 6. Details of installation and construction.
 - 7. Luminaire materials.
 - 8. Site photometric plan. Include lighting contribution from modular building mounted lighting fixtures that are furnished with the modular building.
 - 9. Photometric data based on laboratory tests of each luminaire type, complete with indicated LED's, Drivers, and accessories.
 - a. Testing Agency Certified Data: For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
 - b. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 10. Photoelectric relays.
 - 11. Drivers, including energy-efficiency data.
 - 12. LED's, including life, output, CCT, CRI, lumens, and energy-efficiency data.
 - 13. Materials, dimensions, and finishes of poles.
 - Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
 - 15. Anchor bolts for poles.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - Anchor-bolt templates keyed to specific poles and certified by manufacturer.
 - 3. Wiring Diagrams: For power, signal, and control wiring.
- D. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4-M and that load imposed by luminaire and attachments has been included in design. The certification shall be based on design calculations by a professional engineer.
- E. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.

- F. Field quality-control reports.
- G. Operation and Maintenance Data: For luminaires and poles to include operation, and maintenance manuals.
- H. Warranty: Sample of special warranty.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package aluminum poles for shipping according to ASTM B 660.
- B. Store poles on decay-resistant-treated skids at least 12 inches (300 mm) above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- C. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.08 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
 - 2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
 - 3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
 - 4. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.02 GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.

- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 - 2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: As selected by Architect from manufacturer's full range.
- N. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.03 <u>LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS</u>

- A. Comply with UL 773 or UL 773A.
- B. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc (16 to 32 lx) and off at 4.5 to 10 fc (48 to 108 lx) with 15-second minimum time delay. Relay shall have directional lens in front of photocell to prevent artificial light sources from causing false turnoff.
 - 1. Relay with locking-type receptacle shall comply with ANSI C136.10.
 - 2. Adjustable window slide for adjusting on-off set points.

2.04 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4-M.
 - Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
 - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 - 1. Materials: Shall not cause galvanic action at contact points.

- Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
- 3. Anchor-Bolt Template: Plywood or steel.
- D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.
- E. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange.

2.05 STEEL POLES

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet (12 m) in height with access handhole in pole wall.
 - 1. Mounting Provisions: Butt flange for bolted mounting on foundation.
- B. Steel Mast Arms: Single-arm type, continuously welded to pole attachment plate. Material and finish same as pole.
- C. Brackets for Luminaires: Detachable, cantilever, without underbrace.
 - Adapter fitting welded to pole, allowing the bracket to be bolted to the pole mounted adapter, then bolted together with stainless-steel bolts.
 - 2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire.
 - 3. Match pole material and finish.
- D. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- E. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- F. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- G. Galvanized Finish: After fabrication, hot-dip galvanize complying with ASTM A 123/A 123M.
- H. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
 - 2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
 - 3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

2.06 POLE ACCESSORIES

 Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.

PART 3 - EXECUTION

3.01 **LUMINAIRE INSTALLATION**

- A. Fasten luminaire to indicated structural supports.
 - Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

B. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.

3.02 POLE INSTALLATION

- A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.
 - 1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
 - 2. Grout void between pole base and foundation. Use non-shrink or expanding concrete grout firmly packed to fill space.
 - 3. Install base covers unless otherwise indicated.
 - 4. Use a short piece of 1/2-inch- (13-mm-) diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.
- C. Poles and Pole Foundations Set in Concrete Paved Areas: Install poles with minimum of 6-inch-(150-mm-) wide, unpaved gap between the pole or pole foundation and the edge of adjacent concrete slab. Fill unpaved ring with pea to a level 1 inch (25 mm) below top of concrete slab.
- D. Raise and set poles using web fabric slings (not chain or cable).

3.03 INSTALLATION OF INDIVIDUAL GROUND-MOUNTING LUMINAIRES

A. Install on concrete base. Cast conduit into base, and finish by troweling and rubbing smooth.

3.04 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.05 **GROUNDING**

- A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.06 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 - 1. Verify operation of photoelectric controls.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- Remove surface debris.
- B. Remove paving, curbs, foundations and surface improvements.
- C. Clear site of plant life and grass.
- D. Remove trees and shrubs.
- E. Remove root system of trees and shrubs.

1.03 STANDARDS AND REFERENCES

- A. Conform to applicable codes for disposal of debris. Burning debris on site not permitted.
- B. Coordinate clearing work with utility companies.

1.04 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 Section "Earthwork."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.
- B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are tagged or identified.

3.02 PROTECTION

- A. Protect utilities that are designated to remain from damage.
- B. Protect trees, plant growth and features designated to remain as final landscaping.

- C. Protect bench marks and designated existing structures from damage or displacement.
- D. Erect barricades in accordance with Title 8, Subchapter 4, Construction Safety Orders, California Code of Regulations.
- E. Protect existing items not indicated to be altered.

3.03 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove paving, curbs, foundations and surface improvements. Patch and repair surfaces not indicated to be removed.
- C. Remove trees and shrubs indicated. Remove stumps, main root ball, root system to full depth.
- D. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
- E. Clear undergrowth, grass and deadwood. Protect plant material not scheduled for removal.
- F. Keep site free of dust by sprinkling with water. Maintain adequate water trucks, hoses and water supply.
- G. The limits of clearing and grubbing shall be the area of new construction
- H. Remove all trash, rubbish and all other material not suitable for construction operations.
- I. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
- J. Use only hand methods for grubbing within tree protection zone.
- K. Chip removed tree branches and dispose of off-site.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

 Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground or compact to 90 percent of maximum dry density per ASTM D1557. Bring grade to match surrounding surfaces.

3.04 REMOVAL

- A. Remove debris, rock and extracted plant life from site as work progresses. Dispose legally.
- B. Burial of removed materials not permitted.
- C. Use of Owner's disposal system not permitted. Do not use disposal system belonging to any other property Owner.
- D. Loose fill material, buried trash, abandoned underground structures or deleterious materials of any kind encountered shall be identified and removed to expose natural earth.

END OF SECTION

SECTION 31 23 15

SITE EARTHWORK AND BUILDING EXCAVATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Site earthwork preparation.
- B. Excavation for building foundations within building area.
 - Building Area: Areas indicated on Drawings, plus 5 feet minimum beyond footing lines, including covered walks.
- C. Excavation for site structures.

1.03 STANDARDS AND REFERENCES

- A. ASTM D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort.
- B. AQMD South Coast Air Quality Management District, Local Regulations, Rule 403 for Fugitive Dust.

1.04 QUALITY ASSURANCE

- A. Existing Conditions: Contractor shall examine site of Work and verify existing conditions under which work will be performed, including known subsurface conditions.
- B. Drainage and Pumping: Maintain excavations and site free from water throughout work. Run surface water or seepage to sumps with float-switch-controlled pumps. Pump to drainage system as approved by Architect.
- C. Protection: Provide and maintain protection to retain earth-banks, and protect adjoining existing monuments, grades and structures from caving, sliding, erosions or other damage and provide suitable forms of protection against bodily injury or property damage.
- D. Provide barricades and berms at top of slopes to prevent water from flowing over top
- E. Borrow, fill, backfill, aggregate base, and other soil materials obtained from off-site sources shall be sampled and tested in compliance with CA EPA Department of Toxic Substances Control recommendations to prevent the importation of contaminated materials to the Site.
 - Testing Frequency
 - a. For borrow up to 1,000-cubic yards, conduct 1 test for each 250-cubic yards.
 - b. For borrow between 1,001-cubic yards and 5,000-cubic yards; conduct 4 tests for first 1,000-cubic yards, if material tests acceptable, conduct 1 test for each additional 500-cubic yards.
 - c. For borrow over 5,000-cubic yards, conduct 12 tests during import of first 5,000- cubic yards, if material tests acceptable, conduct 1 test for each additional 1,000-cubic yards.
 - 2. Owner's Testing Laboratory shall take samples at source, conduct testing and evaluate test results prior to delivery.
 - Conduct tests for lead and other heavy metals, asbestos, PCB's, pesticides, herbicides, VOCs, and semi-VOCs.

- When detectable quantities of hazardous materials are found, determine the risk to human health, the environment, or both using the DTSC Preliminary Endangerment Assessment Guidance Manual.
- 5. Do not import soils that exhibit a known risk to human health, the environment, or both.

1.05 SUBMITTALS

- A. Compaction Report indicating requirements per ASTM D1556.
- B. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.06 FIELD CONDITIONS

- A. Geotechnical Investigation Report has been prepared under direction of Owner. Geotechnical Investigation Report is hereby referenced as information for Work of this Section. Architect assumes no responsibility for conclusions Contractor may draw, from information provided. Contract Documents take precedence over recommendations that may be contained in Geotechnical Investigation Report and Contractor must obtain approval for deviations from Contract Documents. Copy of the Geotechnical Investigation Report is available at Architect's office.
- B. Verify that survey benchmark and intended elevations for Work are as indicated.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine entire site including subsurface conditions.
- B. Identify required lines, levels, contours and datum.
- C. Identify known underground, above ground and aerial utilities. Stake and flag locations. Replace as necessary throughout construction operations.
- D. Notify utility company to remove and relocate utilities where required for construction operations.
- E. Protect above and below grade utilities that are to remain.
- F. Protect plant life, lawns and other features remaining as portion of final landscaping.
- G. Protect bench marks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic.
- H. Repair or replace property damaged by Work of this Section.
- I. Commencement of Work means acceptance of existing conditions.

3.02 SITE EARTHWORK

- A. Conform to Section 31 10 00 for clearing requirements.
- B. Sub-excavate and remove loose existing soils to depths recommended by Geotechnical Engineer.
- C. Loose fill and natural on-site soils acceptable to Geotechnical Engineer may be stockpiled for subsequent use as fill material.

- D. After clearing and removal of loose fill, Geotechnical Engineer will inspect exposed surfaces, before commencing further earthwork operations.
- E. After sub-excavating existing soils, Geotechnical Engineer will inspect exposed surfaces. Before commencing further earthwork operations, verify elevations and line. Elevations shall be within 0.2 foot of required.
- F. Correct unauthorized over excavation at no cost to Owner.
- G. Notify Geotechnical Engineer of unexpected subsurface conditions and discontinue affected work until notified to resume work.
- H. Unless otherwise recommended in Geotechnical Report scarify exposed surface to depth of 6 inches. Bring to optimum moisture content and recompact to minimum 90 percent of maximum dry density per ASTM D1557.
- Place approved fill in 8 inch or less lifts, each lift with optimum moisture content and compacted to minimum 90 percent of maximum dry density per ASTM D 1557.
- J. Bring fill to elevations indicated on structural drawings or to those indicated on grading plans. Elevations shall be within 0.1 foot of required.
- K. Backfill holes, voids or depressions caused by earthwork operations with identical fill and compaction standards.
- L. Completed earthwork to determine suitability of exposed soils, will be inspected by Geotechnical Engineer, including cuts, fills and earth bank slopes (cut or fill).

3.03 BUILDING AREA PREPARATION

- A. Within building area and to distance of 5 feet beyond exterior footings or covered walks, remove existing fill or loose natural soils (sub excavate) to a depth recommended by Geotechnical Engineer.
- B. Geotechnical Engineer will inspect exposed surfaces. Additional unsuitable soil, as approved by Geotechnical Engineer shall be removed.
- C. Scarify exposed surface to depth of 6 inches. Bring to optimum moisture content and recompact to 90 percent of maximum dry density per ASTM D1557.
- D. Add approved fill to required subgrade elevation in 8-inch maximum lifts. Bring to optimum moisture content and compact to 90 percent of maximum dry density per ASTM D1557.
- E. Fill: As specified in Section 31 23 23 and as approved by Geotechnical Engineer.

3.04 EXCAVATION FOR FOUNDATIONS

- A. Underpin adjacent structures that may be damaged by excavation work, including utilities, pipes and electrical undergrounding. Protect existing monuments, grades and improvements of any kind. Remove all obstructions to Work.
- B. Excavate subsoil to elevations required to accommodate building foundations, slabs-on-grade, construction operations, forms, forms removal and inspection. Sub-excavate existing soils to depths recommended by Geotechnical Engineer.
 - Side forms in foundation excavations may be omitted where earth remains firm with no cave-in providing one inch is added to footing width for each form removed.
 - 2. Finish subgrade to a tolerance of 0.05 foot within required elevations for subgrade.
- C. Machine slope banks. Earth banks shall be sloped to 1-1/2 (horizontal) to 1 (vertical). Tops of earth banks shall be level to distance of 5 feet minimum from existing structures and 5 feet minimum behind construction barricades adjacent to driveways.
- D. Excavation cut not to interfere with normal 45 degree bearing splay of foundation.

- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Hand trim excavation. Remove loose matter. Machine tamp bottom of excavation.
- G. Remove lumped subsoil, boulders and rock up to any size encountered. Totally remove abandoned pipes and utilities found in excavations. Cap or plug both ends of pipes and conduits to provide complete seal with concrete plugs, threaded caps or other approved methods.
- H. Notify Geotechnical Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.
- I. Correct over-excavation as recommended by Geotechnical Engineer.
- J. Correct areas over-excavated by error by filling with specified concrete.
- K. Stockpile approved excavated material in area designated on site and remove excess material not being reused from site.
- L. Bulkheads and shoring shall conform to Title 8, California Code of Regulations, Construction Safety Orders.
- M. Maintain excavations free of water throughout operations. Run surface water or seepage to sumps or drainage system.

3.05 FIELD QUALITY CONTROL

- A. Testing and Inspection: Owner will engage a qualified independent Geotechnical Engineer to perform field quality-control testing and inspections. Do not proceed with concrete placement without approval of John R Byerly Inc.
- B. Testing agency will test compaction of soils in place according to ASTM D1556, and ASTM D2937 as applicable. Tests will be performed at the following locations and frequencies:
 - Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of building slab, but in no case fewer than 3 tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet or less of wall length, but no fewer than 2 tests.
- C. Frequency of Tests: Geotechnical Engineer may make as many tests as are necessary to ensure specified results.
- D. 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 to depth required; recompact and retest until specified compaction is obtained.

3.06 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled while it is frozen or thawing or during unfavorable weather conditions. When Work is interrupted by heavy rain, fill operations shall not be resumed until field tests by Geotechnical Engineer indicate that moisture content and density of fill are as previously specified.

3.07 PROTECTION

- Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing or excessive water inundation.

END OF SECTION

SECTION 31 23 17

TRENCHING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Excavate trenches for utilities.
- B. Compacted bedding.
- C. Backfilling and compaction to required elevations. D. Slurry concrete.
- E. Thrust blocks.

1.03 STANDARDS AND REFERENCES

- A. ASTM C150 Portland Cement.
- B. ASTM C494 Chemical Admixtures for Concrete.
- C. ASTM D1557 Laboratory compaction characteristics of soil using modified effort.
- D. SSPWC Standard Specifications for Public Works Construction, Latest Edition.
- E. California Code of Regulations, Title 8, Industrial Relations, Construction Safety Orders, Division 01, Chapter 4, Sub-Chapter 4, Article 6 Excavations.
- F. California Public Contract Code, Section 7104 Public Works Contracts for Digging Trenches or Excavations; Notice on Discovery of Hazardous Waste or Other Unusual Conditions; Investigations; Change Orders; Effect on Contract.
- G. California Labor Code, Section 6705 Public Works Contracts requiring detailed plans for shoring, bracing, sloping, indicating protection from caving ground for trenching work in excess of 5' deep and contract amounts stipulated therein.

1.04 QUALITY ASSURANCE

- A. Verify survey benchmark and intended elevations for Work.
- B. Borrow. Fill, backfill, aggregate base, and other soil materials obtained from off-site sources shall be sampled and tested in compliance with CA EPA Department of Toxic Substances Control recommendations to prevent the importation of contaminated materials to the Site.
- Testing Frequency
 - a. For borrow up to 1,000-cubic yards, conduct 1 test for each 250-cubic yards.
 - b. For borrow between 1,001- cubic yards and 5,000-cubic yards, conduct 4 tests for first 1,000- cubic yards, if material tests acceptable, conduct 1 test for each additional 500-cubic yards.
 - c. For borrow over 5,000-cubic yards, conduct 12 tests during import of first 5,000-cubic yards, if material tests acceptable, conduct 1 test for each additional 1,000-cubic yards.
- 2. Owner's Testing Laboratory shall take samples at source, conduct testing and evaluate test results prior to delivery.

- 3. Conduct tests for lead and other heavy metals, asbestos, PCB's, pesticides, herbicides, VOCs, and semi-VOCs.
- When detectable quantities of hazardous materials are found, determine the risk to human health, the environment, or both using the DTSC Preliminary Endangerment Assessment Guidance Manual.
- 5. Do not import soils, that exhibit a known risk to human health, the environment, or both.

1.05 SUBMITTALS

A. The Contractor shall submit in advance of excavation, for acceptance by the Owner's civil or structural engineer, detailed plan(s) 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 trenches more than 5 feet in depth. If such plan(s) varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

1.06 SOILS INFORMATION

A. Geotechnical Investigation has been prepared under direction of Owner. Investigation is hereby referenced as information for Work of this Section. Architect assumes no responsibility for conclusions Contractor may draw from information provided. The Contract Documents take precedence over recommendations that may be contained in the Investigation and the contractor must obtain approval for any and all deviations from the Contract Documents. Copy of investigation is available at Architect's office.

PART 2 - PRODUCTS

2.01 FILL AND BEDDING MATERIALS

- A. Sand: Sand shall consist of natural or manufactured granular material, or a combination thereof, free of deleterious amounts of organic material, mica, loam, clay and other substances not suitable for the purpose intended. Conform to Subsection 200 -1.5.5, SSPWC, for gradation as required for Portland Cement Concrete, sand must achieve compaction of a minimum 90 percent.
- B. Imported Fill: Granular, free of debris, no gravel larger than 3 inches in any dimension, non-expansive, approved by the Architect prior to placement on the site.
- C. Slurry Concrete:
 - 1. Slump: Between 4 inches and 6 inches.
 - Aggregate: 40 percent sand by weight, 60 percent pea gravel, minimum ¼ inch, maximum 5/8 inch.
 - 3. Portland Cement: ASTM C150, 2-sack mix (2 sacks of cement per cubic yard).
 - Admixture: Calcium Chloride free, in proportions not to exceed the manufacturer's recommendations.
 - 5. Artificial Coloring: ASTM C494. Mix in Mapico Red pigment, proportions as recommended by the manufacturer, L.M. Scofield or equal.
 - 6. Sufficient water shall be added to produce a fluid, workable mix that will flow and can be pumped without segregation of aggregate. Material shall be mechanically mixed until the cement and water are thoroughly dispersed.
- Stockpiled Fill: Onsite soils, stored separately on the site, approved for re-use by the Architect.

2.02 ACCESSORIES

A. Underground Warning Tape: Metallic Detection Tape, aluminum core, 6 inches wide AASHTO specification colors, by Safety Sign Company, Cleveland, OH, or equal.

B. Color Coding and Lettering: as required for type of underground utility.

PART 3 - EXECUTION

3.01 **EXAMINATION**

A. Verify fill material to be reused is acceptable to the Geotechnical Engineer.

3.02 PREPARATION

- A. Identify required lines, levels, contours and datum.
- B. Backfill with approved fill and compact to density equal to or greater than requirements for subsequent backfill material.
- C. Prior to commencement of trenching operations, notify Underground Service Alert of Southern California (800) 422-4133, Monday through Friday, 7:00 A.M. to 5:00 P.M.

3.03 EXCAVATION

- A. Conform to Construction Safety Orders, Title 8, CCR, For Sloping, Benching, Shoring, Bracing, Protective Systems, and Shafts.
- B. Conform to Section 7104, Public Contract Code. Promptly notify Owner of any contact with hazardous materials or differing conditions.
- C. Conform to Section 6705, Labor Code. Provide detailed 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 trenches.
- D. Excavate subsoil required for utilities. Trenches shall be level or parallel to finish grade unless designated on drawings to be installed to specific gradient.
- E. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.
- F. Water, storm drainage piping located in the same trench shall be separated by 12 inches horizontally and vertically, and water line shall be placed on a solid shelf excavated on one side of the common trench. Cross-over water lines shall also be separated 12 inches vertically from storm drainage pipe.
- G. Water and sewer piping shall not be located in the same trench and they shall be separated by 12 inches horizontally and 12 inches vertically.
- H. Excavation shall not interfere with normal 45 degree bearing splay of foundations. Parallel trenches, no closer than 18 inches from building foundations.
- I. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- J. Remove lumped subsoil, boulders and rock.
- K. Correct unauthorized excavation.
- L. Stockpile approved excavated material in area designated on site and remove excess material not being used from site.

3.04 BEDDING

- A. Support pipe and conduit during placement and compaction of bedding fill. Provide uniform bearing along entire length. Conform to Section 306, SSPWC.
- Bedding: Place and compact materials in continuous layers not exceeding 6 inches compacted depth, ASTM D1557.

3.05 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen materials.

- B. Fill areas will be inspected, tested and approved by Geotechnical Engineer.
- C. Soil Fill over Bedding: Place and compact material in continuous layers as scheduled, compacted to ASTM D1557.
- D. Employ placement method that does not disturb or damage conduit, ducts or piping in trench.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density. When operations are interrupted by rain, do not resume Work until field tests indicate that moisture content and density of fill are as previously specified.
- F. Remove surplus backfill materials from site and dispose legally.
- G. Leave fill material stockpile areas completely free of excess fill materials.
- H. Minimum Cover over Piping, Conduits or Duct Banks: 24 inches.
- I. Lay out and install or otherwise confirm invert elevations of all gravity flow systems to avoid conflict with other sub-surface structures or utilities of any kind. Adjust elevations or layout of pipes, conduits or duct banks to permit the required gravity flow.
- J. Jetting for utility trenching compaction may be used outside building perimeter and only when recommended by Geotechnical Engineer, in accordance with Section 306 SSPWC.
- K. Pressurized piping shall be installed level or shall be installed parallel to finish grades unless designated on the Drawings to be installed to specific gradients.

3.06 THRUST BLOCKS

A. Install at turns of water lines and as indicated in drawings.

3.07 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: 0.2 ft from required elevations.
- B. Top Surface of General Backfilling: plus or minus 0.2 ft from required elevations.

3.08 FIELD QUALITY CONTROL

- A. Backfill materials and operations will be inspected and approved by Geotechnical Engineer including earth bank slopes (cut or fill).
- B. Tests, analysis and compaction of fill material will be performed in accordance with ASTM D1557.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- D. Frequency of Tests: Geotechnical Engineer may make as many tests as are necessary to ensure specified results.

3.09 PROTECTION OF FINISHED WORK

- A. Protect finished Work.
- B. Recompact fills subjected to vehicular traffic.

3.10 TEMPORARY PROTECTION OF UNFINISHED WORK

A. Trenching for placement of underground utilities shall be covered and protected with steel trench plates during non-work hours. Adequate warnings and protection indication of open trenches during work hours must be provided for project safety.

3.11 SCHEDULE

A. Storm and Sanitary Piping:

- Bedding Fill: Sand, minimum thickness below piping 0.4 times outside diameter of pipe but no less than 4 inches. Minimum thickness above top of piping, 12 inches, compacted to 90 percent. Bedding for HDPE pipe per manufacturer's recommendations.
- 2. Cover with stockpiled fill in 8-inch lifts to specified subgrade elevations, compact to 90 percent or to 95 percent under vehicle traffic-supporting paved areas.
- 3. Fill: Slurry concrete, 6" cover at top, bottom and sides of pipes at exterior paved areas (at vehicle traffic) where minimum fill cover is less than 12" below finished elevation of paving.
- Bury warning tape marked "Caution Sewer Line" 12 inches above all concreteencased piping. Align tape parallel to and within 3 inches of the centerline of the piping.

B. Water Piping:

- 1. Bedding Fill: Sand, minimum thickness below piping 0.4 times outside diameter of pipe but not less than 4". Minimum thickness above top of piping, 6 inches, compacted to 90 percent.
- 2. Fill: Slurry concrete, 6 inches cover at top, bottom and sides of pipes at exterior paved areas where minimum fill cover is less than 24" below finished elevation of paving, and less than 12" below finished elevations of interior floor slabs and at building footings where piping is in the footing structural splay.
- 3. Cover with stockpiled fill in 6-inch lifts to specified subgrade elevation, compact to 90 percent, or 95 percent under traffic supporting paved areas.
- Observe joints at pressure tests.
- Bury warning tape marked "Caution Buried Gas (or "Pipeline") Line" 12 inches above all trenching. Align tape parallel to and within 3 inches of the centerline of trench.

C. Fire Lines:

- 1. Bedding Fill: Manufactured Sand, minimum 6" thickness under piping, minimum thickness above top of piping and sides, 6", compact to 90 percent.
- 2. Fill: Slurry concrete, 6" cover at top pipes at exterior paved areas where minimum fill cover is less than 24" below finished elevation of paving.
- Cover with stockpiled fill in 6-inch lifts to specified subgrade elevation, compact to 90 percent, or 95 percent under traffic-supporting paved areas.
- 4. Bury warning tape marked "Caution Buried Pipeline" 12 inches above all trenching. Align tape parallel to and within 3 inches of the centerline of trench.

END OF SECTION

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SECTION 31 23 23

BACKFILLING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Authorized types of fills.
- B. Building area backfilling to subgrade elevations.

1.03 STANDARDS AND REFERENCES

- A. ASTM D1557 Laboratory compaction characteristics of soil using modified effort.
- B. SSPWC Standard Specifications for Public Works Construction, Latest Edition.
- C. Chapters 18A and 33, California Building Code, 2013.
- D. CSS Caltrans Standard Specifications, Latest Edition.

1.04 QUALITY ASSURANCE

A. Borrow. Fill, backfill, aggregate base, and other soil materials obtained from off-site sources shall be sampled and tested in compliance with CA EPA Department of Toxic Substances Control recommendations to prevent the importation of contaminated materials to the Site.

1. Testing Frequency

- a. For borrow up to 1,000-cubic yards, conduct 1 test for each 250-cubic yards.
- For borrow between 1,001- cubic yards and 5,000-cubic yards; conduct 4 tests for first 1,000-cubic yards, if material tests acceptable, conduct 1 test for each additional 500-cubic yards.
- c. For borrow over 5,000-cubic yards, conduct 12 tests during import of first 5,000-cubic yards, if material tests acceptable, conduct 1 test for each additional 1,000-cubic yards.
- Owner's Testing Laboratory shall take samples at source, conduct testing and evaluate test results prior to delivery.
- 3. Conduct tests for lead and other heavy metals, asbestos, PCB's, pesticides, herbicides, VOCs, and semi-VOCs.
- 4. When detectable quantities of hazardous materials are found, determine the risk to human health, the environment, or both using the DTSC Preliminary Endangerment Assessment Guidance Manual.
- 5. Do not import soils, that exhibit a known risk to human health, the environment, or both.

1.05 <u>SUBMITTALS</u>

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
 - Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.

B. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

- A. This Section establishes standards of quality for backfill materials to be used as approved by Geotechnical Engineer in accordance with Chapter 18A CBC, Section 1803A.2 and Appendix J Section J107, California Building Code, and as scheduled in other Sections of this specification.
- B. Crushed Rock and Rock Dust: Crushed rock and rock dust shall be product of crushing rock or gravel. Portion of material that is retained on a 3/8-inch sieve shall contain at least 50 percent of particles having three or more fractured faces. Not over 5 percent shall be pieces that show no such faces resulting from crushing. Of that portion which passes 3/8-inch sieve but is retained on No. 4 sieve, not more than 10 percent shall be gravel particles. Crushed rock shall conform to 3/4-inch sieve size in accordance with Subsection 200-1.2, SSPWC, Crushed Rock Gradation Table.
- C. Pea Gravel: Natural stone; washed, free of clay, shale, organic matter; graded to the following:
 - 1. Minimum Size: 1/4-inch.
 - 2. Maximum Size: 5/8-inch.
- D. Sand: Sand shall consist of manufactured granular material, or combination thereof, free of deleterious amounts of organic material, mica, loam, clay and other substances not suitable for purpose intended. Conform to Section 200-1.5.5, SSPWC, for gradation as required for Portland Cement Concrete, sand must achieve compaction of a minimum 90 percent.
- E. Crushed Aggregate Base: Crushed rock and rock dust conforming to requirements of Section 200-1.2, SSPWC, with 3/8-inch sieve requirement waived, or Class 2 aggregate base as defined in Section 26, CSS.
- F. Imported Fill: Clean granular, free of debris, no rock larger than 3-inches in any dimension, non-expansive, approved by Geotechnical Engineer prior to placement on site.
- G. Concrete: As specified in Section 32 13 13.
- H. Concrete Slurry: as specified in Section 31 23 17.
- Stockpiled Fill: On-site soils, stored separately on site, approved for re-use by Geotechnical Engineer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify fill materials to be reused or imported are acceptable to Architect.
- B. Verify foundation perimeter drainage installation has been inspected and approved.

3.02 BACKFILLING

- A. Backfill and compact areas to contours and elevations with unfrozen materials. Remove debris from areas to receive backfills.
 - 1. Compaction: ASTM D1557, Compact to 90 percent of maximum dry density.
 - 2. Floor slabs shall be in place a minimum of 7 days before backfill is placed against walls.

- B. Fill areas and types of fills shall be inspected, tested and approved by Geotechnical Engineer.
- C. Employ placement method that does not disturb or damage foundation perimeter drainage, foundation waterproofing and protective cover or utilities in trenches. Do not commence backfill until such work is in place, inspected and approved.
- D. Maintain optimum moisture content of backfill materials to attain required compaction density. When operations are interrupted by rain, do not resume work until field tests indicate that moisture content and density of the fill are as previously specified.
- E. Slope grade away from building minimum 2-inches in 10 ft, unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus backfill materials from site.
- H. Leave fill material stockpile areas completely free of excess fill materials.
- I. Compaction Equipment: Wherever feasible, perform compaction with approved power-driven equipment such as rollers and sheeps-foot compactors. Compact areas inaccessible to rollers with pneumatic tampers or other approved compactors.
- J. Flooding and jetting are not permitted.

3.03 TOLERANCES

A. Top Surface of Backfilling Subgrade: Within 0.05 feet from required elevations.

3.04 FIELD QUALITY CONTROL

- A. No fill shall be placed on any prepared surface until that surface has been inspected and approved by Geotechnical Engineer.
- B. If tests indicate work does not meet specified requirements, remove work, replace and retest. Cost of retests shall be paid by Owner and deducted from contract sum by Change Order.
- Frequency of Tests: Architect may require as many tests as are necessary to ensure specified results.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished Work.
- B. Recompact fills subjected to and damaged by vehicular traffic.

END OF SECTION

SECTION 32 01 90

90-DAY LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Perform 90-day landscape maintenance for all landscaped areas as shown on the Drawings and as specified herein, including all materials and labor for a timely, complete, and proper maintenance period.
- B. The Contractor shall maintain all landscaped areas for a minimum plant establishment period of not less than ninety (90) days from the date of written acceptance of the project. The plant establishment period will not start until the project receives Final, Formal Acceptance by the County. Projects will not be segmented into phases or accepted in phases. Written acceptance from the Owner must be obtained to start the plant establishment period. If the project maintenance fails to continuously meet standards required, the plant establishment period will be suspended and will not re-commence until Contractor has corrected all deficiencies.

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards for the work.
- B. Refer to Section 32 93 00 for additional maintenance information.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experience in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Refer to Section 32 93 00 for Submittal Requirements

1.06 PROJECT CONDITIONS

A. Comply with the requirements of Section 01 50 00 - Construction Facilities.

1.07 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Refer to Section 32 93 00 for Warranty Requirements

1.08 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of maintenance means acceptance of conditions.

3.02 SPECIFIC ITEM(S)

A. Maintenance Tasks

1. During the contract period and up to final formal acceptance by the County, the Contractor shall provide weekly maintenance in the planted areas which are within the work limits of the contract including, but not limited to: 1) watering; weekly mowing; weeding; fertilizing and cultivating; and spraying to keep the plants in a healthy, growing condition and keeping the planted areas neat and attractive; 2) removing trash a minimum of once a week; 3) checking and repairing irrigation systems weekly; 4) pruning trees and shrubs planted under the contract only removing dead, dying or broken branches; 5) removing wilted flowers; 6) pest and vermin control; and 7) all gravel and non-stabilized decomposed granite areas shall be raked weekly.

B. Replacement Plantings

1. After planting and during the plant establishment period in the event any plant should die, is missing, weak or displays the appearance of necrosis, the plant will be immediately removed and replaced at the Contractor's expense. All replacements must occur within five (5) days of notice. At the end of the establishment period, all plants will be in a healthy, growing condition and located as indicated on the plan or as approved by the County.

C. Fertilizing

1. For non-arid plant material, the Contractor will fertilize the plants one (1) month prior to the end of the establishment period. Follow manufacturer's application rate guide and water into planting immediately after applying fertilizers. Arid plant material will not be fertilized.

D. Weekly Reports

- The Contractor, as part of this contract, shall submit reports and schedules as requested. Such reports must be filled out in detail. The following is a breakdown of required forms and schedules. The contractor shall submit these reports as they are completed. Weekly reports shall be filled out by Friday of every week.
 - i. Schedule of Weekly Maintenance
 - Contractor shall provide a schedule of weekly maintenance identifying areas to be maintained and a breakdown of when each function shall be performed.
 - b. The County will assume that the Contractor will adhere to the schedule. The County must receive notification of changes at least 12 hours in advance.
 - ii. Weekly Irrigation Inspection Report
 - iii. Weekly Activity Report
 - a. Indicating the following: litter pickup, weed control, chemical maintenance (herbicide and pesticide applications)

E. End of Establishment Period

1. Approximately one week prior to the end of the establishment period, the County will

conduct a walk-through of the area, noting deficiencies and problems to be resolved. The Contractor will be required to resolve all noted items. If the items cannot be resolved within the time remaining, the establishment period will be extended, without cost to the County, until the items are corrected.

*** END OF SECTION ***

SECTION 32 11 00

STABILIZED DECOMPOSED GRANITE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all stabilized decomposed granite as shown on the Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. This Section includes material and labor requirements for construction with decomposed granite or crushed 3/8" pathway with Stabilizer® binder additive for the following items:

Stabilized Aggregate pathway

C. Related Sections:

Section 31 00 00 - Earthwork

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturer.
- B. Perform gradation of decomposed granite material or 3/8" minus crushed aggregate in accordance with ASTM C 136 Method for Sieve Analysis for Fine and Course Aggregates.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing Stabilized Aggregate surface or ability to follow installation instructions.
- C. Mock-ups: Install 4 ft. wide x 10 ft. long mock-up of decomposed granite or 3/8" or 1/4" minus crushed aggregate surfacing with Stabilizer® additive at location specified by owner's representative.
- D. Compaction testing to be provided by contractor, one test per 2,000 square feet of base course.
- E. Manufacturer's technical representative shall visit the site at the start of an installation to ensure the installer understands the correct installation methods to use.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Products Data: For each product specified. Submit a 5 lb. sample and sieve analysis for grading of decomposed granite or crushed 3/8" minus aggregate to be sent to Stabilizer Solutions, Inc. prior to any construction (allow 2 week turn around). Must be approved by Architect and Owner.

1.07 DELIVERY, STORAGE, AND HANDLING

Comply with the requirements of Section 01 $66\,00$ – Product Storage and Handling Requirements.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities.
- B. Field Measurements: Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.
- C. Environmental Limitations: Do not install Stabilized Aggregate pathway during rainy conditions or below 40 degrees Fahrenheit and falling.

1.09 OPERATION AND MAINTENANCE DATA

Maintenance Instructions: Submit copy(ies) of manufacturer's written maintenance instructions in accordance with 01 77 00 – Project Closeout.

1.10 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 – Warranties and Bonds.
- B. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- C. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of Stabilized Aggregate that fail in materials or workmanship within the specified warranty period. Stabilizer Solutions, Inc. does not warranty "Stabilizer®" purchased from a non-approved Stabilizer Solutions, Inc. licensee. Failures include, but are not limited to, the following:
 - 1. Premature wear and tear, provided the material is maintained in accordance with manufacturer's written maintenance instructions.
 - 2. Failure of system to meet performance requirements.
- D. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from completion.
- E. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

1.11 <u>LEED™ CERTIFICATION</u>

Not applicable.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Stabilizer Solutions, Inc.
- B. Location: 33 South 28th St., Phoenix, AZ 85034
- C. Phone: (602) 225-5900
- D. Website: stabilizersolutions.com
- E. Contact: info@stabilizersolutions.com

2.02 SPECIFIC ITEM(S)

- A. Decomposed Granite or 3/8" crushed aggregate screenings
 - Sand and crushed stone shall consist of inert materials that are hard and durable, with stone free from surface coatings and deleterious materials. Gradation requirements shall be as follows:
 - Crushed Stone Sieve Analysis Percentage of Weight Passing a Square Mesh Sieve AASHTO T11-82 and T2782
 - 3. Acceptable local supplier list to be provided by Architect

B. Stabilizer® Binder

- 1. Patented, non-toxic, organic binder that is a colorless and odorless concentrated powder that binds decomposed granite or crushed 3/8" or 1/4" minus aggregate.
- 2. Product to have 64% pre-consumer recycled content.
- 3. Product shall have 25-years of experience with the same formulation.

C. Excess Materials

1. Provide owner's authorized rep. with the following excess materials for use in future Stabilized Aggregate repair: 40 to 50 lb. Bags of the Stabilized Aggregate blended with proper amount of Stabilizer®.

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 SPECIFIC ITEM(S)

A. PREPARATION

- 1. Although porous, it is recommended to have proper drainage available to ensure no standing water on surface or adjacent to Stabilized Aggregate, including downspouts when placed under roof overhang and surface drains.
- Before proceeding with installation, notify Owner's Representative in writing of unsuitable site conditions.

B. BLENDING STABILIZER

Stabilizer® shall be thoroughly pre-mixed with aggregate at the rate of 15-lbs of Stabilizer® per 1-ton of aggregate. Verify with manufacturer correct Stabilizer® rate for your project and climate. Drop spreading of Stabilizer® over pre-placed aggregate or mixing by rototilling is not acceptable. Stabilizer shall be mechanically pre-mixed per manufacturer's recommendations using an approved mechanical blending unit to adequately blend Stabilizer® with aggregate (Bucket blending is not an approved blending apparatus). Always blend Stabilizer® and aggregate DRY.

C. PLACEMENT

 After pre-blending, place Stabilized Aggregate directly on prepared sub-grade. Level to desired grade and cross section. Depth of pathways shall be 3" for heavy foot traffic and light vehicles. DO NOT place on filter fabric. Contact Stabilizer Solutions, Inc. for installation on slopes greater than 8%.

D. WATERING

- 1. Water heavily for full-depth moisture penetration of profile. Water activates Stabilizer®. Apply 25 to 45-gallons of water per 1-ton to achieve saturation. Randomly test for depth using a probing device, which reaches full depth.
- 2. Contractor shall wait a minimum of 6 72 hours or until such time that the Stabilized Aggregate is able to accept compaction from a 1 to 5 ton roller without separation, plowing or any other physical compromise of the aggregate.
- 3. If surface aggregate dries significantly quicker than subsurface material, lightly mist surface before compaction.

E. COMPACTION

- Compact Stabilized Aggregate to 85% relative compaction by equipment such as; a 2 to 5-ton double drum roller making 3 to 4 passes. Do not begin compaction for 6 hours after placement and up to 72 hours. DO NOT use a vibratory plate compactor or vibration feature on roller, as vibration separates large aggregate particles. If pumping or pancaking of surface occurs, surface is still too wet to roll.
- 2. Take care in compacting surface when adjacent to planting and irrigation systems, use 8" or 10" hand tamp. Installation of Stabilized Aggregate more than 3" thick shall be installed in lifts. If 4" thick compacted (2) 2" lifts. If 5" thick compacted (2) 2.5" lifts. If Stabilized Aggregate is pre-moistened before installation entire 4" or 5" lift may be installed.
- 3. Lightly spray surface area following compaction. Do not disturb aggregate surface with spray action.

F. INSPECTION

1. Finished surface shall be smooth, uniform and solid with no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on surface after installation, but may appear after use and according to environmental conditions. Pathway shall remain stable underneath loose granite on top with a "natural" look. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

G. PROTECTION

- Contractor shall furnish and install construction fence around new surface to prevent public access. Fencing shall be maintained in place for a minimum of 12 - 72 hours after completion of installation, or as directed by the Owner' Representative. Drying period may take longer due to weather conditions.
- 2. Contractor shall notify Owner's Representative that landscape irrigation shall be restricted near Stabilized Aggregate surface until drying period is complete. Standing water on surface and adjacent to path shall be restricted at all times.

H. MAINTENANCE

- 1. Remove debris, such as paper, grass clippings, or organic material by mechanically blowing or hand raking as needed.
- 2. During first year, minor amounts of loose aggregate may appear on surface (1/16 to 1/4"). If material exceeds a ¼", redistribute over entire surface. Water to 1" depth and compact

with power roller of no less than 1000-lbs. Repeat as needed. If cracking occurs, sweep fines into cracks, water thoroughly and hand tamp with an 8" – 10" hand tamp.

I. REPAIRS

- 1. Excavate damaged area to the depth of the Stabilized Aggregate and square off sidewalls.
- 2. If area is dry, moisten damaged portion lightly.
- 3. Pre-blend the dry required amount of Stabilizer® with the proper amount of aggregate in a concrete mixer.
- 4. Add water to the pre-blended Stabilized Aggregate. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.
- 5. Apply moistened pre-blended Stabilized Aggregate to excavated area to finish grade.
- 6. Compact with an 8" to 10" hand tamp or 250 to 300 pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

*** END OF SECTION ***

SECTION 32 13 13

SITEWORK CONCRETE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all items below, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete and proper installation.
- B. Section Includes:
 - 1. Cast-In-Place concrete pedestrian paving and sidewalks.
 - 2. Curbs and gutters.
 - 3. Concrete stairs, ramps and landings.
 - 4. Light standard bases, railing footings and similar site structures.
 - 5. Utility concrete pads.
 - 6. Perimeter concrete curbing, mow strips, concrete drainage structures, swales.
 - 7. Slurry Concrete.
 - 8. Detectable Warnings.

1.03 STANDARDS AND REFERENCES

- A. ACI 117 Standard Specifications for Tolerances for Concrete Construction and Materials.
- B. ACI 224.3R-95 Joints in Concrete Construction
- C. ACI 318 Building Code Requirements for Structural Concrete and Commentary, 2008 Edition.
- D. ACI 301 Structural Concrete for Buildings.
- E. ASTM American Society for Testing and Materials
 - 1. ASTM A185 Steel Welded Wire Reinforcement, Plain, for Concrete
 - 2. ASTM A615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 - 3. ASTM C33 Concrete Aggregates
 - 4. ASTM C94 Ready-Mixed Concrete
 - 5. ASTM C150 Portland Cement
 - 6. ASTM C171 Sheet Materials for Curing Concrete
 - 7. ASTM C309 Liquid Membrane-Forming Compounds for Curing Concrete
 - 8. ASTM C920 Elastomeric Joint Sealants
 - 9. ASTM C979 Pigments for Integrally Colored Concrete
 - 10. ASTM C1107 Packaged Dry, Hydraulic Cement Grout (Non-Shrink)
 - ASTM D1751 Preformed Expansion Joint Fillers for Concrete, Paving and Structural Construction
- F. CBC 2019 California Building Code and Supplements

- 1. CBC-11 CBC Chapter 11B, Accessibility to Public Buildings, Public Accommodations, Commercial Facilities and Publicly Funded Housing
- 2. CBC-17 CBC Chapter 17A, Structural Tests and Special Inspections
- 3. CBC-19 CBC Chapter 19[A], Concrete
- G. Pedestrian walks, plazas and paving shall comply with CBC Chapter 11B. Portland Cement concrete paving shall be stable, firm, and slip resistant and shall comply with CBC Sections 11B-302 and 11B-403.

1.04 QUALITY ASSURANCE

- A. Maintain one copy of all records on site.
- B. Acquire cement and aggregate from same source for all Work.
- C. Conform to ACI 318-11 Chapter 5.13, California Building Code, when placing concrete during hot weather.
- D. Conform to ACI 318-11 Chapter 5.12, California Building Code, when placing concrete during cold weather. No placement of concrete permitted below 50 degrees Fahrenheit.
- E. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI- certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

F. Mock-up

- Install minimum 5 feet by 5 feet mock-up of concrete sidewalk for each surface treatment specified.
- 2. Install mock-up one month prior to installation.
- 3. Locate as approved by the Architect.
- 4. Use identical forming system, sub-grade type, reinforcing, expansion joints, score joints, finishing and edge trim as specified for installation.
- 5. Architect approval required.
- 6. Mock-up may not be used in final installation.
- 7. Remove mock-up materials from site and dispose legally.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Placement Schedule for approval: Provide details or sketches showing location of each placement of concrete Work. Do not deviate from location of expansion joints or scorelines.
- C. Design mix for each concrete mix.
- D. Steel reinforcement shop drawings, including materials, grade, bar schedules, spacing, bent bar diagrams, arrangement and supports.
- E. Submit contraction (crack control) joint, expansion, isolation and construction joint layout to Architect for approval.
- F. Product data on joint filler, sealants, curing compounds and reinforcing.
- G. Project Record Documents

- Accurately record actual locations of embedded sleeves, utilities and components that are concealed from view.
- H. Submit Certification of experience for finisher.

1.07 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Extended Warranty: Manufacturer shall warrant prefabricated detectable warning texture products against failure in materials or workmanship for at least the specified warranty periods. Upon written notice from Owner manufacturer shall promptly, without cost, and with least practicable inconvenience to Owner correct such defects.
 - 1. Failures include, but are not limited to, significant degradation in color fastness, conformation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly.
 - Significant degradation means that product loses 10 percent or more of its approved design characteristics, as determined by the authority having jurisdiction.
 - 2. Minimum Warranty Period: 5 years from date of Certified Completion.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150 Type I Normal or Type II Moderate, Portland Cement type, from one manufacturing plant only.
- B. Aggregates: ASTM C33, single source for all materials. Maximum size aggregate: 3/4-inch.
- C. Non-Shrink Grout: ASTM C1107, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 4,000 psi in 24 hours and 7,500 psi in 7 days unless otherwise indicated on Drawings; of consistency suitable for application and a 30-minute working time.
- D. Threshold and landing mortar: Wheelchair lift ramp mortar: Ardex K301, Mapei Quickcem Top 101 or equal. Finish with manufacturer's cement dressing products for smooth surface.
- E. Crushed Aggregate Base: Crushed rock and rock dust conforming to requirements of Section 200-1.2, SSPWC, with 3/8-inch sieve requirement waived, or Class 2 aggregate base as defined in Section 26, CSS.

2.02 ACCESSORIES

A. Expansion Joints:

- Expansion Joint Filler ASTM D1751: Closed cell, 1/2 inch thick; DECK-O-FOAM by W. R. Meadows, Dayton Superior or equal.
- Joint Devices: Integral extruded polystyrene plastic; 1/2-inch max. thick, with removable top strip exposing sealant trough; Snap Cap Expansion Joint Cap by W. R. Meadows or equal.
- Sealant: Polyurethane two-component type, self-leveling, for level surface application, UREXPAN NR-200 or DYNATRED for sloped surfaces, manufactured by Pecora Corp., Harleysville PA, or equal. Color shall be selected by Architect from manufacturer's standard list of colors.
- 4. Primer: As recommended by sealant manufacturer.

- 5. Joint Backing: ASTM C1330, Cylindrical, Type C, closed cell, polyethylene backer rod; oversized 30 to 50 percent larger than joint width. Green Rod by Nomaco Inc. or equal.
- B. Slip Resistant Finish: Dry shake type aluminum oxide abrasive grains, hardness No. 9 on Mohr's scale; Emery Non-slip, manufactured by Dayton Superior, Kansas City, KS, Emery Aggregate manufactured by Oregon Emery Co., Halsey OR, or equal as approved in accordance with Division 01, General Requirements for Substitutions.
- C. Safety Stair Nosings: Style B-41A, 4 inches wide manufactured by Barrycraft Pattern and Foundry, Inc., Birmingham, AL, or equal as approved in accordance with Division 01, General Requirements for Substitutions. Provide nosings (strips) at all treads.
 - Install 2" wide nosings (Strips) (2" min. 4" max.) in contrasting color (70% contrasting), 1" maximum from edge of nosing of each exterior stairs, CBC Section 1133B.4.4. Colors to be selected by Architect.
 - 2. Install in fresh concrete, cast in place.
- D. Anti-Slip Floor Tape: Coarse grit tape, OSHA 1910.265, 2 inches wide x the length of the stair nosing, Setonwalk Anti-slip Tape by Seton Name Plate Co. Branford, CT, Tred-Sure by Garon Products, Inc., New Brunswick, NJ or equal. Color: in contrasting color to be selected by Architect.

2.03 CONCRETE MIX

- A. Mix and deliver concrete in accordance with Section 1905A, California Building Code. Deliver concrete in transit mixers only. Mix concrete for 10 minutes minimum at a peripheral drum speed of approximately 200 feet per minute. Mix at jobsite minimum 3 minutes. Discharge loads in less than 1-1/2 hours or under 300 revolutions of the drum, whichever comes first, after water is first added.
 - 1. Design Mix:
 - a. Conform to ACI 318-11 Chapter 5.8 for Proportioning on the basis if field experience or trial mixtures method.
 - b. Conform to ACI 318-11 Chapter 5.8 for Selection of concrete proportions method. Selection of concrete proportions and ingredients for design mix by approved Testing Laboratory and certified by a registered civil engineer licensed in California.
 - c. Conform to requirements of the Geotechnical Report.
 - 2. Do not exceed 0.45 water-cement ratio by weight for slabs and for other concrete.
 - 3. Quantities of Materials: Weighmaster's records not required for sitework concrete.
 - 4. Required Strength: Minimum 4,500 psi for sitework concrete, and minimum 4,500 psi for concrete with vehicular load.
- B. Slurry Concrete:
 - 1. Slump: Between 4 inches and 6 inches.
 - 2. Aggregate: 40 percent sand by weight, 60 percent pea gravel, minimum ¼-inch, maximum 5/8 inch.
 - 3. Portland Cement: ASTM C150, 2-sack mix (2 sacks of cement per cubic yard).
 - 4. Sufficient water shall be added to produce a fluid, workable mix that will flow and can be pumped without segregation of aggregate. Material shall be mechanically mixed until the cement and water are thoroughly dispersed.

2.04 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615; deformed billet steel bars, in grades as follows, and conforming to CBC-19, Section 1903A.
 - 1. For No. 4 and larger bars, use 60 ksi yield grade.
 - 2. For ties and stirrups, and No. 3 and smaller bars, use 40 ksi yield grade.
 - 3. For welded bars, use ASTM A706 60 ksi yield grade.
- B. Welded Wire Reinforcement: Plain type, ASTM A185; in flat sheets; uncoated finish, 6 x 6 W4.0 x W4.0 unless otherwise note on drawings.
- C. Tie Wire: Annealed steel, minimum 16 gage size.
- D. Dowels: ASTM A615; 60 ksi yield grade, plain steel, uncoated finish.

2.05 <u>FORMS</u>

- A. Conform to ACI 318-11 Chapter 6.
- B. Plywood Forms: APA Medium density overlay, Group 1, Exterior, PS-1, for exposed surfaces. APA Plyform B-B, Class 1, Exterior, PS-1 for unexposed surfaces.
 - 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- C. Lumber: Douglas Fir species, construction grade, Surfaced Lumber, with grade stamp clearly visible for smooth and straight exposed surface.
- D. Form Release Agent; commercially formulated form-release agent that will not bond with, stain or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.06 CURING MATERIALS

- A. Polyethylene Film ASTM C171; 10 mil thick, clear, manufactured from virgin resin with no scrap or additives, manufactured by Burke-Edoco, Long Beach, CA, or equal as approved in accordance with Division 01, General Requirements for Substitutions.
- B. Water: Potable and not detrimental to concrete.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify site conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. In locations where new concrete is doweled to existing Work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- C. Ensure sub-base or base materials have been compacted or otherwise treated.
 - 1. Sub-base and base preparation per Section 31 23 15 Earthwork and Building Excavation and Section 31 23 23 Backfilling.

3.03 PLACING CONCRETE (GENERAL)

- A. Convey and deposit concrete in accordance with ACI 318-11 Chapter 5.9 and 5.10. Remove loose dirt from excavations.
- B. Notify Job Inspector minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed joint fillers, joint devices and accessories are not disturbed during concrete placement.
- D. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.
- E. Place concrete continuously between predetermined expansion joints.
- 1. Install expansion joints at vertical concrete walls at 24 feet on center unless noted otherwise on drawings.
- F. Do not interrupt successive placement; do not permit cold joints to occur. Avoid segregation of materials. Perform tamping and vibrating so as to produce a dense, smooth application free of rock pockets and voids. Do not use vibrators to move concrete horizontally.
- G. Do not allow concrete to fall free from any height which will cause materials to segregate. Maximum height of free fall permitted in any case: 5 feet.
- H. Defective Installation: Repair and clean at Contractor's expense all concrete damaged or discolored during construction. Where concrete requires repair before acceptance, the repair shall be made by removing and replacing entire section between joints and not by refinishing the damaged portion.
- I. Proper curing of concrete surfaces is the responsibility of the Contractor. Concrete failing to meet specified strength shall be removed and replaced.

3.04 ON-SITE CONCRETE SIDEWALKS, PEDESTRIAN PAVED AREAS AND RAMPS

- A. Forms, Wood: Free from warp, with smooth and straight upper edges, surfaced one side, minimum thickness 1-1/2 inches adequate to resist springing or deflection from placing concrete.
- Forms, Metal: Gauge thickness sufficient to provide rigidity and strength equivalent to wood
- C. Reinforcing Steel: #4 bars, place bars at 12 inches on center each way for sidewalks and paved areas and #4 bars for edges unless otherwise indicated on Drawings.
- D. Concrete Placement: Dampen subgrade to retain moisture in concrete mix. Tamp and spade to consolidate concrete for entire length of pour. Strike off upper surface to specified grades.
- E. Isolation Joints: Locate at slabs abutting vertical concrete surfaces and as patterned on drawings. Install vertically, full depth of concrete with preformed joint filler recessed for plastic cap at 1/2 inch depth at top for sealant application.
 - Doweled Isolation Joints at Heavy Vehicle Driveways and Parking: At abutting building foundations; provide 1/2-inch diameter smooth steel dowels 14 inches long, one end of dowel lubricated and set in capped sleeve to allow for longitudinal movement, spaced at 24 inches on center maximum, 6 inches from edges.
 - Monolithic Curb and Gutter: No expansion joints required between gutter and curb face.
- F. Expansion Joints: Locate maximum 24 feet centers and as patterned on drawings. Install vertically full depth of concrete, install preformed joint filler recessed for plastic cap at 1/2 inch depth at top for sealant application.
 - Monolithic Curb and Gutter: No expansion joints required between gutter and curb face.

- G. Contraction/Crack Control Joints: At 8 feet each way at concrete paved areas, and 5 feet at sidewalks, tool joint with 1/2 inch radius, depth 1/4 the thickness of slab but not less than 1 inch deep. Refer to drawings for required design patterns.
- H. Curb Ramps: Form grooves, flush to finished surfaces, 12" wide border. Grooves at 1/4" deep, 1/4" wide and at 3/4" on centers at 3 sides on level surface of the sidewalk. Provide patterns as indicated in drawings. Detectable Warnings at Curb Ramps per IR 11B-2 and 11B-3, 11B-4 CBC 1127B.5.7.
 - 1. Detectable warning (Truncated Domes) required at curb ramps less than 1:15 (6.7% slope),
 - 2. Detectable Warnings (Truncated Domes) required at all Curb Ramps, American with Disabilities Act Standards for Accessibility Design Section 4.7.7.
 - a. Plastics/Composites: Cast in place plastic tiles per manufacturer's instructions and in accordance with CBC.

I. Finish:

- Portland cement paving shall be stable, firm, and slip resistant and shall comply with CBC Sections 11B-302 and 11B-403.
- Screed concrete to required grade, float to a smooth, flat, uniform surface. Edge all headers to 1/2 inch radius. Edge expansion joints to 1/4 inch radius. Steel trowel to hard surface.
- 3. Medium Broom Finish: After final troweling, apply a medium broom finish transverse to centerline or direction of traffic.
- 4. Heavy Broom Finish At Ramps: After final troweling, apply a heavy broom finish transverse to centerline or direction of traffic.
- 5. Surface Cross slopes: surface cross slopes shall not exceed one unit vertical in 50 units horizontal (2-percent).
- J. Curing: Cure surfaces utilizing one of the following methods:
 - Spraying: Spray water over slab areas and maintain wet for 7 days, use burlap mats.
 - 2. Spread polyethylene film over slab areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for 7 days.
 - 3. Apply liquid curing compound at rate of 200 sf per gallon, using power sprayer equipped with agitator. Do not apply liquid curing compound to surfaces scheduled to receive paving units of any kind.
- K. Remove expansion joint plastic caps. Prime both sides of joint and apply self-leveling sealant per Section 07 92 00. Provide smooth concave surface.

3.05 <u>LIGHT STANDARD BASES, FENCE POST BASES, RAILING FOOTINGS, MISCELLANUOUS SURFACES, UTILITY PADS, AND SIMILAR SITE STRUCTURES</u>

- A. Forms: Suitable material and type, size, shape, quality and strength to insure construction as designed, true to line and sufficiently rigid to resist deflection during placing of concrete. Clean forms of all dirt, mortar and foreign matter before use.
- B. Reinforcement: Place accurately and hold in position, using metal chairs, spacers, metal hangers, supporting wires and other devices of sufficient strength to resist crushing under full load. Clean reinforcing steel of mortar, oil, dirt, loose mill scale loose or thick rust and coatings.
- C. Coordinate installation of conduits, cast in place items and other inserts.

- D. Finish: Grind or sack as required as determined by the Architect to produce a smooth, straight, plumb and acceptable finish without burrs or form marks. For horizontal surfaces: provide float finish.
- E. Curing: Cure surfaces utilizing one of the following methods:
 - 1. Spraying: Spray water over slab areas and maintain wet for 7 days.
 - 2. Spread polyethylene film over slab areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for 7 days.
 - 3. Apply liquid curing compound at rate of 200 square feet per gallon, using power sprayer equipped with agitator. Do not apply liquid curing compound to surfaces scheduled to receive paving units or finish of any kind.

3.06 FORMED CONCRETE STAIRS AND LANDINGS

- A. Subgrade Preparation: As approved by the Geotechnical Engineer.
- B. Forms: Suitable material and type, size, shape, quality and strength to ensure construction as designed, true to line and sufficiently rigid to resist deflection during placing of concrete. Clean forms of all dirt, mortar and foreign matter before use.
- C. Reinforcement: Place accurately and hold in position, using metal chairs, spacers, metal hangers, supporting wires and other devices of sufficient strength to resist crushing under full load. Clean reinforcing steel of mortar, oil, dirt, loose mill scale, loose or thick rust and coatings.
- D. Form grooved nosing flush to finished surface, 3" wide. Grooves at 1/4" deep, 1/4" wide and at 3/4" on centers full length of stair at all treads. Apply contrasting color paint at all treads per Section 09 90 00.
- E. Finish: Hard steel trowel at monolithic risers. Steel trowel surfaces treated with Slip Resistant Finish sufficiently to allow particles to extend slightly above finish surface.
 - 1. Slip Resistant Finish: Apply in accordance with manufacturer's instructions on surfaces at a minimum rate of 50 lbs. per 100 square feet.
 - 2. Owner's Option in lieu of Slip Resistant Finish:
 - a. Apply Medium Broom Finish.
- F. Curing: Cure surfaces utilizing one of the following methods:
 - 1. Spraying: Spray water over slab areas and maintain wet for 7 days.
 - 2. Contractor's Option
 - a. Spread polyethylene film over slab areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for 7 days.
 - b. Apply liquid curing compound at rate of 200 square feet per gallon, using power sprayer equipped with agitator.

3.07 <u>CURB AND GUTTER, MOW STRIPS, CONCRETE DRAINAGE STRUCTURES, SWALES</u>

- A. Subgrade Preparation: Subgrade material, base material and compaction requirements as approved by the Geotechnical Engineer.
- B. Forms: Single face type required, cut to conform exactly with face batter and radius, sufficiently rigid to resist springing or deflection from concrete placement. Clean forms of all loose dirt, mortar or similar materials and apply a light coating of oil or other suitable material prior to concrete placement.
 - 1. Slip Forms: Contractor's option upon approval of the Architect.

- C. Reinforcement: Refer to drawings for size and spacing. Interrupt reinforcement at expansion joints.
- D. Concrete Placement: Dampen subgrade to retain moisture in concrete mix. Tamp and spade to consolidate concrete to entire length of pour. Strike off upper surface to specified grades. Cut drain pipes to conform to curb batter.
- E. Expansion Joints: Locate joint filler at maximum 20 foot centers. Trim off excess filler material flush to finish surface. No sealant application required.
- F. Control Joints: at 8 feet on center, tooled joints, 1/2 inch radius.
- G. Finish: Apply thin layer of mortar of 1 part Portland cement to 1-1/2 parts sand to exposed faces. Trowel to a smooth and even finish with a fine hair broom applied parallel with the line of the work. Round all edges to 1/2 inch radius. No Contractor identification permitted.
- H. Curing: Cure surfaces utilizing one of the following methods:
 - 1. Spraying: Spray water over curb and gutter and maintain wet for 7 days.
 - 2. Spread polyethylene film over areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for 7 days.
 - 3. Apply liquid-curing compound at rate of 200 sf per gallon, using power sprayer equipped with agitator.

3.08 TOLERANCES

- A. Construction tolerances shall not violate dimensions, grades, slopes required by CBC for accessibility requirements. Adjust work accordingly to comply with requirements.
- B. Comply with tolerances of ACI 117 and as follows (tolerances may not exceed CBC maximum or minimum):
 - 1. Maximum deviation of 1/8 inch in 10 feet.
 - 2. Elevation: 1/4 inch (6 mm).
 - 3. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
 - 4. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/8 inch (3 mm).
 - 5. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch (25 mm).
 - 6. Vertical Alignment of Tie Bars and Dowels: 1/4 inch (6 mm).
 - 7. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch (13 mm).
 - 8. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).
 - 9. Joint Spacing: 3 inches (75 mm).
 - 10. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
 - 11. Joint Width: Plus 1/8 inch (3 mm), no minus.

END OF SECTION

SECTION 32 1 373

CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all concrete paving joint sealants as shown on the Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section Includes:
 - 1. Cold-applied joint sealants.
 - 2. Joint-sealant backer materials.
 - 3. Primers.

1.03 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of product.
- C. Product Certificates: For each type of joint sealant and accessory.
- D. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- E. Paving-Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.05 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities
- B. Do not proceed with installation of joint sealants under the following conditions:
 - When ambient and substrate temperature conditions are outside limits permitted by jointsealant manufacturer
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

 Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.06 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.02 COLD-APPLIED JOINT SEALANTS

Multicomponent, Non-sag, Urethane, Elastomeric Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T.

2.03 JOINT-SEALANT BACKER MATERIALS

Joint-Sealant Backer Materials: Non-staining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.

2.04 PRIMERS

Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
 - Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions.

Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 <u>INSTALLATION OF JOINT SEALANTS</u>

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of joint-sealant backings.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 - 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:
 - 1. Place joint sealants so they fully contact joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
 - 1. Remove excess joint sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.04 CLEANING AND PROTECTION

- A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.
- B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

*** END OF SECTION ***

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SECTION 32 18 16

PLAYGROUND PROTECTIVE SURFACING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all (fill in type of Product), as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section includes, but is not limited to:

Unitary synthetic poured dual density rubber seamless surface

- C. Related Sections:
 - 1. Division 31 20 00 Section "Earth Moving" for filling and grading and for drainage and base courses.
 - 2. Division 33 41 00 Section "Drainage" for playground drainage system

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturer.
- B. Definitions:
 - Critical Height: Standard measure of shock attenuation. According to CPSC No. 325, this means "the fall height below which a life-threatening head injury would not be expected to occur." B.
 - 2. TPV: Thermoplastic Vulcanizate.
- C. Performance Requirements
 - Impact Attenuation: According to ASTM F 1292-13 or latest version.
 - 2. Accessibility of Surface Systems: According to ASTM F 1951-13 or latest version.
 - 3. IPEMA certified: Product and crew chiefs must be IPEMA certified.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Installer Qualifications: An employer of workers trained and approved by manufacturer. Crew Chief must be IPEMA Certified.
- C. Source Limitations: Obtain playground surface system materials, including primers and binders, from manufacturer specified.
- D. Provide secondary materials including adhesives, primers, and repair materials of type and from source recommended by manufacturer of playground surface system materials.
- E. Standards and Guidelines: Comply with CPSC No. 325, "Handbook for Public Playground Safety"; ASTM F 1292; and ASTM F 1487.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: Per sub-section 3.01 Analysis and Design, following herein, Shop Drawings shall be submitted to Owner/ Architect for review, together with a written report to document compliance with the CPSC guidelines, all prior to installation of the product.
- D. Samples for Initial Selection:

Include similar samples of playground surface system and accessories involving color selection.

E. Samples for Verification: For each type of playground surface system indicated.

Minimum 4 inch disc Sample of synthetic rubber seamless surface.

- F. Product Schedule: For playground surface systems.
- G. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
 - 1. Extent of surface systems and use zones for equipment.
 - 2. Critical heights for playground surfaces and fall heights for equipment.
- H. Qualification Data: For qualified Installer and testing agency.
- Product Certificates: For each type of unitary synthetic playground surface system, from manufacturer.
- J. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each unitary synthetic playground surface system. Product must be IPEMA certified.
- K. Field quality-control reports.
- L. Warranty: Sample of Warranty. Minimum of 10 years not pro-rated. A 10 year non pro-rated warranty must also be available to include yearly maintenance.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with the requirements of Section 01 66 00 - Product Storage and Handling Requirements.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities.
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit playground surface system installation to be performed according to manufacturers' written instructions and warranty requirements. Temperature should be 40 degrees and rising during the installation period. The installer shall have sole discretion based on their judgement proceed or to halt the installation based on their judgement.

1.09 OPERATION AND MAINTENANCE DATA

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. Maintenance Data: For playground surface system to include in maintenance manuals.
- C. Material Certificates: Material certificates will be filled out and signed by specified manufacturer/supplier that specified materials were shipped and in proper amounts for square footage/thickness/color.

1.10 EXTRA MATERIALS

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.11 WARRANTY

- A. Provide Manufacturer's Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds.
- B. Warranty Period: Ten years from Substantial date of completion.
- C. Failures include, but are not limited to, the following:
 - 1. Failure for impact attenuation as per ASTM 1292-13
 - 2. Deterioration of surface and other materials beyond normal weathering and wear
 - 3. Excessive UV fade/Loss of color
- D. Impact attenuation warranted for 10 years

1.12 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Gametime GT Impax OR PlayMax Surfacing Inc.
- B. Location: PO Box 680121, Fort Payne, AL 35968 (GameTime)

Location: 1950 Compton Avenue, Suite 111, Corona CA 92881 (Playmax)

C. Phone: 800-235-2440 (GameTime)

Phone: 951-250-6039 (PlayMax)

D. Website: https://www.gametime.com/playground-surfacing (GameTime)

Website: https://www.playmaxsurfacing.com (PlayMax)

E. Contact: Myles Harvey 805-320-9007 myles@gwpark.com (GameTime)

Contact: Chris Wolf 951-250-6039 cwolf@playmaxsurfacing.com (PlayMax)

2.02 SPECIFIC ITEM(S)

- A. Unitary Synthetic Dual-Density Seamless Surface
 - Surface System: Poured-in-place, two-layer system with wearing course over cushion course. Provide manufacturer's standard thickness for each layer as required for overall thickness indicated, tested for impact attenuation according to ASTM F 1292-04 and for accessibility according to ASTM F 1951.
 - i. Wearing Course: Minimum ½" thick after troweling using TPV granules 1-3.5mm manufactured by Rosehill Polymers as distributed by American Recycling Center in Owosso, Michigan. A 5/8" rod will be used to level the material so that when troweledit will be ½" thick. Urethane shall be 11.5 lbs per 55 lb bag or 21% of the weight of the rubber used if partial bags are required. All colors must be UV stable for a minimum of 5years. Polymer content must be 25% minimum. EPDM is not an equal. Aliphatic grout or .5 to 1.5mm

granules will be applied under all high impact areas. Tiles will not be allowed. Wear mats will not be allowed.

Cushion Course: Manufacturer's standard formulation of 5/8" chunk rubber with correct amount of urethane for impact attenuation and longevity. Chunk rubber may not be recycled SBR rubber from tires. It must be high quality virgin derived rubber that is preconsumer recycled product.

- ii. Binder: Weather-resistant, flexible, non-hardening, 100 percent solids polyurethane complying with requirements of authorities having jurisdiction for nontoxic and low VOCcontent. Binders allowed are Prem Arc urethanes as distributed by American Recycling Center in Owosso, Michigan. No TDI urethanes will be permitted.
- iii. Critical Height: Per Section 3.01 Analysis and Design section
- iv. Overall Thickness of Cushion Course: Not less than 1 5/8" inches
- v. Primer/Adhesive: Manufacturer's standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location indicated.
- vi. Wearing Course Color(s): As indicated on Drawings.
- vii. Color and Pattern: As indicated on Drawings.
- Leveling and Patching Material: Portland cement-based grout or epoxy- or polyurethane-based formulation suitable for exterior use and approved by playground surface system manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Analysis and Design: Work of this Section shall not commence until after the installation of all concrete paving and play equipment structural members and foundations is complete. Once all deck heights, post top heights, slide top/canopy heights and swing frame heights are established, the Resilient Surfacing installer shall analyze the maximum potential fall-heights presented by the "as-built" equipment installation and shall design the thickness of the resilient surfacing system based upon the "as-built" conditions, to ensure the shock absorbency of the system meets or exceeds the standards for play and surfaces as defined by the Federal Consumer Product Safety Commission (CPSC) guidelines. Thickness of the resilient surfacing may be varied within the play area as a function of the various maximum potential fall-heights. Thickness of cushion course shall be a minimum of 1 5/8". A written report to document the analysis and design of the resilient surfacing, together with Shop Drawings identifying the limits of the various design thickness shall be prepared by the resilient surfacing installer and submitted to Owner and Architect.
- B. Examine the areas and conditions under which work of this Section will be performed.
- C. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- D. Correct conditions detrimental to timely and proper complete of the Work.
- E. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, sub grade and substrate conditions, drainage, and other conditions affecting performance of the Work.
- F. Hard-Surface Substrates: Verify that substrates are satisfactory for unitary playground surface system installation and that substrate surfaces are dry, cured, and uniformly sloped to drain within recommended tolerances according to playground surface system manufacturer's

written requirements for cross-section profile.

- Concrete Substrates: Verify that substrates are dry, free from surface defects, and free
 of laitance, glaze, efflorescence, curing compounds, form-release agents, hardeners,
 dust, dirt, loose particles, grease, oil, and other contaminants incompatible with
 playground surface system or that may interfere with adhesive bond. Determine
 adhesion, dryness, and acidity characteristics by performing procedures
 recommended in writing by playground surface system manufacturer.
- G. Do not proceed until unsatisfactory conditions are corrected.
- H. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. General: Prepare substrates to receive surfacing products according to playground surface system manufacturer's written instructions. Verify that substrates are sound and without high spots, ridges, holes, and depressions.
- B. Concrete Substrates: Provide sound surface free of laitance, efflorescence, curing compounds, and other contaminants incompatible with playground surface system.
 - 1. Repair unsatisfactory surfaces and fill holes and depressions.
 - 2. Mechanically scarify or otherwise prepare concrete substrates to achieve recommended degree of roughness.
 - 3. Saw cut concrete for terminal edges of playground surface systems as required.
 - 4. Treat control joints and other nonmoving substrate cracks to prevent telegraphing through playground surface system.
 - 5. Confirm slope and drainage are correct and in place.

3.03 INSTALLATION, GENERAL

General: Comply with playground surface system manufacturer's written installation instructions. Install playground surface system over area and in thickness indicated.

3.04 INSTALLATION OF SEAMLESS PLAYGROUND SURFACE SYSTEMS

- A. Seamless Surface: Mix and apply components of playground surface system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface and impact attenuating system of total thickness indicated.
 - Poured Cushion Course: Spread evenly over primed substrate to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation, with a minimum of cold joints. Thickness of cushion course should meet ASTM 1292-04 guidelines and shall be a minimum of 1" thick. Varying thickness [is] [is not] allowed to match fall height. If varying thickness not allowed then the specified thickness is [enter here].
 - 2. Intercoat Primer: Over cured cushion course, apply primer at manufacturer's standard spreading rate.
 - 3. Wearing Course: Spread over primed base course to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation and, except where color changes, with [no] [a minimum of] cold joints. Finish surface to produce manufacturer's standard wearing-surface texture. Minimum thickness of wear course shall be ½" after being troweled. A minimum of 5/8 screed rod shall be used when leveling wear course.

Where colored is indicated, place adjacent colored material as soon as placed colored material is sufficiently cured, using primer or adhesive if required by manufacturer's written instructions.

4. Edge Treatment: As indicated on Drawings. Fully adhere edges to substrate with full coverage of substrate. Maintain fully cushioned thickness required to comply with safety performance requirements.

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Testing Services: Testing and inspecting of completed applications of playground surface system shall take place according to ASTM F 1292-04 or latest version.
- C. Remove and replace applications of playground surface system where test results indicate that it does not comply with requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with requirements.

3.06 PROTECTION

Provide protection of surface during curing process.

*** END OF SECTION ***

SECTION 32 31 19

DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all metal fencing as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section includes, but is not limited to:

Decorative metallic-coated-steel tubular picket fences

1.03 STANDARDS AND REFERENCES

A. Comply with the Industry Standards and References as established by Manufacturer.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Include a minimum of: shop drawings, showing all details of construction, including footing sizes, reinforcements, and locations.

1.07 DELIVERY, STORAGE, AND HANDLING

Comply with the requirements of Section 01 66 00 - Product Storage and Handling Requirements.

1.08 PROJECT CONDITIONS

Comply with the requirements of Section 01 50 00 - Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Not required.

1.10 EXTRA MATERIALS

Not required.

1.11 RECORD DRAWINGS

Provide in accordance with Section 01 77 00 - Project Closeout.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 - Project Closeout and 01 78 36 - Warranties and Bonds.

1.13 <u>LEED™ CERTIFICATION</u>

Not applicable.

PART 2 - PRODUCTS

2.01 SPECIFIC ITEM(S)

Decorative Metallic-Coated-Steel Tubular Picket Fences

- A. Decorative Metallic-Coated-Steel Tubular Picket Fences: Comply with ASTM F 2408 for commercial application unless otherwise indicated.
- B. Posts:

End and Corner Posts: Square tube size per plans formed from 0.108-inch nominal-thickness, metallic-coated steel sheet or formed from 0.105-inch nominal-thickness steel sheet and hot-dip galvanized after fabrication.

- C. Post Caps: Formed from steel sheet and hot-dip galvanized after forming.
- D. Rails: Square tubes.
 - 1. Size: Per plan.
 - Metal and Thickness: 0.079-inch nominal-thickness, metallic-coated steel sheet or 0.075-inch nominal-thickness, uncoated steel sheet, hot-dip galvanized after fabrication.
- E. Pickets: Square tubes size per plans
- F. Fasteners: Manufacturer's standard concealed fastening system.
- G. Metallic-Coated Steel Sheet: Galvanized-steel sheet or aluminum-zinc, alloy-coated steel sheet.
- H. Interior surface of tubes formed from uncoated steel sheet shall be coated with zinc-rich thermosetting coating to comply with ASTM F 2408].
- Galvanizing: For components indicated to be galvanized and for which galvanized coating is not specified in ASTM F 2408, hot-dip galvanize to comply with ASTM A 123/A 123M. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.
- J. Finish: Organic coating complying with requirements in ASTM F 2408.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 SPECIFIC ITEM(S)

A. Preparation

Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments

- B. Decorative Fence Installation
 - 1. Install fences according to manufacturer's written instructions.

- 2. Install fences by setting posts as indicated.
- 3. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter and depth per plans.
- 4. Post Setting: Set posts in concrete]at indicated spacing into firm, undisturbed soil.
 - i. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - Concrete Fill: Place concrete around posts and sleeves and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

Exposed Concrete: Extend 2 inches above grade. Finish and slope top surface to drain water away from post.

- 5. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.
- 6. Space posts uniformly at a minimum of 8' on-center.
- 7. All connections are to be welded, ground smooth, painted per plan.

*** END OF SECTION ***

SECTION 12 93 00

SITE FURNISHINGS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. Supply and install all site furnishings as shown on the Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.

B. Section Includes:

- 1. Trash receptacles.
- 2. Picnic tables.
- 3. BBQs.
- Dog waste stations.
- 5. Drinking fountains.
- 6. Benches.
- 7. Shade structures.
- 8. Hot coal containers.

C. Related Requirements:

- Section 033000 "Cast-in-Place Concrete" for installing concrete pads, anchor bolts and pipe sleeves cast in concrete footings.
- Section 312000 "Earth Moving" for excavation for installing concrete pads and footings.

1.03 STANDARDS AND REFERENCES

Comply with the Industry Standards and References as established by Manufacturers.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experience in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section.

1.05 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.
- C. Samples for Initial Selection: For units with factory-applied finishes.
- D. Samples for Verification: For each type of exposed finish, not less than 6-inch long linear components and 4-inch square sheet components.

Product Schedule: For site furnishings.

E. Maintenance Data: For site furnishings to include in maintenance manuals.

1.06 <u>DELIVERY, STORAGE, AND HANDLING</u>

Comply with the requirements of Section 01 66 00 - Product Storage and Handling Requirements.

1.07 PROJECT CONDITIONS

Comply with requirements of Section 01 50 00 - Construction Facilities.

1.08 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 77 00 - Project Closeout.

1.09 LEED™ CERTIFICATION

Not applicable.

1.010 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 - Project Closeout and 01 78 36 - Warranties and Bonds

PART 2 - PRODUCTS

2.01 PREFABRICATED FURNISHINGS

A. Trash Receptacle: Trash Receptable, by QCP

Model No.: QRCAL283WA24 with lid and 26 galloon linear
 Color: Natural California Etch with standard painted logo

3. Supplier: QCP

Phone: (866)703-3434
 Website: qcp-corp.com

B. Picnic Table: Concrete Picnic Table - ADA Accessible, by QCP

Model No.: QLBT102PTADA

2. Color: Natural California Etch

3. Supplier: QCP

Phone: 866-703-3434
 Website: qcp-corp.com

C. BBQ: In-Ground Mount Stainless Steel Park Grill, by RJ Thomas Manufacturing Company

1. Model No.: NSS-20-B6S

2. Supplier: RJ Thomas Manufacturing Company/PilotRock

Phone: 800-762-5002
 Website: pilotrock.com

D. Dog Waste Station: Sentry Dog Waste Station with SinglPull Bag System, by ZeroWasteUSA

1. Model No.: JJB004

2. Color: ZW Green

Supplier: Zero Waste USA
 Phone: 800-789-2563
 Website: zerowasteusa.com

E. Drinking Fountain: Outdoor Drinking Fountain by HAWS Fountains

1. Model No.: 3202G

2. Color: Steel Galvanized Finish

Supplier: HAWS Fountains
 Phone: 888-640-4297
 Website: hawsco.com

F. Bench: Concrete Bench, by QCP

1. Model No.: Q2CAL72B

2. Length: 6 Feet

2 0-1-

3. Color: Natural California Etch

4. Supplier: QCP

Phone: 866-703-3434
 Website: qcp-corp.com

G. Shade Structure: Octagonal Shade Structure, by RCP Shelters, Inc.

1. Model No.: TS-OC24-05 (24') and TS-OC40-05 (40' - Bid Alternative) as per plans

2. Size: 24' or 40' as per Plans

3. Post Color: To be Selected by County

4. Roof: 24 Gauge Exposed Fastener Metal Roofing; Color to be Selected by County

5. Supplier: Great Western Recreation

6. Phone: 435-245-50557. Website: gwpark.com

8. Contact: Myles Harvey – myles@gwpark.com

H. Hot Coal Container: Concrete Hot Coal Container, by QCP

1. Model No.: QPSHA2842

 Color: Natural California Etch with "Hot Coals Only" Inset Letters painted white and Flame painted red

3. Supplier: QCP

Phone: 866-703-3434
 Website: qcp-corp.com

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.
- F. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 <u>INSTALLATION</u>

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and positioned at locations indicated on Drawings on concrete pads as indicated.
- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
- E. Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.
- F. Pipe Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

*** END OF SECTION ***

SECTION 32 33 01

PLAYGROUND, EXERCISE & SPORTS EQUIPMENT

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all playground, exercise, and sports court equipment, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section Includes:
- C. Exterior play equipment and exercise stations
- D. Section 033000 "Cast-in-Place Concrete" for installing concrete pads, anchor bolts and pipe sleeves cast in concrete footings.
- E. Section 312000 "Earth Moving" for excavation and concrete form work.

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturers.
- B. Product Data: Manufacturer's descriptive literature for specified systems, including all components.
- C. Shop Drawings: Indicate component connection details and details of interface with adjacent construction and equipment.
- D. Certificates: Certify that products of this section meet or exceed specified requirements.
- E. Manufacturer's Instructions: Indicate installation instructions for specified equipment including each component.
- F. Maintenance Data: Submit manufacturer's and maintenance instruction for specified equipment.
- G. The editions of specifications and standards referenced herein, published by the following organizations, apply to the construction only to the extent specified by the reference.
 - 1. American Society for Testing and Materials (ASTM).
 - 2. American Welding Society (AWS).

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and se adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five (5) years of documented experience. Manufacturer shall be ISO 9001/2008 certified. Manufacturer shall show IPEMA certification of compliance for each component that the product conforms with the requirements of ASTM F1487-11.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum of three (3) years-experience or certified by the manufacturer.

1.05 <u>SUBSTITUTIONS</u>

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: Manufacturer's descriptive literature for specified systems, including all components. Product Data: Manufacturer's descriptive literature for specified systems, including all components.
- C. Shop Drawings: Indicate component connection details and details of interface with adjacent construction and equipment.
- D. Certificates: Certify that products of this section meet or exceed specified requirements.
- E. Manufacturer's Instructions: Indicate installation instructions for specified equipment including each component.
- F. Maintenance Data: Submit manufacturer's maintenance instruction for specified equipment.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with the requirements of Section 01 66 00 – Product Storage and Handling Requirements.

B. Protection:

- 1. Equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. Equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times prior to installation.
- Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of the Architect.
- 3. Store materials under cover and elevated above grade.

C. Replacements:

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of Architect at no additional cost to the Owner.

1.08 PROJECT CONDITIONS

Comply with requirements of Section 01 50 00 - Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 77 00 - Project Closeout.

1.010 LEED™ CERTIFICATION

Not applicable.

1.011 WARRANTY

- A. Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 Warranties and Bonds
- B. Play Equipment Warranty
 - 1. Lifetime Limited Warranty on Support Posts (Uprights).
 - 2. 15 Year Limited Warranty on Punched Steel Decks, Pipes, Rails, Loops and Rungs.
 - 3. 15 Year Limited Warranty on Rotomolded Polyethylene Components.
 - 4. Lifetime Limited Warranty on Tru-Locks and Hardware.

C. Exercise Equipment Warranty

- 1. Limited 10 Year Warranty on Main Post and Metal Structure
- 2. Limited 5 Year Warranty on Moving Parts and Bearings
- 3. Limited 5 Year Warranty on Seats and Back Rests
- 4. Limited 3 Year Warranty on Hydraulic Pistons
- 5. Limited 2 Year Warranty on Footrests, Armrests, Rubber Parts, and Chains
- D. Volleyball Equipment Warranty
 - 1. Net: 1 Year Warranty
 - 2. Posts: 10 Year Warranty

PART 2 - PRODUCTS

2.01 GENERAL

- A. Equipment not listed within these Specifications or on Drawings as furnished by the equipment supplier, but required for the complete installation shall be furnished by the Contractor.
- B. Products shown on the Drawings, but not listed in this Section, shall be provided in accordance with information shown on the Drawings and the General Provisions of this part of the Specification.

2.02 PLAY EQUIPMENT MANUFACTURER

- A. Play equipment manufacturer shall be: Gametime C/O Great Western Recreation
- B. Address: PO Box 680121 Fort Payne, AL 35967
- C. Representative: Myles Harvey 805-320-9007 myles@gwopark.com

2.03 EXERCISE EQUIPMENT MANUFACTURER

- A. Exercise equipment manufacturer shall be: Greenfields Outdoor Fitness
- B. Address: 2617 W. Woodland Drive, Anaheim, CA 92801
- C. Representative: Giovanni Nunez 888-315-9037 x119 giovanni@greenfieldsfitness.com

2.04 VOLLEYBALL EQUIPMENT MANUFACTURER

- A. Volleyball equipment manufacturer shall be: PW Athletic Mfg. Co.
- B. Address: 2 Industrial Dr, PO Box 1290, Salem, IL 62881
- C. Contact: 866-563-3161 sales@pwathletic.com

2.05 PLAY EQUIPMENT STANDARDS

A. POWDER COAT FINISH - Shall be an electrostatically applied custom formula of TGIC polyester powder. All components will be free of sharp edges and excess weld spatter and shall be cleaned in a four-stage solvent / zirconium based bath system (free of iron phosphate), as a rust inhibitor, and a zirconium conversion coating to prevent flash rusting before coating. In addition, all welds shall be protectively coated with ZRP, a zinc rich primer that forms a rust-resistant barrier layer over each weld prior to application of the powder coating. The powder coating shall have a super tough finish with maximum exterior durability and will have superior adhesion characteristics. Typical characteristics are: Two coat process to achieve 3.0 - 5.0 mil thickness and oven cured between 350 degrees Fahrenheit. Pencil Hardness H (ASTM D-3363), Impact (ASTM D-2794- 69), Wedge Bend (ASTM D-522-68),

- Adhesion (Cross Hatch ASTM D-3359 & Knife Scratch ASTM D-2197), Environmental (Stain Resistance ASTM D-1308, Humidity ASTM D-2247 87, Salt Spray ASTM B-117 & Fadometer 300 hrs with no loss of gloss), Over-bake Stability 100% at 350 degrees Fahrenheit for 10 minutes.
- B. ROTATIONALLY MOLDED PRODUCTS All polyethylene shall be linear low-density material with UV-stabilized color and an anti-static compound additive. All rotationally molded products shall meet or exceed the following specifications: ASTM D-1248, type 2, class A and Federal specification LP-390C, type 1, class M, grade 2, category 3; Density (ASTM D-1505); Brittleness Temperature (ASTM D-746); Tensile Values (ASTM D-638); Flexural Modulus (ASTM D-790); Heat Distortion (ASTM-648); Low Temperature Impact (ARM-STD)
- C. GALVANNEAL COATING All galvanneal coating shall meet or exceed the specifications of ASTM A-6530-CQ.
- D. STEEL TUBING All tubing used to manufacture components shall be an electrical resistance welded, cold rolled, high strength steel tubing. The exterior coating will consist of an in line hot-dipped uniform zinc galvanizing, chromate conversion, and acrylic over-coating. The interior coating will consist of a special organic acrylic modified polyester.
- E. PUNCHED STEEL & COATED COMPONENTS:
 - 1. PUNCHED STEEL DECKS Punched steel decks shall be fabricated from 12 gauge punched steel with a protective p&o finish and other punched steel products shall be fabricated from 11 gauge punched steel with a protective p&o finish. Coated products shall consist of a welded assembly with an oven cured matte finish polyvinyl chloride (PVC) coating with a minimum coating thickness of .080". The PVC coating shall have a hardness of Shore A 83 +/-5 normal durometer range. This material is classed as "Self Extinguishing", meets or exceeds automotive specifications NVSS302, and contains ultraviolet inhibitors to help prolong the life of the coating. The PVC coating shall contain pthalate levels in concentrations of 1/10 of 1% or lower. For ADA Ramp Accessible decks and ramps, the hole shall measure 1/4" diameter after coating. For standard decks and ramps, the hole size shall measure 1-1/4" diameter after coating.
 - 2. DECKS SQUARE Shall have a minimum surface area of 1,286 square inches, maintaining a full 36" center to center spacing on the upright posts. The 36" square deck shall be fabricated from punched steel in conformance with the specifications outlined herein. The deck frame shall be fabricated from 3/16" x 2-1/2" hot rolled steel with corner supports fabricated from 1/4" x 2-1/2" hot rolled steel. Intermediate supports, fabricated from 1/8" x 1" hot rolled steel, shall be notched and welded at the intersections forming a support grid underneath the entire deck surface. The deck shall be a one-piece welded assembly, coated after fabrication with an oven cured matte finish polyvinyl chloride (PVC) coating in accordance with the specifications herein. Each square deck shall be directly bolted to the upright posts with four 3/8" diameter button head cap screws in accordance with the hardware specifications herein. All decks and components shall connect to support posts by means of a through-bolt connection for strong, durable connections. Deck/Collar attachments shall not be acceptable. All climbing attachments shall include a 15"" wide deck entryway or archway to control deck access to one child at a time and help prevent inadvertent falls.
 - 3. All decks and components shall connect to support posts by means of a through-bolt connection for strong, durable connections. Deck/Collar attachments shall not be acceptable. All climbing attachments shall include a 15"" wide deck entry archway to control deck access to one child at a time and help prevent inadvertent falls.

2.06 PLAY EQUIPMENT- XSCAPE

A. Xscape consists of Climbing Walls which utilize formed 3 ½" O. D. Galvanized Pipe Frames with a variety of different climbing inserts placed in the frames. These inserts include metal and High Density Polyethylene construction. The Links and Overheads consist of

- weldments, Roto-Mold and High Density Polyethylene elements for climbing and play. There are Circuits and Connectors which are welded assemblies allowing for multiple configurations.
- B. The Freestanding Components construction is the same as listed above.
- C. All components of this product have plates that bolt together to insure accurate placement of components and ease of installation. Field drilling and measuring are not required.
- D. Concrete footings shall be as shown on the Drawings and specified. The Contractor shall provide all labor, material and equipment to construct the concrete footings as shown and shall conform with concrete design specifications.
- E. TRIANGULAR SHROUD The Triangular Shroud shall be molded from EPDM 90-Durometer

F. PLAYGROUND COVERS

- 1. X-POD STEP WITH UMBRELLA CANOPY Umbrella Arm Weld Assembly:
- 2. Umbrella Brace Weld Assembly: The Umbrella Brace Weld Assembly shall be an all welded assembly fabricated with 2 7/8" O.D. x .134" (SCH 40) wall galvanized steel tubing, 3 1/8" dia x 1/4" H.R. steel plate, and 2 1/2" x 1/4" x 2 3/4" H.R. steel plate. The Umbrella Brace Weld Assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- 3. Umbrella Upright Extension Weld Assembly: The Umbrella Upright Extension Weld Assembly shall be fabricated with 3 1/2" O.D. x .18" (7 gauge) galvanized steel tubing, formed 7 11/16" dia x .109 (12 gauge) H.R. steel plate, 2 15/16" x 3/8" x 5 7/8" H.R. steel plate, and 2 1/16" x 1/4" x 3 1/8" H.R. steel plate. The Umbrella Upright Extension Weld Assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- 4. Umbrella Upright for X-Pod Step: The Umbrella Upright for X-Pod Step upright shall be fabricated from 3.5" o.d, 7 gauge (.18") galvanized round tubing. The horizontal pipes shall be made from 2" LW galv. Pipe. The triangle mounting plates are constructed from 3/16" x 4 ½" stainless steel. The Umbrella Upright shall be all welded assemblies and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- 5. X-Pod Step: The rotomolded step shall be color impregnated linear low-density polyethylene and shall conform to the rotationally molded specifications outlined herein with double wall construction molded to a minimum .25" wall thickness. The X-Pod Step surface shall be cast of EPDM of durometer 90.
- 6. Inground Extension: The Inground Extension shall be fabricated with 3 1/2" O.D. x .18" (7 gauge) galvanized steel tubing.
- 7. Cable: The Cables shall be fabricated from 1/4" nominal diameter, 7 strand, 19 wires per strand (minimum), with nominal tensile strength of 9,000 lbs wire rope

G. ATTACHMENT

- 1. DNA CLIMBING WALL -The DNA Climbing Wall shall be fabricated from rolled 3.5" outside diameter, 13 gauge (.095") galvanized round tubing, 2 3/8" O.D. x .095" (13 gauge) galvanized pipe, and 2 3/8" O.D. SCH 40 x .13" (10 gauge) galvanized pipe. The climbing rails shall be 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing. The top mounting plate is constructed from 3/16" x 4 1/2" stainless steel. The DNA climbing wall assembly shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The Wall Topper shall be molded from EPDM 70-Durometer.
- SINGLE SKY WHEEL The Wheel shall be an all welded construction, which attaches to the Panel Frame. The wheel is fabricated from 1-5/16" O.D. x .083" (14 gauge) wall

galvanized steel tubing, 1-1/16" O.D. x .072" (15 gauge) galvanized steel tube braces, cold rolled steel hub, and 1 1/2" bushing. The Panel Frame shall be an all welded assembly fabricated from rolled 3 1/2" O.D. 13 gauge (.095") galvanized steel tubing, 2 3/8" O.D. SCH 40 x .13" (10 gauge), 2 3/8" O.D. x .095" (13 gauge) galvanized steel tubing, 2 7/8" O.D. x .139" (10 gauge) galvanized steel tubing, 3/16" hot rolled steel gussets, a 3/16" stainless steel mounting plate, stainless steel shaft, and 1/4" diameter cold rolled steel rod. The Panel Frame and Wheel shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The Post Topper shall be molded from EPDM 70-Durometer.

H. LINKS

1. HANGING POD LINK - The mini pod shall be color impregnated rotationally molded linear low density polyethylene conforming to the specifications outlined herein. The double wall part shall have a minimum wall thickness of 1/4". The mini pod hanger shall be fabricated of 1 1/16" dia. cold rolled steel rod, 1 5/16" O.D. x .109" wall galvanized steel tubing, 12 gauge (.109") hot rolled flat steel that is formed, and a 1/4" x 2" x 1 13/16" stainless steel tab. The top rail shall be fabricated from 2 3/8" O.D. SCH 40 x .13" (10 gauge) galvanized steel pipe.

I. ARCHED LOOP LADDER

1. The Arched Loop Ladder shall be fabricated from rolled 2 3/8" O.D. x .165" (8 gauge) galvanized round pipe. The mounting plate is constructed from 3/16" x 4 1/2" stainless steel. The loops shall be fabricated from 1-1/16" O.D. x .072" (15 gauge) wall galvanized steel tubing. The ladder assembly shall be an all welded construction and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.

J. CONNECTORS - CROSS BEAMS 2 TO 5

- 1. PT SINGLE LINK CROSS BEAM
- 2. The PrimeTime Single Link Crossbeam shall be fabricated from 2 3/8" O.D. x .095" (13 gauge) galvanized pipe, 3/16" flat stainless steel mounting tabs, and 3/16" x 4 ½" stainless steel mounting plates. The PrimeTime Single Link Crossbeam shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.

2.07 PLAY EQUIPMENT- PRIMETIME

- A. PrimeTime® features 3 1/2" O.D. uprights with a positive bolt-through fastening system utilizing stainless steel tabs. The uprights shall be factory drilled to ensure accurate placement of components and ease of installation. Field drilling and measuring are not required. PrimeTime is a direct bolt system NOT a clamp system. All uprights shall receive factory installed aluminum post caps and shall be shipped with a factory applied label indicating proper surfacing level.
- B. All decks and components shall connect to support posts by means of a through-bolt connection for strong, durable connections. Deck/Collar attachments shall not be acceptable. All climbing attachments shall include a 15" wide deck entry archway to control deck access to one child at a time and help prevent inadvertent falls.

C. PUNCHED STEEL & COATED COMPONENTS:

1. TRANSFER PLATFORM

Platform and step shall be made from 11 gauge punched steel metal in conformance with the specifications outlined herein. Platform and step shall each be a one-piece welded assembly. The platform frame shall be fabricated from 3/8" x 3-1/2" hot rolled steel. Handholds shall be fabricated from 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing with vertical members fabricated of 2" square x 3/16" wall steel tubing. The corner

post assembly shall be fabricated from 2 3/8" O.D. x .095" (13 gauge) wall galvanized steel tubing with handholds made from 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing. Both the corner post and the handholds shall be all-welded assemblies and shall be coated with a custom formula of TGIC polyester powder in conformance with the specifications outlined herein, after fabrication. Step assembly frame shall be made from 10 gauge (.135" thick) hot rolled flat steel. The step assembly and corner post assembly can be installed on either the right or left side of the platform, offering installation flexibility.

2. PUNCHED STEEL AND COATED DECKS

Punched steel decks shall be fabricated from 12 gauge punched steel with a protective p&o finish and other punched steel products shall be fabricated from 11 gauge punched steel with a protective p&o finish. Coated products shall consist of a welded assembly with an oven cured matte finish polyvinyl chloride (PVC) coating with a minimum coating thickness of .080". The PVC coating shall have a hardness of Shore A 83 +/-5 normal durometer range. This material is classed as "Self Extinguishing", meets or exceeds automotive specifications NVSS302, and contains ultraviolet inhibitors to help prolong the life of the coating. The PVC coating shall contain pthalate levels in concentrations of 1/10 of 1% or lower. For ADA Ramp Accessible decks and ramps, the hole shall measure 1/4" diameter after coating. For standard decks and ramps, the hole size shall measure 1-1/4" diameter after coating.

D. PANELS:

1. BONGOS

The Bongos are molded from a color impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein.

2. CRAWL THRU PANEL

Panel shall be color-impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. Bubble shall be 26" diameter made from a clear polycarbonate, 1/8" thick.

3. BUBBLE PANEL

26" Panel shall be color-impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. Bubble shall be 26" diameter made from a clear polycarbonate, 1/8" thick.

E. HARDWARE

All nuts, bolts, screws, inserts, and lockwashers used in the assembly of all play equipmentshall be stainless steel, yellow dichromate plated steel, blue-coat plated steel, mechanically galvanized or powder coated/yellow dichromate plated steel. All primary fasteners shall be 304 alloy stainless steel. Fasteners with yellow dichromate treatment have an electro-deposited, 99.9% pure zinc substrate applied from a specially formulated solution sealed with a yellow dichromate top coat designed to work in conjunction with the zinc plating. Yellow dichromate has a 320% longer life to white corrosion and 275% longer to red corrosion than does hot-dip galvanizing. All primary stainless steel fasteners shall be Button Head Socket Caps.

F. DECKS - TRIANGULAR

Shall have a minimum surface area of 556 square inches, maintaining a full 36" center to center spacing on the upright posts. The 36" triangular deck shall be fabricated from punched steel in conformance with the specifications outlined herein. The deck frame shall be fabricated from 3/16" x 2-1/2" hot rolled steel with corner supports fabricated from 1/4" x 2-1/2" hot rolled steel. Intermediate supports, fabricated from 1/8" x 1" hot rolled steel, shall be welded at the intersections forming a support grid underneath the deck surface. The deck

shall be a one-piece welded assembly, coated after fabrication with an oven cured matte finish polyvinyl chloride (PVC) coating in accordance with the specifications herein. Each triangular deck shall be directly bolted to the upright posts with three 3/8" diameter button head cap screws in accordance with the hardware specifications herein.

G. ENTRY WAY

Entry Way shall be fabricated from 1-5/16" O.D. \times .083" (14 gauge) wall galvanized steel tubing with 3/16" hot rolled steel formed and stamped mounting tabs. The Entry Way shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder, after fabrication in conformance with the specifications outlined herein.

H. CLIMBERS

- 1. Pine Climber: The Pine Climber weld assembly shall be an all welded assembly manufactured with 3.5"X 0.95" wall galvanized steel tubing, 2.375" O.D. X 0.095" wall galvanized steel tubing and 1.315" X 0.083" wall galvanized steel tubing. The assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The peg cap shall be made from 383 dia cast aluminum alloy.
- 2. Crazy Eight Climber: Crazy Eight climber shall be fabricated from 1-5/8" O.D. x .083" (14 gauge) wall galvanized steel tubing, and step rungs of 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing and 3/16" formed steel mounting tab. Crazy Eight climber shall be a one-piece welded assembly and shall be coated with a custom formula of TGIC polyester powder in conformance with the specifications outlined herein, after fabrication.
- 3. Vert Wall Climber:The Vert Wall Climber shall be fabricated of 1.66" O.D. x .083" wall galvanized pipe, and 11 Gauge Galvanneal Mounting Plate. The Vert Wall Climber shall be an all welded assembly and shall be coated after fabrication with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein. The HDPE climbing surface shall be made from 3/4" thick (solid) high density, UV-stabilized and color impregnated polyethylene. The handholds are purchased pieces that shall be fabricated from hybrid resin mixture with custom formulated UV inhibitor.
- 4. Wave Climber :This patent pending one-piece climber shall be color impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. The climber utilizes "waves" and "bumps" to allow the user to ascend and descend at their level of ability. The mounting bracket shall be fabricated of 3/16" x 2-1/2" hot rolled steel. The mounting bracket, enclosure, and foot buck assemblies shall be coated with a custom formula of TGIC polyester powder, after fabrication in conformance with the specifications outlined herein.

I. SLIDES

1. Wilderslide II :This multi-sectional rotationally molded open-bedway slide shall be manufactured from color impregnated linear low density polyethylene and shall conform to the rotationally molded product specifications outlined herein. The slide bedway shall have a 20" inside diameter on a 40° maximum slope. The slides will be offered on 3' through 8' deck heights. Single Entrance, Double Entrance, Triple Entrance, Straight, Left Curve, Right Curve, and Exit sections shall be molded so that the seams are Tongue & Groove like connections and all hardware connections are located on the outside of the sections. Single and Double Entrances work in conjunction with a rotationally molded hood. Triple Entrance works in conjunction with an enclosure. The Enclosure shall be fabricated of 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing and 1-1/16" O.D. x .075" (15 gauge) wall galvanized steel tubing. The Enclosure shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. Entrances bolt directly to the deck and to the slide hood or enclosure. The exit section of

the bedway shall have a minimum 40" radius for a smooth transition from the slide chute to the run-out area. The run-out shall be angled at a maximum of 4° with an integrated drain at 5° to reduce pooling of water. All sections shall be of double wall construction with a nominal wall thickness of 1/4". Slides 6' through 8' deck heights will use a slide support. The Slide Support shall be fabricated of 1-5/8" O.D. x .083" (14 gauge) wall galvanized steel tubing and 3/16" Hot Rolled Steel plate. The Slide Support shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.

2. Zip Slides (Single & Double Bedway, and Rumble & Roll): Zip Slides and hoods shall be color impregnated linear low-density polyethylene and shall conform to the rotationally molded specifications outlined herein with double wall construction molded to a minimum .25" wall thickness. Single bedway Zip Slides shall have a minimum inside bed width of 17.5" while double bedway Zip Slides shall have a minimum inside bed width of 16.5" on each bedway. Outside rails are at least 7" high when measured from the centerline of the bedway surface. The angle of descent shall be no greater than 50°. Each Zip Slide works in conjunction with a rotationally molded hood that has an integrated cross bar which force users to a seated position. The exit section of the bedway shall have a minimum 40" radius for a smooth transition from the slide chute to the run-out area. The run-out shall be angled at a maximum of 4° with an integrated drain at 5° to reduce pooling of water. Zip Slides bolt directly to the deck and to the slide hood.

J. TRANSFER SYSTEM

The Steps shall be made from 11 gauge punched steel with a protective P&O finish in conformance with the specifications outlined herein. The Steps shall each be a one-piece welded assembly finished with the matte PVC coating per the specifications herein. Handrails and attachment rails shall be fabricated from 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing, with supports fabricated from 1-1/16" O.D. x 15 gauge (.075" thick) galvanized steel tubing and 2" square x 3/16" wall steel tubing. Handholds and attachment rails shall be all-welded assemblies and shall be coated with a custom formula of TGIC polyester powder in conformance with the specifications outlined herein, after fabrication.

2.08 PLAY EQUIPMENT- POWERSCAPE

- A. PowerScape® features 5" O.D. uprights with a positive bolt-through TRU-LOC fastening system. The uprights shall be factory drilled to ensure accurate placement of components and ease of installation. Field drilling and measuring are not required.
- B. PowerScape® is a direct bolt system NOT a clamp system. All uprights shall receive factory installed aluminum post caps and shall be shipped with a factory applied label indicating proper surfacing level.
- C. All decks and components shall connect to support posts by means of a through-bolt connection for strong, durable connections. Deck/Collar attachments shall not be acceptable. All climbing attachments shall include a 15" wide deck entryway or archway to control deck access to one child at a time and help prevent inadvertent falls.

D. ROOFS AND ARCHES:

1. SUNBLOX SQUARE CANOPY

- a. Top Canopy Plate: The Top Canopy Plate shall be fabricated from a formed 19 1/4" dia x 1/4" H.R. steel plate. The Top Canopy Plate shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- b. Bottom Canopy Plate: The Bottom Canopy Plate shall be fabricated from a formed 16 1/8" dia x 1/4" H.R. steel plate. The Bottom Canopy Plate shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.

- c. Cantilevered Post: The Cantilevered Post Weld Assembly shall be an all welded assembly fabricated with 6" dia x 3/16" H.R. steel plate, 5" x 3/8" x 2 3/4" H.R. steel plate, 5" O.D. x .12" (11 gauge) galvanized steel tubing, and 6 15/16" x 3/8" x 7 5/16" H.R. steel plate. The Cantilevered Post Weld Assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- d. Long Canopy Brace: The Long Canopy Brace Weld Assembly shall be an all welded assembly fabricated with 3 1/8" dia x 1/4" H.R. steel plate, 2 7/8" O.D. x .134" (SCH 40) wall galvanized steel tubing, and 2 1/2" x 1/4" x 2 3/4" H.R. steel plate. The Long Canopy Brace Weld Assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- e. Canopy Extension: The Canopy Extension Weld Assembly shall be an all welded assembly fabricated with 5" dia x 3/16" H.R. Steel, 4 11/16" x 3/8" x 3 1/6" H.R. Steel plate, 5" O.D. x .12" (11 gauge) galvanized steel tubing, and 2 15/16" x 3/8" x 5 7/8" H.R. steel plate. The Canopy Extension Weld Assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- f. Inground Extension: The Inground Extension shall be fabricated with 5" O.D. x .12" (11 gauge) galvanized steel tubing.
- g. Cable: The Cables shall be fabricated from 1/4" nominal diameter, 7 strand, 19 wires per strand (minimum), with nominal tensile strength of 9,000 lbs wire rope

E. THERAPEUTIC RINGS

The top rail shall be fabricated from 2-3/8" O.D. x .095" (13 gauge) wall galvanized steel tubing with formed steel end fittings; it shall be an all welded assembly. The toprail assembly shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The trapeze rings shall be cast from strong, light, heat and rust-resistant aluminum alloy. A steel grommet shall be press-inserted into the trapeze ring to add strength and reduce wear. The rings shall be suspended from the toprail by chains and swing hangers. The swing hanger shall consist of a top clevis, bottom clevis, and swing pendulum. The top clevis shall have a non-slip-serrated surface. The swing hangers shall be cast of malleable iron and shall have a galvanized finish. The pendulum shall be attached to the bottom clevis with ½" diameter bolts. The top and bottom clevis shall be attached with 3/8" diameter hardware. The chain shall be a #80 galvanized chain.

F. THUNDERRING

The ThunderRing is molded from a color impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. The ThunderRing bracket shall be an all welded steel structure and shall be coated after fabrication with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein.

G. PANELS:

- 1. SINGLE GIZMO PANEL Gizmo panel shall be 2-1/2" thick, color impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. The Pipe Connector shall be an all welded structure fabricated from 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing and 3/16" stainless steel. The Pipe Connector shall be coated with a custom formula of TGIC polyester powder, after fabrication in conformance with the specifications outlined herein. Gizmo's shall conform to the Gizmo specifications outlined herein.
- 2. GIZMO'S The Wheel Housing, Window Housings and Cap shall be injection molded from color impregnated high density polyethylene. The Maze Bubble shall be injection molded

from clear ABS plastic. The Echo Chamber, Answer Wheel, Knob, Maze, and Click Wheel shall be injection molded from color impregnated ABS plastic. The Bushing shall be injection molded Acetal. The Bubble Mirror shall be vacuumed formed of 3/16" thick polycarbonate with a mirror finish applied to the concave side. The Flat Mirror shall be 1/8" thick Polycarbonate with a mirror finish applied to one side. The Stained Glass shall be 3/16" translucent Polycarbonate.

- 3. BONGOS The Bongos are molded from a color impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein
- 4. 26" BUBBLE PANEL Panel shall be color-impregnated linear low density polyethylene and shall conform to the rotationally molded specifications outlined herein. Bubble shall be 26" diameter made from a clear polycarbonate, 1/8" thick.

H. ATTACHMENT:

- 1. DNA CLIMBING WALL The DNA Climbing Wall shall be fabricated from rolled 3.5" outside diameter, 13 gauge (.095") galvanized round tubing, 2 3/8" O.D. x .095" (13 gauge) galvanized pipe, and 2 3/8" O.D. SCH 40 x .13" (10 gauge) galvanized pipe. The climbing rails shall be 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing. The top mounting plate is constructed from 3/16" x 4 1/2" stainless steel. The DNA climbing wall assembly shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The Wall Topper shall be molded from EPDM 70-Durometer.
- 2. SINGLE SKY WHEEL:The Wheel shall be an all welded construction, which attaches to the Panel Frame. The wheel is fabricated from 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing, 1-1/16" O.D. x .072" (15 gauge) galvanized steel tube braces, cold rolled steel hub, and 1 1/2" bushing. The Panel Frame shall be an all welded assembly fabricated from rolled 3 1/2" O.D. 13 gauge (.095") galvanized steel tubing, 2 3/8" O.D. SCH 40 x .13" (10 gauge), 2 3/8" O.D. x .095" (13 gauge) galvanized steel tubing, 2 7/8" O.D. x .139" (10 gauge) galvanized steel tubing, 3/16" hot rolled steel gussets, a 3/16" stainless steel mounting plate, stainless steel shaft, and 1/4" diameter cold rolled steel rod. The Panel Frame and Wheel shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication. The Post Topper shall be molded from EPDM 70-Durometer.

I. LINKS:

1. HANGING POD LINK:The mini pod shall be color impregnated rotationally molded linear low density polyethylene conforming to the specifications outlined herein. The double wall part shall have a minimum wall thickness of 1/4". The mini pod hanger shall be fabricated of 1 1/16" dia. cold rolled steel rod, 1 5/16" O.D. x .109" wall galvanized steel tubing, 12 gauge (.109") hot rolled flat steel that is formed, and a 1/4" x 2" x 1 13/16" stainless steel tab. The top rail shall be fabricated from 2 3/8" O.D. SCH 40 x .13" (10 gauge) galvanized steel pipe, and 3/16" flat stainless steel mounting tabs. The mini pod hanger and top rail shall be all welded assemblies and shall be coated after fabrication with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein.

J. OVERHEAD

- 1. ARCHED LOOP LADDER: The Arched Loop Ladder shall be fabricated from rolled 2 3/8" O.D. x .165" (8 gauge) galvanized round pipe. The mounting plate is constructed from 3/16" x 4 1/2" stainless steel. The loops shall be fabricated from 1-1/16" O.D. x .072" (15 gauge) wall galvanized steel tubing. The ladder assembly shall be an all welded construction and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.
- TRIANGULAR SHROUD: The Triangular Shroud shall be molded from EPDM 90-Durometer

K. CONNECTORS - CROSS BEANS 2 TO 5

1. PT SINGLE LINK CROSS BEAM: The PrimeTime Single Link Crossbeam shall be fabricated from 2 3/8" O.D. x .095" (13 gauge) galvanized pipe, 3/16" flat stainless steel mounting tabs, and 3/16" x 4 ½" stainless steel mounting plates. The PrimeTime Single Link Crossbeam shall be an all welded assembly and shall be coated with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein, after fabrication.

L. METAL BARRIER ARCHWAY W/ SOCKET

1. The Barrier Archway w/Socket shall be fabricated of 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing, 1-5/8" O.D. x .083" (14 gauge) wall galvanized steel tubing, 1/8"Hot Rolled Steel Gussets, and 3/16" Hot Rolled Mounting Tabs. The vertical rungs shall be fabricated of 1-1/16" O.D. x .075" (15 gauge) wall galvanized steel tubing. The Barrier Archway W/Socket shall be an all welded assembly and shall be coated after fabrication with a custom formula of TGIC polyester powder coating in conformance with the specifications outlined herein.

M. CLIMBERS

1. CLOVER LEAF CLIMBER:Shall be fabricated from 1-5/8" O.D. x .083" (14 gauge) wall galvanized steel tubing upright and step rungs of 1-5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing. The Clover climber shall have a handhold of 1.029" x .083" (14 gauge) wall galvanized steel tubing. The Clover climber assembly shall be coated, after fabrication, with a custom formula of TGIC polyester powder in conformance with the specifications outlined herein. PowerScape clover climber shall include an entry archway or entryway in accordance with the specifications herein. Steel insert shall be fabricated from 11 gauge (.120") hot rolled steel. Decorative designs shall be laser cut to produce accurate, burr-free cut-outs.

N. SLIDES

1. ZIP SLIDES (SINGLE & DOUBLE BEDWAY, AND RUMBLE & ROLL): Zip Slides and hoods shall be color impregnated linear low-density polyethylene and shall conform to the rotationally molded specifications outlined herein with double wall construction molded to a minimum .25" wall thickness. Single bedway Zip Slides shall have a minimum inside bed width of 17.5" while double bedway Zip Slides shall have a minimum inside bed width of 16.5" on each bedway. Outside rails are at least 7" high when measured from the centerline of the bedway surface. The angle of descent shall be no greater than 50°. Each Zip Slide works in conjunction with a rotationally molded hood that has an integrated cross bar which force users to a seated position. The exit section of the bedway shall have a minimum 40" radius for a smooth transition from the slide chute to the run-out area. The run-out shall be angled at a maximum of 4° with an integrated drain at 5° to reduce pooling of water. Zip Slides bolt directly to the deck and to the slide hood.

O. DECKS, SQUARE

1. Shall have a minimum surface area of 2,381 square inches, maintaining a full 49" center to center spacing on the upright posts. The 49" square deck shall be fabricated in conformance with the punched steel specifications outlined herein. The deck frame shall be fabricated from 3/16" x 3-1/2" hot rolled steel with corner supports fabricated from 1/4" x 3-1/2" hot rolled steel. Intermediate supports, fabricated from 1/8" x 2-1/2" hot rolled steel, shall be notched and welded at the intersections forming a rigid 12" support grid underneath the entire deck surface. The deck shall be a one-piece welded assembly, coated after fabrication with an oven cured matte finish polyvinyl chloride (PVC) coating in accordance with the specifications herein. The square deck shall be directly bolted to the upright posts with eight 3/8" diameter button-pin-in-head, hex socket cap screws in accordance with the hardware specifications herein.

P. UPRIGHTS AND UPRIGHT ACCESSORIES

- 1. TRU-LOC CONNECTION :The Tru-Loc shall incorporate an aluminum casting in a distinctive purpose mounting system that allows a rung panel to mount to the upright. The Tru-Loc connector will have a matching counterpart for flat panel connections. Each is bolted directly into the upright post through a factory located and installed connection and designed to eliminate protrusions. Each shall be die cast of 380 aluminum alloy, to resist corrosion. Minimum tensile strength shall be 45,000 psi, minimum yield strength shall be 22,000 psi. All connectors shall be coated with a custom formula of TGIC polyester powder coating, in conformance with the specifications outlined herein.
- 2. UPRIGHTS, ALUMINUM: Shall be 5"outside diameter tubing, 1/8" wall thickness, extruded from 6005-T5 aluminum alloy conforming to ASTM-B-221. Minimum yield strength shall be 35,000 psi and minimum tensile strength shall be 38,000 psi. All upright posts shall have a finished grade line marking to indicate the correct playground safety surface level. All upright posts shall be coated with a custom formula TGIC polyester powder coating in conformance with the specifications outlined herein.
- 3. UPRIGHT CAPS: The standard upright cap shall be an aluminum cap, cast from a 383 alloy, powder coated to match the upright. Every upright cap shall receive a primer coat for maximum protection. All upright caps are permanently installed at the factory using aluminum self-sealing rivets.
- 4. BOLT-THROUGH CONNECTION: Each PrimeTime/TotTime component is bolted directly into the upright post and designed to eliminate exposed hardware and protrusions. Minimum tensile strength of the connection shall be 45,000 psi, minimum yield strength shall be 22,000 psi. All necessary connectors shall be engineered, manufactured and factory installed as an integral part of the upright post. For added protection against corrosion, cold galvanizing shall be applied to the edges of each drilled hole.
- 5. UPRIGHTS STEEL: Shall be 3.5" outside diameter, 13 gauge (.095") galvanized round tubing, manufactured to ASTM A-500 Section II tolerances from cold-formed steel conforming to ASTM A-569 Sheet Spec for Steel Coil. Minimum yield strength shall be 50,000 psi and minimum tensile strength shall be 55,000 psi.
- 6. The exterior surface is hot dip galvanized, chromate conversion coated, and a clear high performance organic polymer is applied. The inside diameter has 81% minimum zinc rich primer capable of providing excellent rust protection and fabrication characteristics. All coatings are applied inside and out after welding for superior corrosion protection throughout. Exterior surface galvanizing zinc purity is 99% as per ASTM B-6 high grade and special high grade. Galvanizing coverage shall demonstrate the ability to exceed 1000 hours salt spray corrosion exposure in accordance with ASTM B-117. Internal surface zinc rich 81% minimum zinc dust content in organic resin, as per ASTM F-1234, Section 5.2.4, Type D. All upright posts shall have a finished grade line marking to indicate the correct playground safety surface level. All upright posts shall be coated with a custom formula TGIC polyester powder coating in conformance with the specifications outlined herein.

Q. HARDWARE

1. All nuts, bolts, screws, inserts, and lockwashers used in the assembly of all play equipment shall be stainless steel, yellow dichromate plated steel, blue-coat plated steel, mechanically galvanized or powder coated/yellow dichromate plated steel. All primary fasteners shall be 304 alloy stainless steel. Fasteners with yellow dichromate treatment have an electro-deposited, 99.9% pure zinc substrate applied from a specially formulated solution sealed with a yellow dichromate top coat designed to work in conjunction with the zinc plating. Yellow dichromate has a 320% longer life to white corrosion and 275% longer to red corrosion than does hot-dip galvanizing. All primary stainless steel fasteners shall be Button Head Socket Caps.

2.09 PLAY FEATURES

- A. Play Feature Equipment List:
 - 1. Gametime PS 17014 Refer to Plans
 - 2. GameTime PT18350 Refer to Plans

2.010 EXERCISE EQUIPMENT STANDARDS

A. Steel Structure

- 1. Material: Carbon Steel; Thickness: 3.5-4 mm; Steel Standard: 35-8 or 45-8 (ASTM Grade B); Welding: MIG welding with hollow coil feed.
- Bearing: HRB stainless sealed ball bearings with life cycle of 10,000 hours; Radial Load (Cor): Minimum 7,900N
- 3. Fasteners and Connectors: molded riveted pin housing with stopper build in; whole steel pin bored and milled to size.
- 4. Pins: 20mm Ferrite chrome enriched steel
- 5. Main Bolts: Stainless flat hex screws; Thickness: cap heads s-torx; Steel Standard: Signature triangle screw

B. Composites

- Seats and Cushions: polyurethane compound with fire and toxicity certification by RHOS and SGS. Compliant with SGS TB117 for flame retardance.
- Handles and Grips: Molded fire-resistant EPDM soft rubber; temperature range -100 F to 4500F.
- Signs and Housings: 18 cm UV stabilized ABS plastic sign housing; signs printed on 4mil 90#PE-coated silicone paper 3.2 mil calendared gloss and matte vinyl with how-to-use diagram and QR code linking to how-to video.
- 4. Foot Pedals: Double wall, one-piece construction of color impregnated rotationally molded linear UV stabilized low-density polyethylene with a 6mm nominal wall thickness. Sand blast grip finish. Complaint with ASTM D-1248, Type 2, Class A.

C. Coating

1. Dupont Alesta AD powder coating for architectural use. Made from carboxyl polyester and IGC. Film thickness: 50 to 70 micros.

2.011 EXERCISE EQUIPMENT FEATURES

- A. Exercise Equipment List
 - 1. Professional Series UBX Refer to Plans

2.012 VOLLEYBALL EQUIPMENT STANDARDS

- A. Net: Netting: Black No. 24 thread nylon, 4" square mesh; Top, Bottom, and Side Tapes: White vinyl coated nylon.
- B. Posts: 2-7/8" OD heavy-duty galvanized steel post; overall length: 10'6"; Rope clamp: diecast from rustproof zamak metal; powder coated

2.013 VOLLEYBALL EQUIPMENT FEATURES

- A. Volleyball Equipment List
 - Volleyball Net and Posts Refer to Plans

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.
- F. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SITE AND DRAWING EXAMINATION

- A. Contractors submitting a proposal for this work shall first examine the site of the proposed work that they may fully understand facilities, difficulties, and restrictions attending the execution of the contract. No subsequent allowances shall be made because of omission, error, or negligence in connection with this provision.
- B. Contractors submitting a proposal for this work shall carefully examine the architectural and structural Drawings and Specifications.
- C. Questions pertaining to work that do not appear to be sufficiently detailed or explained, or pertaining to the true meaning of any part of the Drawings or Specifications, or discrepancies found existing in or between the Specifications and Drawings, shall be referred to the Architect for clarification or correction.

3.03 COORDINATION

- A. The Contractor shall cooperate with subcontractors of other trades, whose work is in any way affected by, or affects the work under this Section.
 - The Contractor shall coordinate the work under this Section with that of other trades to
 effect a complete installation consistent with the requirements and intent of the Drawings
 and Specifications.
- B. The Contractor shall furnish materials so as to avoid delay in the progress of the work and shall store them as to prevent interference with other work.

3.04 GENERAL INSTALLATION

- A. Install and connect all equipment in accordance with manufacturer's instructions and recommendations unless otherwise noted. If specified installation is contrary to manufacturer's instructions, cease installation of affected components or systems.
- B. Notify Project Manager and the Architect and do not resume installation without clear instructions.
- C. Protect pipes, conduits, and equipment from damage from inclement weather.
- D. Parts to be cast in concrete shall be located as detailed on the Plans shall be rigidly supported to resist loads imposed during concrete pour.

3.05 DEFECTIVE WORK AND MATERIALS

A. Materials or work found to be defective or not in strict conformity with the drawings, or different from the requirements of the Drawings and Specifications, or defaced or injured, shall be removed and satisfactory material and work substituted.

3.06 CLEAN-UP

A. Upon completion of the work of this Section, the Contractor shall remove unused equipment and implements of service, and leave the entire area involved in a neat, clean, and acceptable condition as approved by the Owner.

3.07 TESTS AND ADJUSTMENTS

A. General: The Contractor shall test equipment installed by him to show that it complies with specified requirements. Testing shall be done in a manner approved by the Architect.

*** END OF SECTION ***

SECTION 32 33 02

AQUATIC PLAY EQUIPMENT

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all aquatic play equipment as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation
- B. Section Includes:
 - 1. Aquatic play equipment
 - 2. Activation devices for aquatic play equipment
 - 3. Controllers for aquatic play equipment
 - 4. Distribution Manifold
 - 5. Drains
 - 6. Collector Tank,'
- C. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for installing concrete pads, anchor bolts and pipe sleeves cast in concrete footings.
 - 2. Section 312000 "Earth Moving" for excavation and concrete formwork

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturer.
- B. Product Data: Manufacturer's descriptive literature for specified systems, including all components.
- C. Shop Drawings: Indicate component connection details and details of interface with adjacent construction and equipment.
- D. Certificates: Certify that products of this section meet or exceed specified requirements.
- E. Manufacturer's Instructions: Indicate installation instructions for specified equipment including each component.
- F. Operation and Maintenance Data: Submit manufacturer's operation and maintenance instruction for specified equipment.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five (5) years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum of three (3) years experience or certified by the manufacturer.

D. Products Requiring Electrical Connection: Listed and classified by Underwriters' laboratories (UL) as suitable for the purpose specified and indicated.

1.05 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: Manufacturer's descriptive literature for specified systems, including all components. Product Data: Manufacturer's descriptive literature for specified systems, including all components.
- C. Shop Drawings: Indicate component connection details and details of interface with adjacent construction and equipment.
- D. Certificates: Certify that products of this section meet or exceed specified requirements.
- E. Manufacturer's Instructions: Indicate installation instructions for specified equipment including each component.
- F. Operation and Maintenance Data: Submit manufacturer's operation and maintenance instruction for specified equipment.

1.06 DELIVERY, STORAGE, AND HANDLING

 Comply with the requirements of Section 01 66 00 – Product Storage and Handling Requirements.

B. Protection:

- 1. Equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. Equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times prior to installation. Pumps motors, electrical equipment, and other equipment having anti-friction or sleeve bearings shall be stored in weather-tight warehouses that are maintained at a temperature of at least 60 degrees F.
- Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of the Architect.
- 3. Electrical equipment controls, and insulation shall be protected against moisture or water damage. Space heaters and sump pumps provided in the equipment shall be kept connected and operating at all times until the equipment is placed in service.
- 4. Store materials under cover and elevated above grade.

C. Replacements:

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of Architect at no additional cost to the Owner.

1.07 PROJECT CONDITIONS

Comply with requirements of Section 01 50 00 - Construction Facilities.

1.08 OPERATION AND MAINTENANCE DATA

Provide in accordance with Section 01 77 00 - Project Closeout.

1.09 WARRANTY

- Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 Project Closeout and 01 78 36 – Warranties and Bonds
- Extended warranty to be purchased to for collector tank to extend warranty from oen year to five years.

1.010 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Equipment not listed within these Specifications or on Drawings as furnished by the equipment supplier, but required for the complete installation of the water feature mechanical or electrical systems, shall be furnished by the Contractor.
- B. Products shown on the Drawings, but not listed in this Section, shall be provided in accordance with information shown on the Drawings and the General Provisions of this part of the Specification.

2.02 MANUFACTURER

Basis of Design: Water Odyssey™

Location: P.O. Box 807, 4600 Highway 123, San Marcos, TX 78666,

Phone: (512) 392-1155, Facsimile (512) 392-1154.

Website: www.waterodyssey.com

Contact: Myles Harvey 805-320-9007 myles@gwpark.com

2.03 AQUATIC PLAY EQUIPMENT MANUFACTURER'S RESPONSIBILTY

- Aquatic playground materials and component parts shall be guaranteed to be free from defects of materials and workmanship, for a period (two years) from date of shipment.
 Additional warranties shall include;
 - Coating system shall be warranted for a period of (two years) against peeling or fading under normal environmental conditions.
 - 2. Stainless steel pipe and anchor bases shall be guaranteed against structural failure for a period of (twenty-five) years under normal usage.
 - Controller shall be guaranteed against failure for a period of (three years) under normal usage.

2.04 ADDITIONAL INFORMATION

- A. Spray components shall be designed to operate at the specified flow rates.
- B. Anchoring, mounting and assembly hardware shall be constructed of 304/304L Stainless Steel, cast Bronze or Red Brass. All anchoring systems shall include an integrated leveling system facilitating a flat surface installation free of non-compliant protrusions. Exposed and accessible hardware shall be tamper resistant, vandal deterring, theft resistant and shall require a special tool for removal
- C. Top Plates, Component Heads and Spray Nozzles shall be constructed of materials resistant to vandalism, deterrent to theft, require special tools for removal and free from degradation in transmitting pressurized, chemically treated, potable water. Top Plates, Component Heads and Nozzles constructed of Stainless Steel, Bronze or Red Brass shall be given preference.
- D. Where color coated finishes are appropriate or specified, the color coating shall be Aqua Armor™; an elastomeric polymer that is vandal resistant, UV resistant and resistant to degradation in the presence of chemicals at measurable levels typically used to maintain proper water quality levels in swimming pools.

- E. Accessible edges shall be rounded, beveled or otherwise designed to prevent safety hazards. All components and component parts shall be designed to ensure a safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance and compliant with ASTM F1487, ASTM F2461 and CSA Z614-98 standards for public playgrounds and aquatic playgrounds.
- F. All play equipment shall be bonded/grounded per the requirements of NEC article 680 and the codes of the local jurisdiction of authority concerning non-residential, permanently installed swimming pools or fountains.
- G. Concrete footings shall be as shown on the Drawings and specified. The Contractor shall provide all labor, material and equipment to construct the concrete footings as shown and shall conform with concrete design specifications.
- H. All back fill material around the collector tank to be selected and specified by the engineer of record; anchor points of the collector tank to be specified by the engineer of record. Anchor bolts and steel wire cable to be galvanized. Refer to plans and manufacturer's drawings G00130 and G00150 for more additional information.

2.05 SPECIFIC ITEMS

- A. Glow Dome W381- 05,13,15,17
 - Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and 1" FPT inlet. It shall be supplied with 3/8" threaded anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
 - 2. Top Plate Anchors: The housing stabilizers and plate anchors shall be ½" x 5" machined brass with 30° hook bend
 - 3. Construction Cover: The temporary cover shall be a reusable flat 7" diameter HDPE (high density polyethylene) plate.
 - 4. Top Plate: The operational cover shall be a 7" diameter, slightly domed, cast bronze plate with interchangeable nozzle assembly.
 - 5. Gaskets: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
 - 6. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
 - 7. Nozzle: The interchangeable nozzle for 7" diameter operational plates shall be constructed of precision machined brass.
 - 8. Interactive water effect: The spray pattern shall be an array of outward arching streams or water.
 - 9. Hydraulic Requirements: The designed operational water supply shall be a maximum 2.5GPM @ 2PSI and produce a 10' High x 10' Throw spray pattern.
 - 10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
 - 11. As manufactured by Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154, website: www.waterodyssey.com.
- B. Aquatic Play Activation Device

Equipment List: 1 Each W009-W Water Odyssey™ Wireless Touch & Go

1. Housing: The above grade shaft, and base plate shall be constructed of 4" type 304 stainless steel with bonding/grounding connection.

- Anchors: anchors shall be (4) stainless steel concrete anchors supplied by the manufacturer.
- 3. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
- 4. Activator Housing: Activator housing shall be machined PVC and contain wireless transmitter with tactile button for stimulated sensory response.
- Transmitter: The radio frequency transmitter shall be solid state with encoded signal and integral, omni-directional antenna. Transmitter shall comply with Part 15 of the FCC Rules.
- 6. Activator Power: The Transmitter Board shall be powered by an integral 3 Volt lithium CR2477 style battery
- 7. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
- 8. Safety and Compliance: Spray feature meets ASTM safety standards, is ADA compliant, and inspected by a Certified Playground Safety Inspector prior to shipment of product.
- Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
- 10. As manufactured by Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154, website: www.waterodyssey.com
- C. Distribution Manifold and Equipment Cabinet

Equipment List:

- 1. 1 Each WMF-07 Water Odyssey™ Distribution Manifold
- 2. 1 Each WMF-07 Stainless Steel Manifold for Wall Mount Installation
 - Distribution Header: The in-ground distribution manifold header shall be 4" type 304 stainless steel pipe.
 - ii. Water Hammer Arrestor: The water hammer arrestor shall be 2" copper and brass construction with pre-set operating pressure of 10-35 PSI.
 - iii. Drain Valve: The distribution manifold header shall have a 3/4" hose bibb style drain valve constructed of cast bronze.
 - iv. Pressure Gauge: The distribution manifold header shall have a 0-60 PSI discharge side pressure gauge
 - v. Solenoid Valves: The distribution manifold header shall have (7) solenoid valves constructed of die cast bronze with stainless steel hardware, a DIN connector with 15' cord and a 24VAC UL recognized solenoid coil.
 - vi. Balancing Valves: The distribution manifold header shall include (7) true union ball valves constructed of schedule 80 PVC for balancing and throttling the discharges.
 - vii. Mounting Brackets: Type 304 stainless steel with ½" stainless steel u-bolt.
 - viii. As manufactured by Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154

D. CHR150IWF-7CWO Above Ground Equipment Cabinet System

CB1402 above grade IWF equipment cabinet system MV lid on collector tank, 3" multiport valve on sand filter, 3" return line w/flow meter and UV before 3" actuated 3 way valve for rotation between 3' tank return and 3" WO WMF-07 manifold DSC-8-16 controller, Glow Dome controller CHLORKING SAG480-CR UV system. Design feature: flow rate 124.

E. Control Panel

Equipment List:

- 1. 1 Each DSC 8-16 Water Odyssey Controller
- 2. DSC-8-16 Dynamic Sequencing Controller™
 - i. Housing: The enclosure shall carry a NEMA 4X Polycarbonate with a lockable hasp.
 - Input Power Supply: The input power supply shall be 120VAC/60 Hertz, 20 Amps capacity.
 - iii. Power Cord: The power cord shall be 6 foot, 16-3 type SJT with grounded plug
 - iv. Output Power Supply: The output power supply shall be 24VAC/60 Hertz .75 Amps
 - v. Cord Seals: The cord seals shall be PVC compression seal fittings with neoprene gland for 16-2 solenoid valve cables.
 - vi. Time Clock: The time clock shall be integral, electronic, 7 day, 24 hour.
 - vii. Interface: The user interface shall be an integral keypad with 20 keys and a 4 x 20 backlit LCD display.
 - viii. Programmable Events: The programmable events shall be timed duration, cycled, defined, random and/or cued sequencing. The events shall be field adjustable.
 - ix. Programming: The programming shall be through the keyboard interface, set at the factory and shall be field adjustable.
 - x. Safety: The Dynamic Sequencing Controller shall be ETL and Underwriters' Laboratories Listed.
 - xi. Outputs: The Controller shall have the capacity to receive 8 outputs of the specified output power supply.
 - xii. As manufactured by Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154, website: www.waterodyssey.com.

F. Drains

Equipment List:

- 4 Each W200 Water Odyssey™ Deco Drain
- W037A Deco Drain™ "Swirls" Design A
 - Sump Housing: The below grade canister shall be formed polyethylene with a 4" Slip outlet.
 - ii. Top Grate: The operational grate shall be a 12" square, constructed of heavy-duty FRP. The grate shall have a skid resistant surface urethane coating. The grate shall be ADA compliant
 - iii. Strainer Basket: The sump shall include a mesh molded polyurethane strainer basket.
 - iv. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.

- v. Hydraulic Criteria: The designed operational gravity drain capacity shall be
- vi. 50 GPM with less than a 1/2" weir water depth.
- vii. Safety and Compliance: the unit meets ASTM safety standards, is ADA compliant, and inspected by a Certified Playground Safety Inspector prior to shipment of product.
- viii. Finish: When specified for painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer.
- ix. As manufactured by Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154

G. Collector Tank

Equipment List:

- 1. 1 Each CT4000IWF4,000 Gallon Collector Tank
 - Galvanized wire cable is to be mechanically connected to rebar and at eyebolts using a minimum of three galvanized dabbles per side with clamps at each connection end point. Minimum of three anchoring points on the short side. Minimum of four anchoring points on the longer side.
 - ii. Galvanized eyebolt epoxy sealed penetration (provided by Vak Pak) is pre-installed in tank. Additional eyebolts installed beyond factory condition will void warranty.
 - iii. Manufactured by Vak Pak for Water Odyssey™/ Fountain People, Inc., P.O. Box 807, San Marcos TX, 78667, 4600 Hwy. 123, San Marcos TX, 78666, telephone: 512-392-1155, facsimile: 512-392-1154

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.
- F. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 <u>SITE AND DRAWING EXAMINATION</u>

- A. Contractors submitting a proposal for this work shall first examine the site of the proposed work that they may fully understand facilities, difficulties, and restrictions attending the execution of the contract. No subsequent allowances shall be made because of omission, error, or negligence in connection with this provision.
- B. Contractors submitting a proposal for this work shall carefully examine the architectural and structural Drawings and Specifications.

C. Questions pertaining to work that do not appear to be sufficiently detailed or explained, or pertaining to the true meaning of any part of the Drawings or Specifications, or discrepancies found existing in or between the Specifications and Drawings, shall be referred to the Architect for clarification or correction.

3.03 COORDINATION

- A. The Contractor shall cooperate with subcontractors of other trades, whose work is in any way affected by, or affects the work under this Section.
- B. The Contractor shall coordinate the work under this Section with that of other trades to effect a complete installation consistent with the requirements and intent of the Drawings and Specifications.
- C. The Contractor shall furnish materials so as to avoid delay in the progress of the work and shall store them as to prevent interference with other work.

3.04 GENERAL INSTALLATION

- A. Install and connect all equipment in accordance with manufacturer's instructions and recommendations unless otherwise noted. If specified installation is contrary to manufacturer's instructions, cease installation of affected components or systems.
- B. Notify Project Manager and the Architect and do not resume installation without clear instructions.
- C. Protect pipes, conduits, and equipment from damage from inclement weather.
- D. Parts to be cast in concrete shall be located as detailed on the Plans shall be rigidly supported to resist loads imposed during concrete pour.
- E. Water pipe lines shall be flushed free of debris as follows:
 - Completely drain water feature piping and equipment.
 - 2. Remove construction debris and thoroughly sweep all reservoirs and play area clean. Do not flush debris from play area into system drainage system.

3.05 DEFECTIVE WORK AND MATERIALS

Materials or work found to be defective or not in strict conformity with the drawings, or different from the requirements of the Drawings and Specifications, or defaced or injured, shall be removed and satisfactory material and work substituted.

3.06 CLEAN-UP

- A. Upon completion of the work of this Section, the Contractor shall remove unused equipment and implements of service, and leave the entire area involved in a neat, clean, and acceptable condition as approved by the Owner.
- Soiled, abraded, or discolored surfaces of the aquatic play area shall be cleaned and left free from blemishes or defects.

3.07 TESTS AND ADJUSTMENTS

- A. General: The Contractor shall test equipment installed by him to show that it complies with specified requirements. Testing shall be done in a manner approved by the Architect.
- B. Electrical tests:
 - 1. Electrical circuits, feeders, and equipment shall be tested and proven free of faulty grounds, open circuits, or shorts, as required by local codes.
 - 2. Contractor shall, at his expense, make the aquatic playground operational and make tests, adjustments, and corrections, until it is shown to be in proper operating condition.

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SECTION 32 80 00

PLANTING IRRIGATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all planning irrigation as shown on the Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section Includes:
 - 1. Piping.
 - 2. Encasement for piping.
 - 3. Manual valves.
 - 4. Pressure-reducing valves.
 - 5. Automatic control valves.
 - 6. Automatic drain valves.
 - 7. Transition fittings.
 - 8. Dielectric fittings.
 - 9. Miscellaneous piping specialties.
 - 10. Sprinklers.
 - 11. Quick couplers.
 - 12. Drip irrigation specialties.
 - 13. Controllers.
 - 14. Boxes for automatic control valves.

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by Manufacturers.
- B. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
- C. ET Controllers: EvapoTranspiration Controllers. Irrigation controllers which use some method of weather based adjustment of irrigation. These adjusting methods include use of historical monthly averages of ET; broadcasting of ET measurements; or use of on-site sensors to track ET.
- D. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
- E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.
- F. Performance Requirements:
 - 1. Irrigation zone control shall be automatic operation with controller and automatic control valves.

- 2. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.
- 3. Delegated Design: Design 100 percent coverage irrigation system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Zoning Chart: Show each irrigation zone and its control valve. On the inside surface of the cover of each automatic controller, prepare and mount a chart showing the valves and sprinkler heads serviced by that particular controller. Number valves to match the operation schedule and the drawings. Only those areas controlled by that controller shall be shown. The chart shall be a plot plan, entire or partial, showing building(s), walks, roads and walls. Charts shall be blackline prints with transparent colors used to show area of coverage for each station. A photostatic print of this plan, reduced as necessary and legible in all details, shall be made to a size that will fit into the controller cover. This print shall be reviewed and shall be hermetically sealed by plastic, and then be secured to the inside of the cover.
- C. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.
- D. Field quality-control reports for mainline pressure testing and other inspections required.

1.07 DELIVERY, STORAGE, AND HANDLING

- Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements.
- B. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- C. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities
- B. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
 - Notify Owner no fewer than two days in advance of proposed interruption of water service.
 - 2. Do not proceed with interruption of water service without Owner's permission.

1.09 OPERATION AND MAINTENANCE DATA

- A. Provide in accordance with Section 01 77 00 Project Closeout
- B. Operation and Maintenance Data: For sprinklers controllers and automatic control valves to include in operation and maintenance manuals.

1.010 EXTRA MATERIALS

- A. Provide in accordance with Section 01 77 00 Project Closeout
- B. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Spray Sprinklers: Equal to no fewer than 10 units of each type and size indicated.
 - 2. Bubblers: Equal to no fewer than 10 units of each type and size indicated.
 - 3. Emitters: Equal but no fewer than 10 units of each type and size indicated.
 - 4. Quick coupler Keys: Equal to no fewer than two.
 - 5. Controller Keys: Equal to no fewer than two.

1.011 RECORD DRAWINGS

- A. Provide in accordance with Section 01 77 00 Project Closeout
- B. As-Built Drawings: Before final acceptance, make sure the following information is included on the record set of drawings:
 - 1. Changes in location of items or type of installations from that indicated.
 - 2. Valves shall be numbered and corresponding numbers shall be shown.
 - Remote control valves, shut-off valves, and quick coupler valves shall be located by measured dimensions. Dimensions shall be given to permanent objects and shall be to the nearest one-half foot.
 - 4. Immediately upon the installation of buried pipe or equipment, indicate the locations of said equipment. Dimensions shall be given from permanent objects such as buildings, sidewalks, curbs and driveways.

1.012 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 - Project Closeout and 01 78 36 - Warranties and Bonds.

1.013 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.00 LATERAL PIPE AND FITTINGS

- A. Use rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with integral belled end suitable for solvent welding.
- B. Sizes: Pipe sizes indicated are nominal inside diameter unless otherwise noted.
- C. Polyvinyl Chloride (PVC) Pipe: NSF 14-78 and the following:
 - 1. Pressure Lines Upstream of Remote-Control Valves and Quick Couplers:

- Lines 2 Inches and Larger: ASTM D 2241, PVC 1120 or 1220, Class 315 (SDR 13.5).
- ii. Lines 1-1/2 Inches and Smaller: ASTM D 1785, PVC 1120 or 1220, Schedule 40.
- 2. Non-pressure Lines Downstream of Remote-Control Valves:
 - i. Lines 3/4 Inch and Larger: ASTM D 2241, PVC 1120 or 1220, Class 200 (SDR 21).
 - ii. 1/2 Inch Lines: ASTM D 2241, PVC 1120 or 1220, Class 315 (SDR 13.5).
- D. Polyvinyl Chloride Pipe Fittings and Connections: ASTM D 2464 or D 2466, Type II, Grade 1, Schedule 40, high impact molded fittings, manufactured from virgin compounds as specified for piping, tapered socket or molded thread type, suitable for either solvent weld or screwed connections. Machine threaded fittings and plastic saddle and flange fittings are not acceptable
- E. Solvent Cement: ASTM D 2564.
- F. Identification:
 - 1. Furnish plastic pipe continuously and permanently marked with following information: Manufacturer's name or trade mark, size, class and type of pipe, working pressure at 73.4 degrees F, and NSF rating.
 - 2. Furnish fittings permanently marked with following information: Nominal pipe size, type and schedule of material, and NSF seal of approval.

2.01 BRASS PIPE, FITTINGS, AND CONNECTIONS

- A. Pipe: ASTM B 43, IPS, Standard weight, 125 pounds, 85 percent red brass.
- B. Fittings and Connections: ANSI B16.15-85, Standard 125-pound class, threaded, 85 percent red brass.

2.02 GALVANIZED IRON PIPE, FITTING AND CONNECTIONS

- A. Pipe: ASTM A 53, standard weight.
- B. Fitting and Connections: ANSI B16.3-85, Class 150, zinc coated or ANSI B16.4-85, Class 125, zinc coated.
- C. Thread lubricant shall be Teflon ribbon-type, suitable for threaded installations as per manufacturer's recommendations.

2.03 AUTOMATIC CONTROL COMPONENTS

- A. Automatic Controller: The contractor shall verify the location of the existing irrigation controller. Existing controller shall be protected in place. New controllers shall be installed per plan, if applicable.
- B. Automatic Control Wire: Electric wiring runs from controller to the automatic control valves shall be No. 14 (colors) Direct Burial AWG-F wire. All common wire shall be No. 12 (white). Manufacturer: Paige or approved equal.
- C. Remote Control Valves: Normally closed electrically actuated diaphragm type, all brass and stainless-steel construction. 24-volt solenoid, one-piece epoxy encapsulated and coated, operate on 2 watts real power. Removable top and serviceable seat disc, manual bleed and flow control. Diaphragm one-piece molded construction with integral "O" ring seal reinforced with 600-pound test fabric. Capable of multiangle installation and manual slow closing operation without electrical power.
- D. Remote Control Drip Assembly Valve: Drip irrigation zones must include control valve, filtration, and pressure regulation components sized to meet the hydraulic demands and flow requirements of the zones that they service.

- E. Irrigation Controller 2 Wire (Maxi) to Decoder Communication Path.
 - 1. Communication wire between the SDI/LDI and the Decoder must utilize MAXI wire communication. Specifications shall be as follows:
 - i. MAXI Wire, Hardwire Communications: the MAXI Type Communication wire for the Two-Wire paths shall be double jacketed, two-conductor cable intended for control of the Communications Signal and Feed-back Signal for the Rain Bird Central Computerized Control Systems. The cable shall be suitable for direct burial in the earth and also may be installed in ducts or conduits.
 - ii. Conductors: The Conductors shall be tin coated (for good mechanical bonding), soft drawn, annealed solid copper conforming to the requirements of ASTM-33. Each conductor shall be insulated with 4/64" (minimum) thick PVC conforming to the requirements of U.L. Standard #493 for thermoplastic insulated underground feeder cables (TYPE UF).
 - a) The two (2) conductors shall be color coded with one conductor black and the other red. Both conductors shall be of the same size and shall be of sizes as specified and/or shown on the drawings and a required for the proper operation of the Satellite and Decoder units connected to it.
 - b) The wire manufacturer (not the wire broker) shall certify in writing, for each shipment, that the insulated conductors have been tested for and meet the requirements of U.L. Standard #493 for thermoplastic-insulated, underground feeder cables (TYPE UF). He shall also certify in writing that the individual conductors have a minimum insulation thickness of 4/64" throughout the entire length of the cable and that the finished cable meets the following requirements of the same standard:
 - Dielectric Voltage Withstand Test: 5000V for 60 Seconds
 - Tension and Elongation Test: 300 lbf, no separation
 - Impact Test: 6000V after the impact
 - Crushing Resistance Test: an average of no less than 4500 lbf flat
 - Crushing Resistance Test: an average of no less than 1200 lbf edge
 - Cold Bend Test: No Cracks
 - iii. Water Absorption: In addition, each shipment of cable shall include a current dated listing card from the Underwriters showing the MANUFACTURER'S U.L. IDENTIFICATION NUMBER as evidence that the MANUFACTURER is approved to manufacture thermoplastic insulated underground feeder cable in accordance with the U.L. Standard #493.
 - iv. Outer Jacket: the two (2) conductors shall be laid parallel and covered with a Solid Color, HIGH DENSITY, sunlight resistant polyethylene outer jacket, of the color coding specified and conforming to the requirements of ICEA S-61-402 and NEMA WC 5. The MINIMUM jacket thickness, when measured at any point in contact with the PVC insulation of the copper conductor and to the outer surface of the outer jacket, shall be 3/64" thick. The outer jacket shall be PRESSURE EXTRUDED so as to COMPLETELY FILL the interstices between the two insulated wires. The polyethylene outer jacket shall conform to the following:
 - v. The entire outer polyethylene jacket shall be of the color specified for easy identification of the Two-Wire path. Each Two-Wire Path on the system shall have a different color outer jacket for easy identification after installation and for easily distinguishing between the various Two-Wire paths on the system. Standard colors

- for the outer jacket color-coding shall be White, Red, Green, Blue, Yellow, Orange and Black.
- vi. The MAXI® Type Cable SHALL be marked on the jacket as follows MAXI TYPE COMMUNICATION CABLE 2/C ## AWG, along with the manufacturer's name and identification number (which is mandatory) and other designations, such as, voltage rating, etc., as may be appropriate. The wire shall not be marked with any other designation, except as noted above.
- vii. The manufacturer shall also certify in writing that the POLYETHELENE outer jacket is of minimum thickness (3/64") throughout the entire length of the cable and that it does meet and conform to the requirements of ICEA S 61 402 and NEMA WC 5 as outlined above for both Electrical Properties and Physical Properties.
- viii. The cable shall be shipped on non-returnable wood reels, in the lengths and color-coding outer jacket color as specified.
- ix. The MAXI Type Communication Cable, for the Two-Wire Paths of the various Rain Bird control systems shall meet or exceed the above specifications in all respects and all written certifications from the manufacturer shall be supplied with the wire as outlined and called for in these specifications.
- F. The ESP-LXD Controller shall be of a hybrid type that combines electro-mechanical and micro-electronic circuitry capable of fully automatic or manual operation. The controller shall be housed in a wall-mountable, weather-resistant plastic cabinet with a key-locking cabinet door suitable for either indoor or outdoor installation. The controller shall have the ability to be programmed and operated in any one of six languages: English, Spanish, French, German, Italian, and Portuguese. The display shall show programming options and operating instructions in the chosen language without altering the programming or operation information.
- G. The controller shall have a base station capacity of 50 stations with two additional expansion slots capable of receiving ESPLXD-SM75 station modules to create a controller capacity of up to 200 stations. All stations shall have the capability of independently obeying or ignoring any weather sensor as well as using or not using the master valves. Station timing shall be from 0 minutes to 12 hours. The controller shall have a Seasonal Adjustment by program which adjusts the station run time from 0 to 300% in 1% increments. The controller shall also have a Monthly Seasonal Adjustment of 0 to 300% by month. Station timing with Seasonal Adjustment shall be from 1 second to 16 hours.
- H. The controller shall have 4 separate and independent programs which can have different start times, start day cycles, and station run times. Each program shall have up to 8 start times per day for a total of 32 possible start times per day. The 4 programs shall be allowed to overlap operation based on user-defined settings which control the number of simultaneous stations per program and total for the controller. The controller shall allow up to 8 valves to operate simultaneously per program and total for the controller including the master valves.
- I. The controller shall have a 365-day calendar with Permanent Day Off feature that allows a day(s) of the week to be turned off on any user selected program day cycle. (Custom, Even, Odd, Odd31, & Cyclical). Days set to Permanent Day Off shall override the normal repeating schedule and not water on the specified day(s) of the week. The controller shall also have a Calendar Day Off feature allowing the user to select up to 5 dates up to 365-days in the future when the controller shall not start programs. The controller shall incorporate a Rain Delay feature allowing the user to set the number of days the controller should remain off before automatically returning to the auto mode.
- J. The controller shall have Cycle+Soak water management software which is capable of operating each station for a maximum cycle time and a minimum soak time to reduce water run-off. The maximum cycle time shall not extend by Seasonal Adjustment.

- K. The controller shall incorporate a FloManager feature providing real-time flow, power, and station management. FloManager shall manage the number of stations operating at any point in time based on water source capacity, station flow rate, number of valves per station; user-defined simultaneous stations per program and for the controller. The controller shall provide station priorities to determine the order in which stations shall operate. The controller shall ignore the station number and instead operate the highest priority stations first and the lower priority stations last.
- L. The controller shall offer Water Windows for each program. This function sets the allowed start and stop time where watering is allowed. If the watering cannot be completed by the time the Water Window closes, the stations with remaining run time are paused and watering automatically resumes when the Water Window opens the next time.
- M. The controller shall include an integrated Flow Smart Module with flow sensing functionality. The Flow Smart Module shall accept sensor decoder input from 1 - 5 flow sensors with no flow scaling device required.
- N. A FloWatch Learn Flow Utility which learns the normal flow rate of each station shall be included. Each time a station runs FloWatch compares the current real-time flow rate to the learned rate and takes user-defined actions if high flow, low flow, or no flow is detected. FloWatch shall automatically determine the location of the flow problem and isolate the problem by turning off the affected station(s) or master valve(s). FloWatch shall be compatible with both normally closed and open master valves. A Manual Master Valve Water Window shall be provided to coordinate daytime manual watering with the flow sensing. This Water Window shall offer programmable days of the week and manual watering additional flow rate.

2.04 SPRINKLER HEADS

- A. Pop-up Spray Type: Full or part circle pop-up spray type sprinkler body, stem, nozzle and screen constructed of heavy-duty plastic. The sprinkler shall have a soft wiper seal for cleaning debris from pop-up stem as it retracts into case to prevent sprinkler from sticking up. The sprinkler shall have a matched precipitation rate plastic nozzle with an adjusting screw capable of regulating the radius and flow. The sprinkler shall have a strong stainless steel retract spring for positive pop down. Pop-up height shall be as indicated. The sprinkler head shall have a screen under the nozzle to protect it from clogging and for easy removal for cleaning and flushing system. The sprinkler head shall have a bottom inlet and may have a side inlet for ease of installation.
- B. Pop-up Rotary Type: Rotary sprinkler of the gear driven type, capable of covering a maximum foot radius at psi with a maximum discharge rate of gpm. Nozzles shall be available for true matched precipitation rates.
- C. The sprinkler shall be available in adjustable arc or in full or part circle configuration. The adjustable arc sprinkler shall be adjustable from 40 degrees to 360 degrees in 1-degree increments. Adjustments shall be made from the top of the riser assembly in either the up or down position. The part circle unit shall be a fixed arc type available in 90 degree and 180-degree arcs.
- D. The pop-up sprinkler shall pop-up 6 inches with nozzle discharge point 3-3/4 inches above grade. Nozzle shall be integrally molded multiple orifice type that can be changed with tools included. Radius shall be adjustable by means of a plastic, Allen diffuser pin. Nozzle turret shall be molded with a service indentation to accept a tool for raising nozzle piston for service.
- E. The sprinkler shall have a ¾-inch NPT inlet and shall be accessible by a threaded cap for easy service.
- F. The body of the sprinkler shall be constructed of non-corrosive heavy-duty ABS. The sprinkler shall be equipped with a filter screen for debris stoppage. The sprinkler shall also

- be available in shrub model with the same nozzle package. The sprinkler shall carry a 3-year unconditional warranty.
- G. All sprinkler heads with similar functions shall be of common manufacture and, with the exception of shrubbery heads, shall be marked with the manufacturer's name and identification in a position where they may be identified without being removed from the system.

2.05 VALVES AND VALVE ASSEMBLIES

- A. Quick Coupler Assembly:
 - 1. Quick Coupler Valves: 1 inch size, double lugged, locking cap, all brass or bronze construction with vinyl yellow top.
 - 2. Quick Coupler Key: Brass or bronze with a hose bib assembly.
- B. Ball Valves: Valve shall be Type I, Grade 1 polyvinyl chloride (PVC) type 1220, of double true union design, with Teflon seats and Viton "O" rings. Valve shall have a pressure rating of 150 psi (10.5 kg/sq cm).
- C. Anti-drain Valves: Plastic construction, with soft composition disc, stainless steel internal parts, and with spring tension adjustable from 4 psi to 15 psi. Valves shall prevent low head drainage quickly and positively after RCV shut-off.
- D. Backflow Preventer: Backflow preventers are existing. Contractor to protect in place.

2.06 MATERIALS AND EQUIPMENT FOR DRIP IRRIGATION

- A. Flexible Hose for Drip Emitters: Nonrigid vinyl chloride hose extruded from V-38-3A high temperature formulation as specified in ASTM D 2287, uniformly black in color. Hose shall have a laboratory proven effective algaecide compounded into the formula.
 - 1. PVC hose shall meet or exceed the following criteria:

Durometer Hardness "C" scale C-77

Specific Gravity (nominal P 23 deg. F) 1.34

Tensile Strength (min. PSI) 3000

2. Emitter Hose: Acceptable product or equal:

Salco Products, Inc.; PVC-AR

- B. Fittings: Schedule 40, Type I, Grade 1, polyvinyl chloride (PVC), ASTM D 1784 and ASTM D 2466; uniformly white in color.
- C. Gravel: Clean, crushed aggregate, pea size.
- Plush Valve: Integrally molded virgin PVC ball valve with CPVC ball, Teflon seats and Viton "O" rings.
 - Provide flexible dual-layered pressure-compensating sub-surface dripline manufactured by Rain Bird or equal, with emitter spacing and dripline row spacing as indicated on irrigation drawings.
 - 2. Provide insert or compression fittings that are compatible with inline emitter tubing as indicated on irrigation drawings.
 - Sub-Surface Dripline with pressure-compensating inline emitters. Sub-Surface Dripline
 model numbers for POTABLE water systems; a dual-layered, brown colored dripline
 tubing with emitter flow rates and spacing refer to irrigation plans.

2.07 ACCESSORY MATERIALS

- A. Valve Boxes: Boxes shall be plastic valve boxes with lockable covers. Minimum sizes of valve boxes shall be as follows:
 - 1. Remote Control Valves: 16" by 10".
 - 2. Gate, Globe, and Ball Valves: 10" inch diameter.
- B. Tracer Wires: No. 12, Type TW plastic coated copper wires.
- C. Concrete for thrust blocks and footings shall conform to Section 03300 for compressive strength of 2,250 psi concrete at 28 days.
- D. Sand bed and backfill shall be Class A clean fill sand for piping under paved roads.

2.08 DRIP IRRIGATION COMPONENTS

- A. Drip Assembly Control Valve
 - 1. General Information
 - i. Provide drip assembly control valve as indicated on construction drawings.
 - ii. Control zone assemblies for dripline irrigation zones must include control valve, filtration, and pressure regulation components sized to meet the hydraulic demands and flow requirements of the zones that they service.
 - Rain Bird Medium Flow Commercial Control Zone Kits for dripline zones with flows from 3.0 to 20.0 GPM (11.4 to 75.7 lpm), including, Rain Bird PESB valve with PVC ball valve and pressure regulating quick-check basket filter and Rain Bird PGA valve with pressure regulating basket filter.
 - i. PEB Available model numbers:
 - XCZ-100-PRB-COM [1" (25 mm) PVC ball valve, 1" (25 mm) Rain Bird PESB valve, and 1" (25 mm) PRB-QKCHK-100 quick check pressure regulating basket filter]
 - ii. PEB valve assembly component specifications must include:
 - a) 1" (25 mm) PVC full-port ball valve with female threaded inlet and outlet connections
 - b) PESB valve body and bonnet constructed of durable glass-filled nylon, stainless steel and other chemical/UV resistant materials
 - c) Diaphragm constructed of a durable Buna-N rubber material reinforced with nylon
 - d) One-piece solenoid with captured plunger and 90 mesh (200 micron) solenoid filter
 - e) External bleed for manual system flushing during start-up, internal bleed for manual zone activation during maintenance operations
 - f) Inlet pressure rating: 20 to 200 PSI (1,4 to 13,8 bar)
 - g) Female threaded inlet and outlet connections
 - iii. Pressure Regulating Quick Check Basket Filter combines filtration and pressure regulation in one integrated unit for protection of downstream components of drip irrigation system. Pressure regulating basket filter component specifications must include:
 - a) Basket style body and jar-top cap constructed of heavy-duty glass-filled, UV-resistant polypropylene, with 150 PSI (10,3 bar) operating pressure rating.

- Maximum dimensions of filter body; Height: 6 1/2" (16,5 cm), Length: 6 1/2" (16,5 cm), Width: 3 1/2" (8,9 cm)
- b) Indicator incorporated into filter cap that changes color from green to red during operation when the filter element requires cleaning.
- c) Standard 200 mesh (75 micron) filter screen constructed of stainless steel attached to propylene frame. Screen is serviceable for cleaning purposes by unscrewing cap from filter body and removing filter element.
- d) Normally-open in-line pressure regulating device, constructed of durable, UV resistant non-corrosive material able to accommodate an inlet pressure rating of not less than 150 PSI (10,3 bar), with preset outlet pressure of approximately 40 PSI (2,8 bar). Pressure regulating device allows full flow with minimal pressure loss unless inlet pressure is greater than preset level. As inlet pressure increases above preset level, internal spring compresses to reduce downstream pressure.
- e) Male threaded 1" (25 mm) inlet and outlet connections.

B. Rain Bird XF Series Dripline Components

- Rain Bird XFCV Dripline with Heavy-Duty Check Valve and pressure-compensating inline emitters.
 - i. Available Rain Bird XFCV Dripline with Heavy Duty-Check Valve model numbers for POTABLE water systems; brown colored dripline tubing with emitter flow rates and spacing as shown:
 - Rain Bird XFCV-06-12; 0.6 GPH (2,3 lph) emitters spaced 12" (30,5 cm) oncenter
 - Rain Bird XFCV-06-18; 0.6 GPH (2,3 lph) emitters spaced 18" (45,7 cm) oncenter
 - Rain Bird XFCV-09-12; 0.9 GPH (3,4 lph) emitters spaced 12" (30,5 cm) oncenter
 - d) Rain Bird XFCV-09-18; 0.9 GPH (3,4 lph) emitters spaced 18" (45,7 cm) oncenter
 - ii. Required dripline tubing material and performance specifications include:
 - a) XFCV tubing; dual-layered, brown in color, conforming to an outside diameter (O.D.) of 0.634 inches (16 mm) and an inside diameter (I.D.) of 0.536 inches (13,6 mm) and wall thickness of 0.049 inches (1,2 mm)
 - b) Inline emitter that includes a 3.5psi check-valve to facilitate 8ft of holdback
 - c) Factory installed, pressure-compensating, inline emitters welded to the inner circumference of the polyethylene tubing at spacing specified by model number
 - d) Inline emitters designed to pressure-compensate by lengthening the emitter's turbulent flow path (Rain Bird patent pending)
 - e) Consistent flow rate from each installed inline emitter when emitter inlet pressure is supplied between recommended operating range of 8.5 to 60 PSI (0,7 to 4,1 bar)
 - Required filtration for XF Series dripline tubing and emitters is 120 mesh (125 micron)

2. Rain Bird XF Series Dripline Tubing Insert Fittings

 Available model numbers, designed for compatibility with Rain Bird XF Series Dripline Tubing:

- a) Tee: XFF-TEE insert tee (17 x17 x 17 mm)
- b) Coupling: XFF-COUP insert coupling (17 x 17 mm)
- c) Elbow: XFF-ELBOW insert elbow (17 x 17 mm)
- d) Cross: XFD-CROSS insert cross (17 x 17 x 17 x 17 mm)
- e) Insert Adapters:
 - 1/2" (13 mm) Male pipe thread adapter: XFF-MA-050 [17 mm x 1/2" (13 mm) MPT]
 - 3/4" (19 mm) Male pipe thread adapter: XFF-MA-075 [17 mm x 3/4" (19 mm)MPT]
 - 3/4" (19 mm) Female pipe thread adapter: XFD-FA-075 [17 mm x 3/4" (19 mm)FPT]
 - 1/2" (13 mm) Tee male pipe thread adapter: XFF-TMA-050 [17 mm x 1/2" (13 mm)MPT x 17 mm]
 - 3/4" (19mm) Tee female pipe thread adapter: XFD-TFA-075 [17 mm x 3/4" (19 mm)FPT x 17 mm]
- ii. XF Series insert fitting specifications and features include:
 - a) Constructed from black and/or brown acetyl plastic for long-term, leak free connections
 - b) Intended for use with polyethylene tubing with ID of 0.536" (13,6 mm), including Rain Bird XF Dripline and XF Series Blank Tubing
 - c) Operating pressure range is 0 to 50 PSI (0 to 3,5 bar)
- 3. Rain Bird Air Relief Valves

Available model numbers, designed for compatibility with Rain Bird XF Series Dripline Tubing:

ARV050 Air Relief Valve; includes 1/2" (13 mm) air relief valve.

- C. Rain Bird Point Source Irrigation Emission Devices
 - 1. General Information
 - Provide low-volume point-source emission devices, manufactured by Rain Bird, to efficiently deliver irrigation water at the plant root zone as indicated on construction drawings.
 - 2. Rain Bird Single-outlet Xeri-Bug™ Emitters
 - i. Available model numbers with 10-32 threaded inlet:
 - 1) XB-10PC-1032 (Black); 1.0 GPH (3,79 lph)
 - 2) XB-20PC-1032 (Red); 2.0 GPH (7,57 lph)
 - ii. Single-outlet Xeri-Bug Emitter specifications and features include:
 - 1) Available with three inlet options:
 - a) Self-piercing barb inlet; Emitters with self-piercing barb inlet permit one-step insertion into 1/2" (13 mm) or 3/4" (19 mm) drip tubing when installed with Rain Bird Xeriman tool.

- b) 10-32 threaded inlet; Emitters with 10-32 threaded inlet allow threaded connection into PolyFlex Riser, 1032 Thread Adapter, or 1800 Xeri-Bubbler Adapter
- c) 1/2" (13 mm) threaded inlet; Emitters with 1/2" (13 mm) threaded inlet allow threaded connection into 1/2" (13 mm) PVC male adapter.
- 2) External surfaces constructed from UV resistant acetyl materials
- 3) Self-flushing to minimize clogging
- 4) Color-coded to identify flow rate;
 - Blue emitter indicates a flow rate of 0.5 GPH (1,89 lph)
 - Black emitter indicates a flow rate of 1.0 GPH (3,79 lph)
 - Red emitter indicates a flow rate of 2.0 GPH (7,57 lph)
- 5) Pressure-compensating over the pressure range of 15 to 50 PSI (1,0 to 3,5 bar) with consistent flow rate of 1.0 GPH (3,79 lph) over this pressure range

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.
- F. Before start of installation of the irrigation system, examine the site to:
 - 1. Verify location of existing underground utilities valves, manholes, catch basins, and other appurtenances that will affect the layout of the sprinkler system.
 - 2. Verify location of existing trees, new specimen trees, and other obstructions that will affect the layout of the sprinkler system.
 - 3. Verify location of stub outs and points of connection to the water supply system.
 - 4. Verify grades to determine that work may safely proceed, keeping within the specified trench depths.
- G. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Locations indicated are diagrammatic and approximate only and shall be changed and adjusted as necessary and as directed to meet existing conditions and obtain complete water coverage.
- B. Sprinkler lines shall have a minimum clearance of 6 inches from each other and from other utility lines. Do not install parallel lines directly over one another.
- C. Stake out locations of all pipe, valves, equipment and irrigation heads and emitters using an approved staking method and maintain the staking of the approved layout until installation is completed.

3.03 EXCAVATION AND BACKFILLING OF TRENCHES

- A. Excavation and backfilling of trenches shall comply with Section 312000 and the following additional requirements:
 - 1. When trenching through areas where topsoil has been spread, deposit topsoil on one side of trench and subsoil on opposite side.
 - 2. Provide sand bedding a minimum of extending 2 inches under, around and 2 inches above top of pipe for PVC plastic pipe and brass piping.

3.04 INSTALLATION OF PIPE

A. Polyvinyl Chloride Pipe:

- Pipe shall be cut using approved PVC pipe cutters only. Sawed joints will not be permitted. All field cuts shall be beveled to remove burrs and excess before fitting and gluing together.
- 2. Pipe ends and fittings shall be wiped with MEK, or other primer recommended by the pipe manufacturer, before welding solvent is applied. Socket joints shall be made in accordance with recommended procedures for joining PVC plastic pipe and fittings with PVC solvent cement by the pipe and fitting manufacturer and procedures outlined in the Appendix of ASTM D 2564. Welded joints shall be given a minimum of 15 minutes to set before moving or handling.
- When connection is plastic to metal, PVC female adapters shall be used with short (not close) brass threaded nipples if needed to complete the connection. Joints shall be made with 2 wraps of Teflon tape and hand tightened plus one turn with a strap wrench.
- Assemble and place pipe lines having rubber ring seal joints in accordance with manufacturer's written instructions.
- 5. Snake pipe from side-to-side of trench bottom to allow for expansion and contraction.
- Center load pipe with small amount of backfill to prevent arching and slipping under pressure. Leave joints exposed for inspection during testing.
- 7. No water shall be permitted in the pipe until inspections have been completed and a period of at least 24 hours has elapsed for solvent weld setting and curing.
- At changes of direction of 45 degrees or more for pipes 2-1/2 inches and larger, construct concrete thrust blocks against undisturbed earth with sufficient bearing to resist the thrust of water.

B. Installation of Brass and Galvanized Iron Pipe:

- Cut piping by power hacksaw, circular cutting machine using an abrasive wheel, or hand hacksaw. Do not cut brass piping with metallic wheel cutter of any description. Ream and remove rough edges or burrs so smooth and unobstructed flow is obtained.
- 2. Make threaded pipe connections using Teflon tape applied to male threads only.
- C. Dielectric bushings shall be used for connections of piping of dissimilar metal materials.

D. Tracer Wires:

- 1. Install tracer wire on all nonmetallic (plastic) irrigation main lines.
- 2. Place the tracer wire on the bottom of the trench under the vertical projection of the pipe. Splice and solder joints and cover them with insulation type tape.
- 3. Tracer wire shall follow the main line pipe and branch lines and terminate in the yard box with the control valves. Provide enough length of wire or tape to make a loop and attach a "Dymo-Tape" type plastic label with the designation "Tracer Wire".

3.05 INSTALLATION OF AUTOMATIC CONTROL COMPONENTS

A. Automatic Sprinkler Controller: Test the controllers after completion of electrical connections. Make connections to control wiring within the enclosure of the controller. All wire shall follow the pressure main insofar as possible.

B. Remote Control Wiring:

- 1. Install direct burial AWG F wire a minimum of 18 inches below finish grade and minimum of 4 inches from pipe or fittings except at terminal points.
- 2. Install control wires and irrigation piping in common trenches wherever possible.
- 3. Wire Splices: Allow only on runs of more than 300 feet, spliced as follows:
 - i. Strip off minimum of 2-1/2 inches of insulation from each wire.
 - ii. Twist on Scotchlok electrical spring connector, minimum 4 complete turns.
 - iii. Seal connector in epoxy resin.
 - iv. Tape completed splice with Scotch 33 electrical tape.
- C. Remote Control Valves: Install remote control valves in locations indicated, with a cover of 8 inches minimum over top of flow control stem. Install a union type connection. Fit each valve with a valve box, set over 1 cubic foot of pea gravel, and a cover.

3.06 INSTALLATION OF SPRINKLER HEADS

Nozzle size of heads shall be adjusted to suit any particular conditions of the area. This shall be done after the system has been thoroughly tested, immediately after written notification by the Architect to do so.

3.07 INSTALLATION OF VALVES AND VALVE ASSEMBLIES

- A. Quick Coupler Assembly: Set valves plumb and true to finish grade and a maximum of 12 inches from paving, walks, headers or curbs. Connect to PVC pressure piping with brass nipple set in a concrete thrust block as indicated.
- B. Valve Boxes: Install valve boxes as indicated. Install no more than one valve per box. Stencil valve number and controller letter on underside of valve box lid.
- C. Existing backflow preventer protect in place.

3.08 FIELD QUALITY CONTROL

- A. Testing: Subject the main and lateral lines to a pressure test of 125 psi for a period of 4 hours. Perform testing in the presence of the Architect. Obtain approval before backfilling trenches. Do not cover lines until they have been inspected and approved.
- B. Inspection: In cases where inspection of the sprinkler system construction is required or where portions of the construction are specified to be performed under the direction or inspection of the Architect, notify the Architect at least 3 working days in advance of the time such inspection or direction is required.
- C. Inspection will be required for the following parts of the construction:
 - Upon installation and testing of main lines and lateral lines; when pipes are laid and are
 to be submitted to pressure tests. Do not cover lines until they have been inspected and
 approved.
 - 2. Upon installation and testing of valves, quick couplers, automatic controllers, and control valves and wires.
 - 3. When the sprinkler system is completed, perform a coverage test, in the presence of the Architect, to determine if the coverage of water afforded the lawn and planting areas is

complete and adequate. Furnish materials and perform construction required to correct inadequacies in the coverage.

- 4. Final inspection and performance test shall be at the same time as the final inspection of the landscape construction.
 - i. Mainline and valve layout 2-day notice
 - ii. Mainline Pressure Test 3-day notice
 - iii. Coverage Test 3-day notice
 - iv. Final inspection 7-day notice

3.09 CLEAN-UP

As project progresses, maintain the site in a neat manner and remove unsightly debris as necessary. After completion of construction, remove debris and containers used in accomplishing construction. Sweep and clean sidewalks, asphalt, and concrete areas adjacent to plantings.

*** END OF SECTION ***

SECTION 32 91 13

SOIL PREPARATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section

1.02 SCOPE OF WORK SUMMARY

- A. Prepare soil as specified herein, including all materials and labor for a timely, complete, and proper completion of the work.
- B. Section includes planting soils specified by composition of the mixes.
- C. Related Requirements:
 - 1. Section 31 10 00 "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Section 32 92 00 "Turf and Grasses" for placing planting soil for turf and grasses.
 - 3. Section 32 93 00 "Plants" for placing planting soil for plantings.

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards for completion of the work.
- B. AAPFCO: Association of American Plant Food Control Officials.
- C. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- D. CEC: Caution exchange capacity.
- E. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- F. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- G. Imported Soil: Soil that is transported to Project site for use.
- H. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- I. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- J. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through inter laboratory sample exchanges and statistical evaluation of analytical data.
- K. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- L. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- M. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

- N. SSSA: Soil Science Society of America.
- O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- P. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- Q. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- R. USCC: U.S. Composting Council.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 <u>SUBSTITUTIONS</u>

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of product. Include recommendations for application and use.
- C. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.07 <u>DELIVERY, STORAGE, AND HANDLING</u>

- A. Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements
- B. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

C. Bulk Materials:

- 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
- 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
- 3. Do not move or handle materials when they are wet or frozen.
- Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.08 PROJECT CONDITIONS

Comply with the requirements of Section 01 50 00 - Construction Facilities.

1.09 OPERATION AND MAINTENANCE DATA

Not applicable.

1.10 EXTRA MATERIALS

Not applicable.

1.11 RECORD DRAWINGS

Provide in accordance with Section 01 77 00 - Project Closeout.

1.12 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 - Project Closeout and 01 78 36 - Warranties and Bonds.

1.13 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 PLANTING SOILS SPECIFIED BY COMPOSITION

- A. General: Follow the recommendations as per the Waypoint Analytics soil testing report included in the plans.
- B. Planting-Soil Type for turf areas and non-desert plants: Existing, on-site surface soil, with the duff layer, if any, retain and stockpiled on-site; modified to produce viable planting soil. For bidding: Blend existing, on-site surface soil with the soil amendments and fertilizers as shown on the plans to produce planting soil.

PART 3 - EXECUTION

3.01 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.02 PREPARATION OF SOIL BEFORE AMENDING

Soil Conditioning: All planting areas with a grade of 3:1 or flatter shall be graded to finish grade allowing for amendments, then incorporate the recommended amendments evenly into the top 4" -6" of soil for each 1000 square feet of area; do not add amendments for desert plants unless the soils report indicates to do so.

3.03 BLENDING PLANTING SOIL IN PLACE

- A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of 4- 6inches Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- C. Mixing: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.

- 1. Mix lime and sulfur with dry soil before mixing fertilizer if required by soils report.
- Mix fertilizer with planting soil no more than seven days before planting.
- D. Compaction: Compact blended planting soil to 75 to 85 percent of maximum Standard Proctor density according to ASTM D 698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.04 PROTECTION

- A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- B. If planting soil or subgrade is over-compacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

3.05 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
- C. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

*** END OF SECTION ***

SECTION 32 92 00

TURF AND GRASSES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all turf and grasses, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section Includes:
 - 1. Hydrostolonizing
 - 2. Seeding.
 - 3. Turf renovation.
- C. Related Requirements:

Section 32 93 00 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

1.03 STANDARDS AND REFERENCES

- A. Comply with Industry Standards and References as established by the Manufacturer as applicable.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.
- F. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 - Substitution Procedures.

1.06 SUBMITTALS

A. Qualification Data: For landscape Installer.

- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - Certification of each seed mixture for turfgrass/sprigs/seed. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For fertilizers, from manufacturer.
- Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.07 <u>DELIVERY, STORAGE, AND HANDLING</u>

- A. Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements.
- B. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.09 OPERATION AND MAINTENACE DATA

- A. Provide in accordance with Section 01 77 00 Project Closeout
- B. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.010 EXTRA MATERIALS

Not required.

1.011 RECORD DRAWINGS

Not required.

1.012 WARRANTY

Provide Manufacturer's Standard Warranty in accordance with Sections: 01 77 00 - Project Closeout and 01 78 36 - Warranties and Bonds.

1.013 LEED™ CERTIFICATION

Not required.

PART 2 - PRODUCTS

2.01 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species:

- 1. Quality: State-certified seed of grass species as listed below for solar exposure.
- 2. Full Sun: Perrenial Ryegrass for winter months overseeding purposes.

2.02 FERTILIZERS

Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

- A. Composition: 12 of actual nitrogen, 9 percent phosphorous, and 8 percent potassium, by weight. 15 15 -15 (turf maintenance).
- B. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.03 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.04 MULCHES

- A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- B. Nonasphaltic Tackifier (M Binder): Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
 - Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.
- D. Correct conditions detrimental to timely and proper complete of the Work.
- E. Do not proceed until unsatisfactory conditions are corrected.
- F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.03 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 32 91 13 "Soil Preparation".
- B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- C. All natural turf field surface areas are to be compacted to at least 93% of maximum dry density by mechanical means as determined by ASTM D 1557-02 The Contractor shall be responsible for maintaining appropriate soil moisture prior to and during compaction activities, the cost of which is to be included in the contract price. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.04 OVERSEEDING

- A. Overseeding of Hybrid Bermuda Turf will be required during maintenance period prior to final acceptance if project installation takes place after October 1 or when evenings are consistently cool (approximate ambient temperature below 68), unless overseeded sod is installed prior to maintenance period. It is the contractor's responsibility to determine the best time to overseed to insure proper germination.
- B. Turn water off of Bermuda grass for at least three days to encourage dormancy.
- C. Mow turf to height that will permit proper seed germination.
- D. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph
 - Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- E. Sow seed at a total rate of 10 lb/1000 sq. ft.
- F. Water with fine spray.

- G. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.
 - Protect seeded areas from hot, dry weather or drying winds by applying compost mulch or topping mix within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch.
- H. Apply 15-15-15 commercial fertilizer to be applied at a rate of 6 pounds per 1000 square feet.

3.05 HYDROSEEDING

- A. Irrigate areas to be hydroseeded prior to installation. Soil shall be damp to a depth of 2".
- B. The minimum planting rate is 4 pounds per thousand square feet
- C. Wood Fiber Mulch Application Rate: 2000 lbs per acre
- D. M-Binder 120 lbs per acre
- E. Fertilizer Application Rate: 300 lbs per acre
- F. Season for Application: Before September 15 unless approved by County.
- G. Hydraulic equipment: Slurry application of prepared fiber mulch shall be of the "Super Hydro seeder" type, or other approved types.
- H. Irrigation must begin immediately upon completion of planting and continuously keep the sprigs and soil moist for a period of seven (7) to ten (10) days. When evidence of green foliage and rooting is visible, irrigation practices may be modified to the soil and plant's needs. Irrigate thoroughly to provide good moisture penetration after sod is laid.
- I. The slurry shall be processed in such a manner that it will contain no growth or germination inhibiting factors and shall be dyed an appropriate color to facilitate metering of materials.
- J. Operations may proceed only after free surface water resulting from recent rains or mechanical watering has drained away. Other moisture and weather considerations should be used as guides as if normal grassing practices were to be conducted.
- K. The mulch and water shall be combined into the slurry tank for distribution of all ingredients in one operation by hydraulic method. The slurry mixture shall be so regulated that the amounts and rates of application shall result in a uniform application of all materials.
- L. After hydro mulch has been applied and allowed to dry, the seeded area shall be sprinkled, with a fine spray of water to prevent run-off, by County and he shall continue to water often enough to keep the surfaces constantly moist. Hydroseeded areas shall be adequately protected from foot or vehicular traffic during the period that grass is being established.
- M. Additional hydro mulching of bare or eroded areas may be required prior to final approval to obtain an erosion-free stand of grass. After three to four (3 to 4) weeks of favorable growing weather, bare spots shall be recultivated, reseed, raked and rolled by others as in the original work.

3.06 TURF RENOVATION

- A. Renovate existing turf where disturbed by construction.
- B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - Reestablish turf where settlement or washouts occur or where minor regrading is required.
 - 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

- D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4-6 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
 - Soil Amendment(s): Insert required soil amendment(s) according to requirements of Section 329113 "Soil Preparation."
 - Initial Fertilizer: Commercial fertilizer applied according to manufacturer's recommendations.
- J. Apply sod as required for new turf.
- K. Water newly planted areas and keep moist until new turf is established.

3.07 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Keep turf uniformly moist to a depth of 2 inches
 - 1. Following the planting operation in each area that has been hydroseeded, the care and watering of all grassed areas shall be the responsibility of the Contractor. All areas should be watered lightly and frequently to keep top 2 inches continuously moist for 4-6 weeks.
 - 2. Ruts caused by planter and/or tractor shall be smoothed out by the Contractor immediately after planting so that watering may commence.
 - 3. Water shall be applied to these grassed areas within at least one hour after planting. The entire surface and slopes of within the park should be lightly top dressed and rolled with a roller to firm the sprigs into the seedbed. The slopes should again be thoroughly watered but not flooded to the point of erosion or washing.
 - 4. Erosion damage or other damage to a planted area that was not directly caused by the Contractor shall be the County's responsibility.
 - 5. Water turf with fine spray at a minimum rate of 1 1/2 inches per week unless rainfall precipitation is adequate.

- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow bermuda grass to a height of 1 1/2" in cool season and 1" in warm season.
- D. Turf Post Fertilization: Apply commercial fertilizer after initial mowing and when grass is dry.

3.08 <u>SATISFACTORY TURF</u>

- A. Turf installations shall meet the following criteria as determined by Architect and Owner:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.09 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.010 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.011 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Seeded Turf: 90 days from date of Substantial Completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
 - 2. Maintenance Period: 90 days from date of Substantial Completion

*** END OF SECTION ***

SECTION 32 93 00

PLANTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Supply and install all plants, as shown on Drawings and as specified herein, including all materials and labor for a timely, complete, and proper installation.
- B. Section Includes:
 - 1. Plants.
 - 2. Tree stabilization.
 - 3. Landscape edgings.
- C. Related Requirements:
 - 1. Section 329200 "Turf and Grasses".
 - 2. Section 329113 "Soil Preparation."

1.03 STANDARDS AND REFERENCES

- A. Comply with the Industry Standards and References as established by the industry for the work and by Manufacturer (if applicable).
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- D. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown inground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.
- E. Finish Grade: Elevation of finished surface of planting soil.
- F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- G. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- H. Planting Area: Areas to be planted.
- Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation for drawing designations for planting soils.

- J. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- K. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- L. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- M. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
 - 1. Experience: Three years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
 - 2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 3. Pesticide Applicator: State licensed, commercial.
- C. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Product Data: For each type of product.

Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

- C. Samples for Verification: For each of the following:
 - 1. Mulch: 1-quart (volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

- Mineral Mulch (DG/Rock): 1/4 lb of each mineral mulch required, in sealed plastic bags labeled with source of mulch. Sample shall be typical of the lot of material to be delivered and installed on-site; provide an accurate indication of color, texture, and makeup of the material.
- 3. Weed Control Barrier: 12 by 12 inches.
- 4. Edging Materials and Accessories: Manufacturer's standard size, to verify color selected.
- D. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
 - 1. Manufacturer's certified analysis of standard products.
 - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- E. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.
- F. Sample Warranty: For special warranty.

1.07 DELIVERY, STORAGE, AND HANDLING

- Comply with the requirements of Section 01 66 00 Product Storage and Handling Requirements.
- B. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.
- D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- E. Handle planting stock by root ball.
- F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 - 1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- H. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

- 1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
- 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
- 3. Do not remove container-grown stock from containers before time of planting.
- Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray.
 Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.08 PROJECT CONDITIONS

- A. Comply with the requirements of Section 01 50 00 Construction Facilities.
- B. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.09 OPERATION AND MAINTENANCE DATA

- A. Provide in accordance with Section 01 77 00 Project Closeout.
- B. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.010 EXTRA MATERIALS

Not required.

1.011 RECORD DRAWINGS

Not required.

1.012 WARRANTY

- A. Provide Manufacturer's Standard Warranty (if applicable) in accordance with Sections: 01 77 00 – Project Closeout and 01 78 36 – Warranties and Bonds.
- B. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
 - b. Structural failures including plantings falling or blowing over.
 - c. Faulty performance of tree stabilization
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Periods: From date of Substantial Completion.
 - a. Trees: 12 months.
 - b. Ground Covers, Shrubs: Three months.
 - 3. Include the following remedial actions as a minimum:

- a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
- b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
- 4. limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.

1.013 LEED™ CERTIFICATION

Not applicable.

PART 2 - PRODUCTS

2.01 PLANT MATERIAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
 - 1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
 - 2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.
- C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

2.02 FERTILIZERS AND SOIL CONDITIONERS

- A. Desert acclimated plant material shall not be fertilized. All desert plants shall be backfilled with clean native soil only. Contact the Architect to determine which plants are designated "desert".
- B. Organic amendment shall be added to non-desert plants and shall consist of nitrolized-mineralized redwood sawdust (.5% actual nitrogen) or nitrolized mineralized fir sawdust (.8% actual nitrogen). Amendment shall be fine textured, having actual minimum 80% passing #8 screen and minimum 95% passing #4 screen. The electrical conductivity (EC) should not exceed 3.0. Salinity shall not be higher than 3.5 millimhos per centimeter ast 25 degrees C. as measured saturation extract conductivity.
- C. Commercial fertilizer, for non-desert plants, shall have a minimum of 12 nitrogen, 9 phosphoric acid, 8 potash. Deliver mixed fertilizer in standard bags, marked with weight, analysis and name of manufacturer. Keep fertilizer in dry storage.

2.03 CRUSHED ROCK GROUND COVER

A. Provide crushed rock (gravel or "fines") where indicated and as specified on the drawings. Rock shall be installed per the thickness stated on the drawings; if no thickness is called out, install a minimum of 2" thick, after compaction. B. Stabilizer for decomposed granite, if specified on the plans, shall be "Stabilizer" by Stabilizer Solutions of Phoenix, AZ 800-336-2468, or approved equal, installed per the manufacturer's instructions for the type of application, i.e., pedestrian or vehicular traffic. See Section 32 11 00 – Stabilized Decomposed Granite for specific information.

2.04 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Mirafi 140N or approved equal.

2.05 PESTICIDES

- A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.06 TREE-STABILIZATION MATERIALS

- A. Trunk-Stabilization Materials:
 - 1. Upright and Guy Stakes: Lodge pole pine by length indicated on plan, pointed at one end.
 - 2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes.
 - Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.
 - 4. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
 - 5. Guy Cables: Five-strand, 3/16-inch- diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.

2.07 LANDSCAPE EDGINGS

- A. Concrete Mow Curb: As per plans
 - 1. Size: 6" x 6"
 - 2. Joints: 15' OC and at corners
 - 3. Refer to Section 32 13 13 Concrete Paving

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the work of this Section will be performed.
 - Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.

- 3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
- 4. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the installation.

If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

- C. Correct conditions detrimental to timely and proper complete of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.
- D. Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.03 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 32 91 13 "Soil Preparation."
- B. Coordinate "Placing Planting Soil" Paragraph below with Section 32 91 13 "Soil Preparation"
- C. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade
- D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.04 COORDINATION

- A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
- B. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

3.05 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches:
 - Excavate planting pits per planting details.
 - 2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
 - 3. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
 - Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.

- 5. Maintain supervision of excavations during working hours.
- 6. Keep excavations covered or otherwise protected after working hours. [Retain subparagraph below if applicable.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.
- C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.06 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Layout: The locations for plants and outlines of shrub areas to be planted shall be approved on site by the Architect and/or County before planting. All such locations shall be checked for possible interference with existing underground piping, before excavation of holes. If underground construction or utility lines are encountered in the excavation of planting areas, alternate locations for the plants may be selected by the Architect and/or County. Damage to existing utilities shall be the responsibility of the Contractor.
 - 1. Trees shall be planted with the following clearances:
 - a. Five feet from the edge of curbs and sidewalks
 - b. A minimum of Five feet from utility poles and fire hydrants
 - c. A minimum of 8 feet from canopies or awnings or building
 - d. A minimum of Five feet from underground utilities
- Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- D. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.07 TREE, SHRUB, AND VINE PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.
- C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.
- D. Do not apply pruning paint to wounds.

3.08 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:
- B. Upright Staking and Tying: Stake trees to the dimension indicated on Drawings. Set vertical stakes and space to avoid penetrating root balls or root masses.

3.09 PLANTING

- A. Set out and space trees, shrubs, and vines by scaling from the Drawings.
- B. Locate containers per plan and obtain approval from the Architect before excavating pits.
- C. Excavate pits per detail sheets.
- D. If planting pits are cut with power auger, vertical sides of pit shall be additionally broken with balling bar or spade to interrupt continuous curve influence on root development.
- E. Plant material shall be planted in such a manner, that after settling, the crown of the plant bears the same relation to finish grade that it did to the surface in the container.
- F. Backfill tree and shrub pits (for non-desert plants) with a prepared mix as follows: (Applies to non-native plant materials only. Native plants to be backfilled with native soil.) This mix may be modified after review of soil sample results. Contact architect for list of native plants.
 - 1. 8 parts (by volume) native on site soil
 - 2. 8 parts (by volume) well composted material or equal
 - 3. 18 lbs of Gro-Power or equal per c.y. of mix
 - 4. 10 lbs Gypsum per c.y. of mix
- G. Form shallow basin around edge of plant pit.
- H. Grade area around plants to finish grades and dispose of excess soil.
- Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- J. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- K. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.010 CRUSHED ROCK GROUND COVER INSTALLATION

- A. Sterilize soil.
- B. Wet and compact area which is to receive rock to 90% compaction
- C. Install weed-control barriers before installing rock ground cover.
- D. Spread, wet and roll crushed rock to specified thickness. Add stabilizer to the rock, if called for on the plans. If no thickness is specified, provide 2" minimum thickness. Thickness of rock shall be uniform.
- E. Rake to a uniform surface level with adjacent finish grades and 1" below walkways, driveways and other hard surface areas.

3.011 EDGING INSTALLATION

- A. Mow-Curb Installation:
 - 1. Excavate for mow strip as indicated on Drawings.
 - 2. Compact subgrade uniformly beneath mow strip.
 - 3. Apply nonselective, pre-emergent herbicide that inhibits growth of grass and weeds.

3.012 OBSERVATIONS

- A. Observations: Observations will be made by the Architect. Contractor shall be on site when observations are made. Request observations by telephone or email at least two working days in advance of date desired.
 - 1. Observation is required for the following:

- a. Grading and soil conditioning prior to planting
- b. Landscape edging layout prior to installation
- c. Irrigation mainline pressure test
- d. When trees and shrubs have been spotted for planting, but before planting holes are excavated.
- e. When planting and all other specified work has been completed, prior to maintenance period.
- f. Irrigation coverage test
- g. At end of 90 day maintenance period.

3.013 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.014 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations. Do not apply to seeded areas.
- C. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.015 REPAIR AND REPLACEMENT

- A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
 - 1. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
 - Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.
- B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
 - 1. Provide new trees of same size as those being replaced for each tree.

3.016 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.
- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

3.017 MAINTENANCE SERVICE

- A. Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
 - 1. Maintenance Period: Three months from date of Substantial Completion.
 - 2. See Section 32 01 90 90-Day Landscape Maintenance for additional information regarding Maintenance Service.

*** END OF SECTION ***

SECTION 33 11 00

WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

A. The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide water distribution system components and other work, as required in these specifications, on the drawings and as otherwise deemed necessary to complete the work. The limits of the work, including the responsible party for testing purposes, shall be clearly defined on the Drawings.

1.03 STANDARDS AND REFERENCES

A. American Society for Testing and Materials (ASTM):

1.	B88	Standard Specifications for Seamless Copper Water Tube
2.	F477	Standard Specifications for Elastomeric Gaskets for Joining Plastic Pipe
3.	D3139	Standard Specifications for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
4.	D3350	Standard Specifications for Polyethylene Plastic Pipe and Fittings Materials

B. American Water Works Association (AWWA):

ne	erica	an vvater vvo	rks Association (AVVVVA):
	1.	C502	Dry Barrel Fire Hydrants
	2.	C504	Rubber-Seated Butterfly Valves
	3.	C509	Resilient-Seated Gate Valves for Water Supply Service
	4.	C515	Reduced Wall, Resilient Seated Gate Valves for Water Supply Service
	5.	C550	Protective Epoxy Interior Coatings for Valves and Hydrants
	6.	C800	Underground Service Line Valves and Fittings
	7.	C900 Distribution	Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings for Water (4"-12")

- 8. C905 Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings for Water Distribution (14"-48")
- 9. C906 Polyethylene Pressure Pipe, and Fabricated Fittings for Water Distribution (4"-63")
- C104/ANSI A21.4 Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- C105/ANSI A21.5 Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
- C111/ANSI A21.11 Standard for Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
- 13. C151/ANSI A21.51 Standard for Ductile Iron Pipe, Centrifugally Cast
- 14. C153/ANSI A21.53 Standard for Ductile Iron Compact Fittings

1.04 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Provide manufacturers product information (cut sheets) and O&M information for watermain materials including:
 - 1. Pipe
 - 2. Fittings
 - 3. Valves
 - 4. Hydrants
 - 5. Joint Restraint Materials
- C. Provide copies of all pressure and electric continuity testing procedures and results for the project to the Project Representative and the AE within 48 hours of completing the individual tests.
- D. Provide reports that document safe sample collection procedures and results.

1.05 CONTINUITY OF EXISTING WATER DISTRIBUTION SYSTEM

- A. Provide a construction schedule to Project Representative, municipal water utility (if applicable) and local fire department (if applicable) for review and approval prior to starting construction. Schedule shall indicate the date and time of all required water supply interruptions.
- B. Do not interrupt existing water supply without approval from Project Representative, municipal water utility, and local fire department.
- C. Once approved, notify all distribution system users impacted by outages a minimum of 48 hours in advance of outage. Notification shall be provided in writing and describe the nature and duration of outages and provide the name and number of Contractor's foreman or other contact.

1.06 PROVISIONS FOR FUTURE WORK

- A. Construct watermain system in a manner that will facilitate future extension or connection.
- B. Unless otherwise shown on the drawings, provide valves on "dead end" mains that will allow dry connection to the watermain system. Terminate "dead end" mains with full length of pipe be-yond the valve, and a bell end with restrained plug.

1.07 RECORD DRAWINGS

- A. Provide as-built drawings in accordance with Section 01 77 00 Project Closeout.
- B. Show the actual locations of watermain and services, valves and hydrants on drawings and show changes to proposed watermain size, alignment, or grades. Show the actual locations, sizes and types of underground utilities and other features encountered during construction.

PART 2 - MATERIALS

2.01 PVC WATERMAIN

- A. Polyvinyl chloride pipe shall have a dimension ratio (DR) of 18 or less and conform to the requirements of AWWA C900 (4"-12") or AWWA C905 (14"-48"). Pipe shall meet applicable NSF standards for use in a potable water distribution system.
- B. PVC watermain joints shall be rubber gasket push-on joint conforming to ASTM D 3139, using a gasket that conforms to ASTM F477.

2.02 COPPER WATER SERVICE

A. BELOW GROUND 2-1/2" AND SMALLER:

 Type K copper water tube, O (annealed) temper, ASTM B88; with cast copper pressure fittings, ANSI B16.18; wrought copper pressure fittings, ANSI B16.22; lead free (<.2%) solder, ASTM B32; flux, ASTM B813; or cast copper flared pressure fittings, ANSI B16.26.

2.03 <u>DUCTILE IRON WATERMAIN FITTINGS</u>

- A. Fittings shall be ductile iron cement mortar lined mechanical joint compact style fittings meeting the requirements of ANSI/AWWA C153/A21.53.
- B. Fittings shall be manufactured in the United States.

2.04 POLYETHYLENE FITTINGS

A. HDPE fittings manufactured in accordance with ASTM D2683 (socket fused) or ASTM D3261 (butt fused). Fittings shall be supplied by the HDPE piping manufacturer. Butt fusion outlets shall be made to the same dimensional characteristics and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Pressure de-rated fabricated fittings are prohibited.

2.05 VALVES

A. Resilient Wedge Gate Valve

- Resilient seated wedge gate valve meeting the requirements of AWWA C509 and C515. Body, bonnet and gate shall be constructed of ductile iron. Bolts shall be stainless steel.
- Interior and exterior surfaces of valve shall be provided with epoxy coating meeting the requirements of AWWA C550. Symmetrical wedge shall be completely encapsulated with resilient material.
- 3. Valve stem shall be non-rising, low-zinc (zinc content not to exceed 6%) bronze. Valve stem shall have an integral thrust collar. Thrust collar bearings shall be designed to withstand maxi-mum torque without distortion.
- 4. Stem seal shall be so designed that the O ring above the stem collar can be replaced while the valve is under pressure and in the fully open position.
- 5. Valve shall be left opening and be provided with standard 2" square operating nut.
- Valve shall be provided with mechanical joint connections. Mechanical joint ends shall conform to AWWA C509 and shall be furnished complete with all mechanical joint accessories including approved M.J. bolts and nuts. Glands shall be full body gray iron or ductile iron. Mechanical joint bells, glands and rubber gaskets shall be in accordance with AWWA C111.
- 7. Mueller, Kennedy, US Pipe, American Flow Control, Clow, or approved equal.

B. Butterfly Valve

- 1. Rubber-seated butterfly valve meeting the requirements of AWWA C504, for Class 150B. Body and disc shall be constructed of ductile iron. Bolts shall be stainless steel. Disc shall be lens shaped.
- 2. Interior and exterior surfaces of valve shall be provided with epoxy coating meeting the requirements of AWWA C550. Disc shall be provided with a stainless steel disc edge.
- 3. Valve stem shall be stainless steel. Packing shall be permanent duty "chevron V-type" or "O-ring" type. Bearings shall be permanent, non-metallic, and self-lubricating.
- Valve seat shall be a single piece of elastomeric material that is not penetrated by the valve shaft.

- 5. Provide manual operator that is suitable for underground service and includes a standard 2" square operating nut.
- Valve shall be provided with mechanical joint connections. Mechanical joint ends shall conform to AWWA C509 and shall be furnished complete with all mechanical joint accessories including approved M.J. bolts and nuts. Glands shall be full body gray iron or ductile iron. Mechanical joint bells, glands and rubber gaskets shall be in accordance with AWWA C111.
- 7. Mueller/Henry Pratt, Kennedy or approved equal.

C. Tapping Valve

- Resilient seated wedge gate tapping valve having 100% port, and meeting the requirements of AWWA C509 and C515. Body, bonnet and gate shall be constructed of ductile iron. Bolts shall be stainless steel.
- Interior and exterior surfaces of valve shall be provided with epoxy coating meeting the requirements of AWWA C550. Symmetrical wedge shall be completely encapsulated with resilient material.
- 3. Valve stem shall be non-rising bronze. Stem collar shall be provided with thrust bearings that are protected by upper and lower O-ring seals both above and below.
- 4. Valve shall be left opening and be provided with standard 2" square operating nut.
- 5. Valve shall be provided with flange connection on inlet side of valve and mechanical joint connections on outlet side of valve. Mechanical joint end shall conform to AWWA C509 and shall be furnished complete with all mechanical joint accessories including approved M.J. bolts and nuts. Glands shall be full body gray iron or ductile iron. Mechanical joint bells, glands and rubber gaskets shall be in accordance with AWWA C111.
- 6. Provide suitable companion tapping sleeve.
- 7. Mueller, US Pipe, American Flow Control, Clow, or approved equal.

2.06 BRASS WATER SERVICE FITTINGS

A. Service Saddles

- 1. Double strap, bronze service saddles meeting the requirements of AWWA C800. Service saddles shall be provided with nitrile O-ring gasket and AWWA Taper outlet.
- 2. Service saddles shall be properly sized to accommodate both the main and service lines.
- 3. Mueller BR 2B Series, Ferguson, Romac, or approved equal.

B. Corporation Stops

- 1. Corporation stops shall be brass, ball style. Inlets shall be AWWA Taper; outlet connection shall be compression having a positive indicator to avoid over-tightening.
- 2. Corporation stops shall be Mueller B-25008, A.Y. McDonald Mfg. Co., or approved equal.

C. Curb Stops

- 1. Curb stops shall be brass, with compression connections having a positive indicator to avoid over-tightening Curb stops shall be provided with a quarter turn check.
- 2. Curb stops shall be Mueller B-25209, A.Y. McDonald Mfg. Co., or approved equal-

D. Unions

- 1. Unions shall be 3-piece brass, with compression connections having a positive indicator to avoid over-tightening.
- 2. Unions shall be Mueller H-15403, A.Y. McDonald Mfg. Co., or approved equal.

E. U-Branch, Wyes, Etc.

- 1. U-branch, wye and other fittings shall be brass, with compression connections having a positive indicator to avoid over-tightening. Fittings shall be produced specifically for water supply applications.
- 2. Mueller, A.Y. McDonald Mfg. Co., or approved equal.

2.07 <u>VALVE BOXES</u>

A. Gate/Butterfly Valve Boxes

- Valve boxes shall be screw type and shall consist of a base, middle section, top section
 with cover and intermediate extension sections. The top section shall be designed to
 thread onto the middle section so that the unit can be adjusted to a variable length.
 The top section shall be de-signed to receive a circular drop cover.
- 2. The valve box and component parts shall be cast iron in accordance with ASTM-A48 class 20, 30, 35, or approved equal.
- 3. Boxes shall be 5-1/4" with stay-put "WATER" cover.
- 4. The cast iron valve box and components shall be free from blowholes, cold shots, shrinkage defects, cracks or other injurious defects and shall have a normal smooth casting finish.
- 5. All cast iron valve boxes and components shall be thoroughly coated with asphaltic pitch varnish or approved equal.
- 6. Provide valve box extensions as necessary to accommodate depth of cover shown on drawings, or 6.5-foot minimum.
- 7. Valve boxes shall be Bingham & Taylor, East Jordan Iron Works, Tyler, or approved equal.

B. Curb Stop Boxes

- 1. Curb stop boxes shall be 1 1/4" minimum diameter, cast iron, arch style, valve boxes. Boxes shall be telescopic, extendable to accommodate 7' bury. Lid shall be two piece threaded, with a plug having a pentagonal bolt for removal.
- 2. Provide valve box extensions as necessary to accommodate depth of cover shown on drawings, or 6.5-foot minimum.
- 3. Ford, Mueller, or approved equal.

2.08 HYDRANTS

- A. Fire hydrants shall be dry-bury type meeting the requirements of AWWA C110, C111, and C502.
- B. Hydrants shall be ductile iron, 250 psi rated working pressure.
- C. Hydrants shall be traffic rated as specified in AWWA C502 except which is modified to permit a complete 360 degree rotation, or any increment thereof.
- D. Hydrants shall be provided with the following features:
 - 1. 7' bury (6.5' cover over lead)
 - 2. 6" mechanical joint inlet
 - 3. 5 1/4" main valve opening

- 4. One 4 1/2" pumper nozzle with National Standard Threads
- 5. Two 2 1/2" hose nozzles with National Standard Threads
- 6. Nozzle caps with chains
- 7. Pentagon operating nut, open counter-clockwise, conforming to AWWA C502. Material of the operating nut shall be either hardened bronze or ductile iron.
- 8. Painted red. Painting shall be in accordance with AWWA C502.
- E. All extensions shall be made for insertion below the breakable flange. Extensions shall be made from the same material as that of the barrel. The hydrant must be designed to allow the use of barrel extension kits, which allow the raising of the hydrant to a new grade while retaining the "Safety Coupling and Breakable Flange" traffic collision feature at the new grade. Extension kits are to be in 6" increments, with the shortest being 6" long.
- F. All nozzles shall be at the same elevation. Nozzle shall be capable of being threaded into the up-per barrel and shall be mechanically locked in place. The distance from the base of the operating nut to the center of the pumper nozzle shall not be less than 7-1/8". The distance between the ground and the center of the pumper nozzle shall not be less than 15 inches nominal dimension.
- G. Hydrant shall be Waterous, Mueller, U.S. Pipe, or approved equal.

2.09 JOINT RESTRAINTS

- A. Retainer Glands for Ductile Iron Pipe
 - 1. Ductile iron wedge action retainer glands designed for use with ductile iron pipe.
 - Glands shall be constructed of. Restraint shall be provided by a minimum of three wedges that are tightened onto the exterior of the pipe using a threaded, torque limiting mechanism.
 - 3. Glands shall be tested to provide restraint at 250 psi operating pressure.
 - 4. EBAA Iron, Mueller AquaGrip, Romac Romagrip, or approved equal.
- B. Retainer Glands for PVC Pipe
 - Wedge action retainer glands designed for use with PVC pipe.
 - Glands shall be constructed of ductile iron. Restraint shall be provided by a minimum of four wedges that are tightened onto the exterior of the pipe using a threaded, torque limiting mechanism.
 - 3. Glands shall be tested to provide restraint at 200 psi operating pressure.
 - 4. Retainer glands shall be MEGA-LUG by EBAA Iron, or approved equal.
 - 5. EBAA Iron, Mueller AquaGrip, Romac Romagrip, or approved equal.

2.10 POLYETHYLENE ENCASEMENT BAG

A. 8-mil polyethylene encasement bag meeting the requirements of ANSI/AWWA C105/A21.5, Class "C" black.

2.11 BOARD INSULATION

- A. Insulation shall be rigid, closed-cell extruded polystyrene insulation suitable for buried installation. Individual boards shall have minimum dimensions of 8'x4'x2".
- B. Owens Corning, Dow Styrofoam, or approved equal.

2.12 TRACER WIRE

A. Tracer wire shall be #10 solid copper wire with insulated jacket. Tracer wire insulation color for non-metallic, potable water pipe shall be blue. Tracer wire insulation color for non-metallic, non-potable water pipe shall be purple.

2.13 LOCATOR TAPE

- A. Tape shall be detectable metallic locator tape, specifically manufactured for marking utilities with a minimum width of 6 inches and detectable at a depth of 18".
- B. Tape for potable water shall be marked "WATER" and blue colored. Tape for non-potable water shall be marked "NON-POTABLE WATER" and purple colored.

2.14 CHLORINE

A. Chlorine disinfectant shall be calcium hypochlorite tablets or granules. Calcium hypochlorite product shall meet requirements for AWWA C651 – Standard for Disinfecting Water Mains - latest revision, Arch "HTH", or approved equal.

2.15 PIPE JOINT LUBRICANT

A. Petroleum free pipe lubricant formulated for use with potable water systems. Product shall meet the requirements of ANSI/AWWA C111/A21.11 - latest revision.

PART 3 - EXECUTION

3.01 GENERAL

- A. Complete exploratory excavations at utility crossings as shown on the drawings and as necessary to complete the work.
- B. Maintain clearances between watermains and existing or proposed sewer lines as follows:
 - 1. 8' horizontal separation (measured center to center) between watermains and existing or proposed sanitary or storm sewers.
 - 2. 12" vertical separation (measured from outsides of pipes) where watermains cross over sanitary or storm sewers.
 - 3. 18" vertical separation (measured from outsides of pipes) where watermains cross under sanitary or storm sewers.
- C. Notify the Project Representative of utility conflicts as soon as they are encountered.
- D. Store and handle pipe in accordance with manufacturers' recommendations. Keep pipes clean of soil, debris and animals.
- E. Watermain construction shall be completed in a manner that minimizes interruptions to existing services.

3.02 CONNECTIONS TO EXISTING WATERMAINS/TAPPING

- A. Provide tapping sleeves, valves, cutting-in sleeves and other materials specifically manufactured for use with the type of pipe to which the connection is being made.
- B. Notify the Project Representative if the proposed point of connection is located within 4' of an existing joint.
- C. Connections shall be made at existing pipe stubs, valves or other fittings.
- D. At connections to existing mains, locate the new valve as close to the existing main as possible. Swab the interior surfaces of all pipe, fittings, valves that will be exposed to the existing system. Swab solution shall consist of a 5% (by weight) solution of calcium hypochlorite.

3.03 BEDDING /UTILITY COVER

- A. Provide bedding and utility cover in accordance with the applicable requirements of Section 31 23 17 Trenching.
- B. Watermain and water service piping shall be provided with 6" of bedding material and 12" of utility cover material (both measured at the bell of the pipe).
- C. Bedding and cover material for various types of pipe shall consist of the following:
 - 1. PVC Watermain: Crushed stone bedding.
 - 2. Copper Water Services: Bedding sand or crushed stone screenings.

3.04 LAYING WATERMAIN

- A. Install pipe in accordance with the SSSWC and ASTM specifications that pertain to the specified type of pipe material and the installation situation.
- B. Provide a minimum of 6.5' of cover over watermain, unless otherwise shown on the drawings or directed by the Project representative. For watermains with less than 6.5' of cover, provide insulation as shown on the drawings, or as directed by the Project Representative.
- C. Lay watermain at uniform grades between deflection points shown on the drawings; do not install watermains with intermediate high points.
- D. Unless otherwise shown or approved by the Project Representative, lay pipe with bell end facing the direction of pipe laying.
- E. For ductile iron watermain, place polyethylene encasement bag on watermain prior to lowering into trench. Once pipe is joined, pull bag over entire length of pipe, overlap joint at adjacent pipe and secure using "Duct" tape or other approved method.
- F. Prepare pipe bell and gasket in accordance with manufacturers requirements. Lubricate bell and/or pipe with AWWA/NSF approved lubricant.
- G. Push pipe home in accordance with manufacturer's recommendations regarding tools and methods.
- H. Pipe joint deflection shall not exceed manufacturer's requirements.
- For ductile iron pipe, connect bonding straps or lugs to provide electrical continuity along entire
 watermain. Provide exothermic weld to attach new bonding straps, when existing straps are
 missing or damaged. Follow manufacturer's requirements for exothermic welding procedures.
- J. Locate the geographic location of all dead end watermains and services and note actual location on As-Built Drawings.
- K. Disinfect pipe by placing calcium hypochlorite in each section of pipe as pipe laying progresses. Provide dosage as indicated on Table 33 11 00-1.

Watermain Nominal Diameter	Dose Calcium Hy-pochlorite*
(inches)	(oz./length pipe)
4-6	1
8	3
10	5
12	7

^{*} Granular/tablet calcium hypochlorite with 68% (weight) available chlorine

Table 33 11 00-1

- L. When required, provide board insulation in the thickness and width shown on the drawings. Un-less otherwise shown, insulation shall be provided at a minimum thickness of 2 inches.
- M. Install insulation on compacted initial cover material 6 inches above the top of pipe. Stagger joints when placing multiple layers of insulation.
- N. Provide insulation with a minimum of 1 foot of utility cover material. Place backfill material in manner that does not damage insulation; replace damaged insulation.

3.05 TRACER WIRE

- A. Provide tracer wire for buried non-metallic water piping. Tracer wire shall be installed directly above the top of pipe and within six inches of the pipe.
- B. Splices in tracer wire shall be made with split-bolt or compression-type connectors.
- C. Access points are required every 400 feet. At access points the tracer wire shall be brought to grade in valve boxes, utility structures or other covered access devices.

3.06 LOCATOR TAPE

A. Install locator tape directly above new non-metallic sanitary sewer pipe approximately 15 inches below finished grade. Bring tape to surface and terminate in valve box or other structure.

3.07 FITTINGS, VALVES AND HYDRANTS

- A. Install fittings, valves and hydrants at locations shown on the drawings.
- B. Unless otherwise shown, provide restrained mechanical joint connections. Install materials in accordance with manufacturer's recommendations.
- C. Maintain electrical continuity through all fittings, valves and hydrants. Provide and install suitable jumper cables for epoxy coated valves.
- D. Place hydrants and valves on 4" x 8" x 16" solid concrete masonry units set on compacted soil.
- E. Install joint restraints in accordance with the requirements of this section.
- F. Install valve box so that bonnet rests on compacted initial backfill material at the same elevation as the top of the valve stuffing box. Center the valve box over the valve nut.
- G. Install valve box plumb and level, backfilling evenly. Extend valve box to proposed final grade; provide valve box extensions as necessary. Valve boxes that shift during backfilling or restoration shall be excavated and re-set.
- H. Mark all valve boxes with a steel "U" fence post to protect them from damage.
- Install hydrants at elevation shown on drawings or as required to provide a minimum of 6.5'
 cover over the hydrant lead.
- J. Place approximately ½ cy of clear stone bedding material from the base of the hydrant to 6" above the drain holes on the hydrant elbow. Cover clear stone material with a "skirt" of polyethylene encasement bag material to prevent backfill material from migrating into the clear stone.
- K. Install hydrant plumb and level, backfilling all sides evenly.
- Cover all new hydrants with a plastic garbage bag or similar cover until the main has been filled and placed in service.

3.08 JOINT RESTRAINT

A. Unless otherwise noted, all fittings, valves and hydrants shall be installed with restrained joints. Joint restraints shall be used on the adjacent full length (or more lengths as shown on the drawings) of pipe on all sides of fittings. Additionally, branch runs of pipe shall be installed with re-strained joints beginning at the fitting at the main to the first valve.

- B. Hydrant leads shall be provided with restrained joints beginning at the fitting at the main to the hydrant.
- C. Joint restraint shall be provided using retainer glands.
- Install all joint restraint products in accordance with manufacturer's recommendations and drawings.

3.09 COPPER WATER SERVICES AND BRASS FITTINGS

- A. Connect copper water service piping to watermain, wellhouse, or other supply as shown on the drawings.
- B. Watermain taps shall be made under pressure using a tapping machine specifically designed to tap and install corporation stops. Dry watermain taps are not allowed.
- C. Service saddles shall be installed on services where the corporation stop is 1 ½" nominal diameter or greater.
- D. Provide a horizontal offset adjacent to the main for all copper services. Comply with pipe manufacturer's requirements with respect to minimum radius on bends.
- E. Install curb stops as shown on the drawings. If specific curb stop location is not shown on the drawings, consult with Project Representative to determine acceptable location prior to installing.
- F. Place curb stop box on a 4" x 8" x 8" solid concrete masonry unit set on compacted ground. Orient box so that no portion of the box bears on the water service or curb stop.
- G. Install curb stop box plumb and level and backfill all side simultaneously. Extend curb stop box to proposed final grade; provide extensions as necessary. Curb stop boxes that shift during backfilling or restoration shall be excavated and re-set.
- H. Install copper water service as shown on the drawings. Prepare copper pipe joints in accordance with pipe and fitting manufacturer recommendations. Cut pipe squarely, remove burs and round ends as necessary.
- I. Install fittings in accordance with manufacturer's recommendations. Torque compression connections to recommended tightness; do not over-tighten compression joints.
- J. Provide dead-end copper water services with compression connectors fitted with plugs. Do not tap or crimp the ends of copper water services shut.
- K. Locate the geographic location of all dead end services and curb stop boxes and note actual lo-cation on As-Built Drawings.

3.10 FILLING WATERMAIN

- A. Fill watermain after main has been installed and completely backfilled.
- B. Fill main slowly to limit entrapped air and evenly distribute calcium hypochlorite. Open all hydrants completely to allow air to escape and monitor filling.
- C. Once main is full, allow a minimum of 48 hours of time for disinfection to occur before flushing.

3.11 PRESSURE TESTING

- A. Pressure test all watermain and copper water services.
- B. Provide all valves, fittings, joint restraints, hoses, compressors, water and power supply as necessary to complete pressure testing. Utilize testing apparatus that is fabricated specifically for testing watermains. Calibrate pressure gauges as necessary.
- C. Flush main as necessary to remove air prior to testing. Comply with the requirements of this section with respect to flushing.

- D. For longer installations or installations consisting of watermain and copper water service, the Contractor may elect to pressure test the system in short segments.
- E. All pressure testing shall be conducted in the presence of the Project Representative. Provide minimum of 48 hours advanced notice of testing.
- F. Conduct a combined pressure/leakage test for 1 hour at a pressure equal to 150% of system normal operating pressure (as measured at the lowest point in the system), or a minimum pressure of 150 psig.
- G. When conducting test, pressure test equipment shall be set-up as close to the highest point in the line as possible.
- H. Make-up water for the test shall be clean potable water supplemented with $\frac{1}{2}$ oz of dry calcium hypochlorite per 35 gallons of water.
- I. Leakage for test shall not exceed gallons per hour as allowed by the attached formula:

G=(ND\P)/7400

Where: G= Allowable leakage (gallons per hour of test)

N=Number of joints under test

D=Nominal diameter of main (inches)

P=Average pressure during test (psig)

- J. Allowable leakage for high density polyethylene pipe shall be zero.
- K. Record and document pressure test by recording the following information:
 - 1. Date of test
 - 2. Section tested
 - 3. Diameter and length of main under test
 - 4. Number of fittings, valves hydrants, etc.
 - 5. Results of test including test length, pressure, actual water loss
 - 6. Calculation of allowable leakage
 - 7. If a failed test, describe actions taken to eliminate leaks and results of re-testing
- L. Submit reports documenting pressure testing.

3.12 ELECTRIC CONTINUITY TESTING

- A. Conduct electric continuity test on all ductile iron watermain and copper water services.
- B. The electric continuity test shall be performed using a multi-meter to verify electrical continuity of the watermain system.
- C. The Contractor shall furnish all labor and equipment necessary to conduct the electric continuity test.
- D. Document electric continuity testing by recording the following information:
 - 1. Date of test
 - 2. Test methods and equipment
 - 3. Section tested
 - 4. Diameter and length of main under test
 - 5. Number of fittings, valves hydrants, etc.
 - 6. Results of test including resistance

- 7. If a failed test, describe actions taken to eliminate leaks and results of re-testing
- E. Submit reports documenting electric continuity testing.

3.13 DISINFECTION/FLUSHING

- A. After filling the main, allow a minimum of 48 hours of time for disinfection to occur before flushing.
- B. Flush all sections of watermain and water service. When possible, utilize hydrants or other large diameter orifices to complete flushing and achieve 2.5 fps water velocity. If needed, utilize ser-vices or temporary connections to complete flushing.
- C. All watermain and services shall be flushed for a minimum of 10 minutes, or as necessary to obtain a sediment-free and bacteriologically safe sample.
- D. Utilize diffusers, hoses, settling basins and other devices as necessary to limit erosion and other damage to the site and downstream areas.
- E. Contractor shall be responsible for providing all necessary fitting, valves, joint restraints, hydrants and other materials necessary to conduct flushing.
- F. Submit reports documenting disinfection and flushing.

3.14 BACTERIOLOGICAL SAMPLE

- A. Following all pressure testing and flushing, the contractor shall collect a sample from the newly installed watermain or water service(s). Samples shall be submitted to the State Laboratory of Hygiene, or other licensed testing laboratory for bacteriological (coliform bacteria) analysis.
- B. The Contractor shall be responsible for all costs associated with sample collection(s) and analysis.
- C. Document bacteriological sample collection and analysis by recording the following information:
 - 1. Date of sample collection
 - 2. Sample collection methods and equipment
 - 3. Person collecting the sample
 - 4. Location(s) sample was collected
 - 5. Results of sample analysis
- D. If sample results indicate water is "Unsafe Coliform Bacteria Present", Contractor shall redisinfect watermain and water services by introducing additional chlorine into the line and reflushing the main. This process shall be repeated as necessary until a clean sample is obtained. The Contractor shall be responsible for all costs associated with all efforts necessary to obtain a "Safe Coliform Bacteria Not Present" sample.
- E. Submit reports documenting bacteriological sample collection and analysis.

END OF SECTION

SECTION 33 31 00

SANITARY SEWAGE SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Sanitary drainage piping, fittings and accessories.
- B. Connection of building sanitary drainage system to site sewer systems.
- C. Cleanout access.
- D. Connection of site sewer system to campus sewer system unless indicated otherwise on Drawings.
- E. Grease Interceptor

1.03 STANDARDS AND REFERENCES

- A. ASTM D2751 Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
- B. SSPWC Standard Specifications for Public Works Construction, Latest Edition.
- C. APWA American Public Works Association.
- D. ANSI / ASTM D3034 Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- E. REGULATORY REQUIREMENT: Conform to Section 306, Standard Specifications for Public Works Construction, for materials and installation of Work of this Section.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Shop drawings indicating dimensions, locations and elevations of manholes, cleanouts and sub-surface structures.
- C. Product data for pipe and pipe accessories.

1.07 RECORD DRAWINGS

- A. Project Record Documents
 - Accurately record location of pipe runs, connections, manholes, cleanouts and invert elevations.
 - Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 - PRODUCTS

2.01 SEWER PIPE MATERIALS

- A. Plastic Pipe: ASTM D2751, acrylonitrile-butadiene-styrene (ABS) material; sizes; bell and spigot style solvent sealed end joints.
- B. PVC pipe is for outside conditions.
- C. Hub and Spigot, Cast-Iron Soil Pipe and Fittings: ASTM A74, Service class, gray cast iron for gasketed joints. Include ASTM C564, rubber compression-type gaskets.

2.02 PIPE ACCESSORIES

- A. Pipe Joints: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene-ribbed gasket for positive seal.
- B. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required "T", bends, elbows, cleanouts, reducers, traps and other configurations required.
- C. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D3034, SDR 35, for solvent-cemented or gasketed joints.
 - 1. Gaskets: ASTM F477, Elastomeric seals.

2.03 CLEANOUTS

- A. Lid and Frame: Cast iron construction, removable lid, closed checkerboard grill lid design; nominal lid and frame diameter as required for pipe sizes. (APWA 304-0)
- B. Manholes: American Public Works Association, APWA 321-1 Los Angeles County Department of Public Works Standard Drawing 2003-1.

2.04 FILL MATERIAL

A. Bedding and Fill: As specified in Section 31 23 17 - Trenching.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that trench cut or excavation base is ready to receive work, excavations, dimensions and elevations are as indicated on Drawings.
- B. Beginning of installation means acceptance of existing conditions.
- C. Verify that existing invert elevations on site will allow proper tie in to new work with proper positive slope. Ascertain accuracy prior to trenching and installation of sanitary sewer system.

3.02 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with approved fill material.
- B. Remove large stones or other hard matter that could damage sewer pipe or impede consistent backfilling or compaction.

3.03 INSTALLATION - PIPE

- A. Prior to commencing Work, Contractor shall pothole existing utilities at points of connection. Notify Architect in event of discrepancies.
- B. Install pipe, fittings and accessories in accordance with Section 306, SSPWC and manufacturer's instructions. Seal joints watertight.
- C. Place pipe on bedding as specified in Section 31 23 17 Trenching.
- Lay pipe to slope gradient noted on Drawings with maximum variation from true slope of 1/8 inch in 10 feet.

- E. Do not displace or damage pipe when compacting.
- F. Connect to site sewer outlet system through installed sleeves.
- G. Do not cover joints until lines have been tested and approved.

3.04 <u>INSTALLATION – CLEANOUTS</u>

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Establish elevations and pipe inverts.
- C. Mount lid and frame level in grout secured to top cone section to elevation indicated.

3.05 PROTECTION

A. Protect pipe cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

SECTION 33 41 00

STORM DRAIN SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Division 0, Contract Requirements and Division 1, General Conditions apply to this Section.

1.02 SCOPE OF WORK SUMMARY

- A. Storm drainage piping, fittings, and accessories.
- B. Connection of building storm water drainage system to municipal campus storm drains.
- C. Catch basins, paved area drainage, manhole access and site surface drainage.

1.03 STANDARDS AND REFERENCES

- A. CPC California Plumbing Code, 2010, Chapter 11.
- B. ASTM A74 Cast Iron Soil Pipe and Fittings.
- C. ASTM C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
- D. ANSI/ASTM C443 Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
- E. ANSI/ASTM D2729 Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- F. ANSI/ASTM D3034 Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- G. ANSI A21.11 Rubber Gasket Joints for Cast Iron and Ductile-Iron Pressure Pipe and Fittings.
- H. SSPWC Standard Specifications for Public Works Construction, Latest Edition.
- I. APWA American Public Works Association.
- J. REGULATORY REQUIREMENTS: Conform to Section 306, SSPWC, code for materials and installation of the Work of this Section.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 SUBSTITUTIONS

Substitutions will be considered per Section 01 25 00 – Substitution Procedures.

1.06 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 Submittal Procedures.
- B. Shop drawings indicating dimensions, locations and elevations of catch basins, manholes, cleanouts and subsurface structures.
- C. Product data indicating pipe and pipe accessories.

1.07 RECORD DRAWINGS

- Accurately record location of pipe runs, connections, catch basins, manholes, cleanouts and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 - PRODUCTS

2.01 MANUFACTURERS - STORM DRAIN PIPE MATERIALS

- A. Products of the following manufacturers form the basis for design and quality intended.
 - Cast Iron Pipes
 - a. Precast Products, Garden Grove, CA.
 - 2. Reinforced Concrete Pipes, Manholes, Utility Structures
 - a. Johnson Bateman Co., Ontario, CA.
 - b. Precast Products, Garden Grove, CA.
 - c. Jensen Precast, Fontana, CA.
 - 3. PVC Pipe
 - a. Diamond Plastic Corp., Grand Island, NE.
 - b. Advanced Drainage Systems, Inc., Hilliard, OH.
 - 4. HDPE Pipe
 - Advanced Drainage Systems, Inc., Hilliard, OH.

2.02 STORM DRAIN PIPE MATERIALS

- A. Cast Iron Pipe: ASTM A74; service type; plain end joints.
- B. Cast Iron Pipe Joint Device: ANSI A21.11, rubber gasket joint device.
- C. Reinforced Concrete Pipe: ASTM C76, with wall Type B; mesh or bar reinforcement; plain end joints.
- D. Reinforced Concrete Pipe Joint Device: ASTM C443, rubber compression gasket joint.
- E. Plastic Pipe: ASTM D2729, polyvinyl chloride (PVC) material; bell and spigot style solvent sealed end joints.
- F. Plastic Pipe: ASTM D3034, Type PSM, polyvinyl chloride (PVC) material; bell and spigot style solvent sealed end joints.
- G. HDPE: ASTM F2619, high-density polyethylene (HDPE) material

2.03 PIPE ACCESSORIES

- A. Pipe Joints: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene ribbed gasket for positive seal.
- B. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required 'T', bends, elbows, cleanouts, reducers, traps, and other configurations required.

2.04 CATCH BASINS

- A. Basin Lid and Frame: Welded steel grating construction conforming to ADA spacing requirements, hinged lid, linear grill lid design.
 - 1. Grid/Openings limited to 1/2 Inch maximum with direction of grate slots perpendicular to path of travel.
- B. Shaft Construction and Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female dry joints.
- C. Base Pad: Cast-in-place concrete of type specified in Section 32 13 13; leveled top surface to receive concrete shaft sections, sleeved to receive pipe sections.

- D. Accessories: Joint Sealant for gasketing of concrete sections flexible butyl resin sealant, ASTM C990, Concrete Sealants CS-102 and CS-202 by ConSeal by Concrete Sealants Inc., New Carlisle, Ohio. Or equal.
- E. Provide catch basin unless otherwise indicated on Drawings.

2.05 MANHOLES AND CLEANOUTS

- A. Lid and Frame: Cast iron construction, removable lockable lid, closed lid design; nominal lid and frame diameter of 26 inches; manufactured by Brooks Products, or equal.
- B. Shaft Construction and Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female dry joints; cast steel ladder rungs into shaft sections at 12 inches; nominal shaft diameter of 48 inches; manufactured by Brooks Products, or equal.
- C. Base Pad: Cast-in-place concrete of type specified in Section 32 13 13; leveled top surface to receive concrete shaft sections, sleeved to receive storm drain pipe sections.
- D. Accessories: Joint Sealant for gasketing of concrete sections flexible butyl resin sealant, ASTM C990, Concrete Sealants CS-102 and CS-202 by ConSeal by Concrete Sealants Inc., New Carlisle, Ohio. Or equal.
- E. Cleanouts: Iron body type; extra heavy bronze plugs; manufactured by Acorn Engineering Co., J.R. Smith Mfg. Co., or F.A. Zurn Mfg. as follows:
 - Concrete areas: non-skid nickel bronze lid, set flush with surface; Acorn 120-11, Smith 4240, or Zurn Z-1326-10.
 - 2. Non surface and asphalt surface areas: Non-skid extra heavy cast iron cover; Acorn 120-10, Smith 4240, Zurn Z-1326-10.

2.06 FILL MATERIAL

A. Bedding and Fill: Type specified in Section 31 23 17 - Trenching.

PART 3 - EXECUTION

3.01 **EXAMINATION**

- A. Verify that trench cut or excavation base is ready to receive work.
- B. Verify existing invert elevations for proper tie-in of new work prior to trenching and installation of storm drain system.
- C. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with approved fill material.
- B. Remove large stones or other hard matter that could damage drainage pipe or impede consistent backfilling or compaction.

3.03 <u>INSTALLATION - PIPE</u>

- Install pipe, fittings, and accessories in accordance with Section 306, SSPWC. Seal joints watertight.
- B. Place pipe on bedding as specified in Section 31 23 17 Trenching.
- C. Lay pipe to slope gradients noted on drawings, with maximum variation for true slope of 1/8 inch in 10 feet.
- D. Install bedding at sides and over top of pipe. Provide top cover to minimum compacted thickness of 12 inches.

- E. Place bedding in maximum 8 inch lifts, consolidating each lift.
- F. Do not displace or damage pipe when compacting.
- G. Connect to storm drain municipal system through installed sleeves. Do not cover joints until lines have been tested and approved.

3.04 <u>INSTALLATION - CATCH BASINS, MANHOLES AND CLEANOUTS</u>

- A. Install per Standard Specifications for Public Works Construction.
- B. Form bottom of excavation clean and smooth to correct elevation.
- C. Form and place cast-in-place concrete base pad, with provision for storm drain pipe end sections.
- D. Establish elevations and pipe inverts for inlets and outlets.
- E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.05 FIELD QUALITY CONTROL

A. Request inspection by Geotechnical Engineer prior to placing cover over pipe.

3.06 PROTECTION

A. Protect pipe and filter aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION