SAN BERNARDINO COUNTY
DEPARTMENT OF PUBLIC WORKS
SPECIAL DISTRICTS

ADDENDUM NO. 05

TO THE BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, GENERAL CONDITIONS, SPECIAL CONDITIONS, AND TECHNICAL SPECIFICATIONS FOR THE

BIG BEAR TENNIS COURT REHAB PROJECT

PROJECT NO.: 30.30.0164

May 21, 2025

The Contract Documents for the above-referenced project are hereby amended in the following manner and the following manner only:

I. All provisions of Addendum No. 5 are hereby incorporated into the Contract Documents, and Bidders shall account for all provisions pursuant to this Addendum No. 5 when submitting their bid proposals. **Each Bidder shall include a dated and signed copy of this Addendum with their sealed bid proposal**.

1. ITEM NO. 1: REVISED BID OPENING DATE

Contractors are advised of the following changes in Section A: Bidding Requirements of the Specifications.

A. Contractors are advised that the following change in the Advertisement for Bids section of the bid package (Page AB-1), initially issued on April 08, 2025, as well as in Addendum No. 02 issued on May 07, 2025, and Addendum No. 03 issued on May 15, 2025, shall be replaced with:

Please be advised that the bid opening date has been revised to Tuesday, May 27, 2025, at 2:00 p.m. This amendment supersedes the previously established deadlines of May 8, 2025, May 15, 2025, and May 22, 2025.

B. Contractors are advised that Item 1.B of the Instructions to Bidders section of the bid package (Page IB-1), initially issued on April 08, 2025, as well as in Addendum No. 02 issued on May 07, 2025, and Addendum No. 03 issued on May 15, 2025, shall be replaced with:

Please be advised that the bid opening date has been revised to Tuesday, May 27, 2025, at 2:00 p.m. This amendment supersedes the previously established deadlines of May 8, 2025, May 15, 2025, and May 22, 2025.

C. Contractors are advised of the following change as it appears within Bid Proposal section of the bid package (Page BP-1), initially issued on April 08, 2025, as well as in Addendum No. 02 issued on May 07, 2025, and Addendum No. 03 issued on May 15, 2025, shall be replaced with:

Please be informed that the revised bid opening date has been rescheduled to Tuesday, May 27, 2025, at 2:00 p.m. This amendment supersedes the previously established deadlines of May 8, 2025, May 15, 2025, and May 22, 2025.

D. Contractors are hereby advised that the following changes, as indicated on Addendum No. 01 issued on April 21, 2025, Addendum No. 02 issued on May 07, 2025, for Item No. 2.D: Section A – Bidding Requirements – Bid Opening issued on April 21, 2025, shall be replaced with:

The bid opening for the Big Bear Tennis Court Rehab Project has been rescheduled for **Tuesday, May 27, 2025, at 2:00 P.M. PST.** Prompt attendance is required. Please allow adequate time to log in to the online meeting through Microsoft Teams before 2:00 p.m. PST. Note that the previously indicated dates of May 8, 2025, May 15, 2025, and May 22, 2025, have been amended to May 27, 2025. All other information contained below remains unchanged.

Please join my meeting from your computer, tablet, or smartphone.

https://microsoftteams.com
Join the meeting now

Meeting ID: 286 605 703 167 4
Passcode: h2un67hN

You can also dial in using your phone.
Access Code: 536 961 605#
United States: +1 (661) 568-6806

2. ITEM NO. 2: SECTION A – BIDDING REQUIREMENTS

Contractors are advised of the following changes to the Scope of Works as presented in the Advertisement for Bids (PP AB-1 and PP AB-2) and the Bid Proposal (PP BP-2) within Section A: Bidding Requirements, of the Specifications.

To serve the best interests of the County, the additive alternate bid for the complete supply and installation of a post-tensioned slab-on-grade has been removed from this bid package. Consequently, this bid will focus exclusively on the traditional cast-in-place concrete slab on grade. This revision supersedes the previous Scope of Works outlined in Addendum No. 01, issued on April 21, 2025; Addendum No. 02, issued on May 7, 2025; Addendum No. 03, issued on May 15, 2025; and Addendum No. 04, issued on May 20, 2025.

3. ITEM NO. 2: SECTION F – TECHNICAL SPECIFICATIONS

Contractors are hereby advised to disregard the previously issued Section F – Technical Specifications and to refer to the revised copy attached to Addendum No. 05. Furthermore, Section 03 38 00 – Post–Tension Concrete, which was included in Addendum No. 04 published on May 20, 2025, will be excluded from the revised bid package. This exclusion results from the removal of the additive alternate bid for the post-tensioned slab-on-grade from this bid package.

The above items modify the informal bid documents in the manner prescribed and in that manner only. All other contract items will remain as originally intended. The contractor will sign/date this addendum and submit it with their bid as an acknowledgment of receiving and complying with this addendum.

ISSUE DATE: May 21, 2025,

Date Acknowledged by Bidder: _____

Russel Viloria

Digitally signed by Russel Viloria
DN: C=US, E=russel.viloria@sdd.sbcounty.gov, O=DPW Special District, OU=San Bernardino County, CN=Russel Viloria
Reason: I am the author of this document
Date: 2025.05.21 16:43:27-07'00'

By: _____

By: _____

Russel Viloria, Project Manager
Department of Public Works - Special Districts
Project Management Division

Bidders Company Name

_____

Bidders Signature

Section A -
Bidding Requirements,
page 1 of 7.R3

www.SBCounty.gov

SAN BERNARDINO COUNTY

BID REQUIREMENTS, CONTRACT DOCUMENTS, GENERAL AND SPECIAL CONDITIONS, TECHNICAL SPECIFICATIONS AND PROJECT PLANS

FOR

BIG BEAR TENNIS COURT REHAB PROJECT

AT

BIG BEAR SPORTS RANCH,
2080 ERWIN RANCH RD, BIG BEAR, CA 92314

FOR

BIG BEAR VALLEY RECREATION AND PARK DISTRICT
BIG BEAR, CALIFORNIA

PROJECT NO.: 30.30.0164

SAN BERNARDINO COUNTY
DEPARTMENT OF PUBLIC WORKS - SPECIAL DISTRICTS
222 WEST HOSPITALITY LANE, 2nd FLOOR
SAN BERNARDINO, CALIFORNIA 92415-0450

DATE: MAY 2025

BID REQUIREMENTS, CONTRACT DOCUMENTS, GENERAL AND SPECIAL CONDITIONS, TECHNICAL SPECIFICATIONS AND PROJECT PLANS

FOR THE

BIG BEAR TENNIS COURT REHAB PROJECT

AT

BIG BEAR SPORTS RANCH,
2080 ERWIN RANCH ROAD, BIG BEAR, CA 92314

Submitted By: Russel Viloria, Project Manager
Department of Public Works - Special Districts

Reviewed By: Maurico Rodriguez, FMP, Senior Project Manager
Department of Public Works - Special Districts

Approved By: David R. Doublet, M.S., P.E., Assistant Director
Department of Public Works - Special Districts

Approved as to form:

By: Sophie A. Curtis, Deputy County Counsel

Contract Compliance Review:

By: Noel Mondragon, P.E., Division Manager Project Management
Department of Public Works - Special Districts

TABLE OF CONTENTS

SAN BERNARDINO COUNTY

www.SBCounty.gov

SECTION A

BIDDING REQUIREMENTS

BIG BEAR TENNIS COURT REHAB PROJECT

AT

BIG BEAR SPORTS RANCH,
2080 ERWIN RANCH RD, BIG BEAR, CA 92314

FOR

BIG BEAR VALLEY RECREATION AND PARK DISTRICT
BIG BEAR, CALIFORNIA

ADVERTISEMENT FOR BIDS
FOR
BIG BEAR TENNIS COURT REHAB PROJECT

Notice is hereby given that the Department of Public Works – Special Districts (Department), on behalf of the Governing Board of the Big Bear Valley Recreation and Park District (District), will receive sealed bids for the **BIG BEAR TENNIS COURT REHAB PROJECT.** Bids must be submitted by the revised deadline of **May 27, 2025, at 2:00 PM,** superseding the previous deadlines of May 08, 2025, May 15, 2025, and May 22, 2025. Bids should be delivered to the Department's office, located at **222 W. Hospitality Lane, 2nd Floor, San Bernardino, California, 92415-0450**. At this time, the bids will be publicly opened**.** Bids received after this time will be returned unopened. Bids shall be valid for 60 calendar days after the bid opening date.

SCOPE OF WORK: The contractor shall provide all supervision, labor, equipment, tools, materials, transportation, and incidentals necessary to complete the Project, which will include the construction of two (2) tennis courts and the reconstruction of one (1) existing tennis court, which will be adapted for use as a multi-purpose court, as well as clean up activities, and all other work necessary to complete this project. All work must be executed in accordance with the Bid Documents, including Plans and Specifications but not limited to the following:

1. **Construct two (2) New Tennis Courts:**
   Refer to Location "A" in Section G – Contract Drawings for further reference.

   The project involves constructing two (2) new tennis courts, which are 36 feet wide and 78 feet long, and with an overall pad dimension of 118 feet wide and 110 feet long, with the following Scope of Works (SOW):
   a) Excavate and compact subbase and base course (minimum of at least 95% FDT) with proper slope (no less than 0.83% and no more than 1% on an actual plane, going down to the north side of the court) and proper storm drainage surface.
   b) Provide a new 5" thick dark, green-colored concrete slab with a compressive strength of 3,000 psi after 28 days of pouring. See Section G for a sample of the existing dark-green colored concrete chip.
   c) The new concrete slab will have #5 reinforcement deformed bars in both directions and be placed 12 inches apart. The reinforcement bars will be ASTM A615, Grade 60 or 40.
   d) Provide and install concrete pipe sleeves and footing for the tennis net posts.
   e) Provide and install moisture/vapor barriers and non-extruded ¾" thick expansion joint filler material on the new concrete slab.
   f) Fill the gaps with a non-sag sealant or self-leveling sealant to fill the gaps for either the expansion joint or the sawed joint.
   g) Provide pavement markings and stripping paint.
   h) Supply and install the missing 78' length x 4' high chain link fence, including any necessary repair to access the existing fence when complete.
   i) Remove and replace the existing concrete entryway, 4' wide x 6' in length, "in-kind," including the height adjustment of the current fence gate.
   j) Provide a 3- to 5-foot-wide earth swale or re-grade the low-lying spots along the perimeter side of the newly poured concrete slab.

To be done by Big Bear Valley Recreation and Park District (BBVRPD) staff:

a) Provide and install tennis nets and posts, except for the concrete footing (by the contractor).
b) Relocate and re-install the abandoned existing sprinkler heads, five (5) each.

Please coordinate with the BBVRPD staff before the new 5" thick dark-green colored concrete slab is poured to determine the exact location of the tennis post footings.

2. **Reconstruct one (1) Tennis/Multi-Purpose Court**
   Refer to Location "B" in Section G – Contract Drawings for further reference.

   The project involves the reconstruction of an existing single tennis court, which will be utilized as a multi-purpose court. The dimensions of the new court will be 27 feet wide and 78 feet long, with an overall dimension of 56 feet wide and 118 feet long. The following Scope of Works (SOW):

   a) Remove and replace the existing 30' length x 10' high fence for access and necessary repair when complete.
   b) Demolish and dispose of the existing asphalt pavement tennis court and tennis posts.
   c) Excavate and compact the subbase and base course materials (minimum of at least 95% FDT) with a proper slope (no less than 0.83% and no more than 1% on an actual plane, away from the center of the court) and proper storm drainage surface.
   d) Provide moisture/vapor barriers and non-extruded ¾" inches thick expansion joint filler material on the new concrete slab.
   e) Fill the gaps with a non-sag sealant or self-leveling sealant to fill the gaps for either the expansion joint or the sawed joint.
   f) Provide a new 5" thick dark green colored concrete slab with a compressive strength of 3,000 psi after 28 days of pouring. See Section G for the sample of the existing dark-green colored concrete chip.
   g) The new concrete slab will have #5 reinforcement deformed bars in both directions, placed 12 inches apart. The reinforcement bars will be ASTM A615, Grade 60 or 40.
   h) Provide a 3- to 5-foot-wide earth swale or re-grade the low-lying spots along the perimeter side of the newly poured concrete slab.

   To be done by Big Bear Valley Recreation and Park District (BBVRPD) staff:

   a) Remove and dispose of the existing chairs and benches.

3. **Additive Alternate Bid**— To serve the best interest of the County, the additive alternate bid for the complete supply and installation of a post-tensioned slab on grade has been deleted from this bid package. Consequently, this bid will solely focus on the traditional cast-in-place concrete slab on grade, as outlined in items 1 and 2 above.

Bids can be submitted through the County Electronic Procurement Network (ePro) at https://epro.sbcounty.gov/epro/ **(however, if the bid is submitted in ePro, the bidder's security described herein must still be submitted in person in a sealed envelope prior to the proposal opening date and time)** or in person at the Department. If the bid is submitted through ePro, the bidder acknowledges that its electronic signature is legally binding. **All bidders must register with the ePro system prior to the date and time to receive sealed bids, or they will be disqualified. Late or incomplete bids will be considered nonresponsive.** A "complete" bid is defined as a bidder's submittal that includes all bid documents (i.e., the bid / proposal, bidder's security in a separately sealed envelope, and any other bid documents required for the project). System-related issues in ePro shall be directed to Vendor support at ePro.Vendors@buyspeed.com or at (855) 800-5046. For procurement questions involving ePro, please contact the Purchasing Department at (909) 387·2060.

PLEASE NOTE: All bidders and subcontractors must be registered with: 1) the Department of Industrial Relations (with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)); and 2) the County's ePro system prior to the date and time to receive sealed proposals or they will be disqualified. The lowest responsive and responsible bidder and its subcontractors must also be registered with the Department of Industrial Relations at the time of award of the contract and must remain registered throughout the term of the contract pursuant to Labor Code section 1771.1. For more information on the requirements of Labor Code section 1771.1, please see http://www.dir.ca.gov/Public-Works/SB854.html. Mandatory Pre-bid meeting will start at 10:00 AM on April 17, 2025, at the project site located at 2080 Erwin Ranch Road (34°14'57.0" N 116° 48'23.5" W), Big Bear, California 92314. BIDS SUBMITTED BY FIRMS NOT ATTENDING THE MANDATORY PRE-BID MEETING WILL BE REJECTED AS NONRESPONSIVE.

Each bidder shall be a licensed contractor according to the Business and Professions Code and shall be licensed in the following classification of contractor's license for the work bid upon, and must maintain the license throughout the contract: California Class 'A' (General Engineering), 'B' (General Building), 'C-8' (Concrete), Class C-12 (Earthwork and Paving), 'C-13' (Fencing), and/or 'C-50' (Reinforcing Steel) Contractor's License. In order to be deemed responsive, the bidder must list, in the bid forms, at least three (3) projects of similar size and scope that it has completed over the last five years.

The Bid Documents, including final Plans and Specifications, are available at no cost to the bidder from the ePRO Website at https://epro.sbcounty.gov/bso/.

This Project is subject to California's Prevailing Wage requirements. Copies of the prevailing wage rates are on file at the Department and shall be made available to any interested party on request. Copies are also included in the Bid Documents. The successful bidder shall post a copy of these rates at the job site.

Bids must be accompanied by cash, a certified or cashier's check, or a bid bond in favor of the District in an amount not less than ten percent (10%) of the submitted total bid price.

The successful bidder will be required to furnish the District with a Performance Bond and

a Payment Bond, each equal to 100% of the successful bid, before execution of the contract. All bonds are to be secured from a surety that meets all of the State of California bonding requirements, as defined in Code of Civil Procedure Section 995.120, and is admitted by the State of California.

Pursuant to Public Contract Code Section 22300, the successful bidder may substitute certain securities for funds withheld by the District to ensure its performance under the Contract.

The District shall award the Contract for the Project to the lowest responsible bidder as determined pursuant to Public Contract Code Section 20103.8(a). The lowest bid shall be the lowest total of the base bid prices on the contract. The responsible bidder who submits the lowest bid for the Project as determined by this section shall be awarded the contract if it is awarded. The District reserves the right to reject any or all bids, to waive technical errors, discrepancies or informalities of a bid not affected by law, if to do so seems to best serve the public interest.

For information contact **Russel Viloria, Project Manager at (909) 386-8823 or email russel.viloria@sdd.sbcounty.gov.**

By order of the Governing Board for the District at San Bernardino, California.

Russel Viloria

Digitally signed by Russel Viloria
DN: C=US, E=russel.viloria@sdd.sbcounty.gov, O=DPW Special District, OU=San Bernardino County, CN=Russel Viloria
Reason: I am the author of this document
Date: 2025.05.22 07:25:29-07'00'

Russel Viloria, Project Manager
Department of Public Works - Special Districts

Published in: ePro

INSTRUCTIONS TO BIDDERS

BIG BEAR TENNIS COURT REHAB PROJECT

1. FORM AND PREPARATION OF BID PROPOSAL AND SIGNATURE

A. The bid proposal shall be submitted on the properly completed forms attached hereto and shall be enclosed in a sealed envelope marked and addressed as hereinafter directed. Bids can also be submitted through the San Bernardino County Electronic Procurement Network (ePro) https://epro.sbcounty.gov/epro/. **However, if the bid is submitted in ePro, the bidder's security described herein must still be submitted in person in a sealed envelope prior to the proposal opening date and time). All bidders must register with the ePro system prior to the date and time to receive sealed bids or they will be disqualified.** System-related issues or procurement questions in ePro shall be directed to the Purchasing Department at (909) 387-2060.

B. The Revised Opening Bid date is now set for May 27, 2025, at 2:00 PM. This change replaces the previously scheduled dates of May 22, 205, May 15, 2025, and May 08, 2025.

A Mandatory Pre-bid meeting will start at 10:00 AM on April 17, 2025, at the project site located at 2080 Erwin Ranch Road (34°14'57.0" N 116° 48'23.5" W), Big Bear, California 92314. BIDS SUBMITTED BY FIRMS WHO HAVE NOT ATTENDED THE PRE-BID MEETING WILL BE REJECTED.

The individual attending the mandatory pre-bid meeting must comply with the following:

- *Sign the individual's name on the official sign-in sheet at the beginning of the meeting.*
- *Write the name and address of the company the individual represents and*
- *Only one company may be shown as being represented by the individual attending.*

The Owner of this Project is the Big Bear Valley Recreation and Park District, hereinafter referred to as "District." The Project is administrated by the Department of Public Works - Special Districts, hereinafter referred to as "Department".

No bid may be withdrawn sixty (60) days after the bid opening.

For information regarding this Project, contact the Project Manager, **Russel Viloria, at (909) 386-8823 or email at russel.viloria@sdd.sbcounty.gov**. DO NOT CONTACT THE DESIGN CONSULTANT. All technical questions may be submitted to the Project Manager in ePro, via e-mail, and in writing. The last date to submit questions is **May 01, 2025, at 10:00 AM.** No questions will be answered within 72 hours of the bid opening. Should any questions require changes to the plans, specifications, or requirements, an addendum will be issued to clarify those changes. Bidders shall be responsible for ensuring that they have received all addendums issued by the County, and the submittal of a bid shall be deemed to be based on the Bid Documents, as modified and/or clarified by any addenda.

C. Bid proposals must be submitted on the forms prepared and furnished for that purpose and which may be obtained on ePro or at the Department of Public Works - Special Districts office located at 222 W Hospitality Lane, 2nd Floor, San Bernardino, CA 92415 (909-386-8818). All blank spaces in the bid proposal and bid sheet(s) shall be appropriately filled. The phraseology of the bid proposal must not be changed, and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations, or provisions attached to a bid proposal will render it unresponsive and may cause its rejection. Alterations by erasure or interlineations must be explained or noted in the bid proposal over the signature of the bidder. Alternative bid proposals will not be considered unless specifically provided for in the bid sheet(s).

D. In the event of a discrepancy between the unit price and the total amount bid for an item work, the unit price bid will be considered correct, and the total amount will be corrected to conform to the unit price. In the case of a discrepancy between the written bid or numerical bid set forth on the bid proposal and the numerical bid set forth in the ePro system, the information on the bid proposal shall prevail.

E. If the bid proposal is made by an individual, it shall be signed with a full name and address; if it is made by a firm, it shall be signed with the partnership name by a member of the firm, who shall also sign their own name, and the name and address of each member shall be given; and if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer(s). If a bid proposal is a joint venture, it shall be signed by a member of the joint venture and the full names and addresses of all partners of the joint venture shall be given.

F. All the Work is to be done under contract including the plans, specifications, and contract documents prepared for **BIG BEAR TENNIS COURT REHAB PROJECT.** Specifically, specifications entitled: **"BIG BEAR TENNIS COURT REHAB PROJECT."**

G. Each bid shall be in accordance with the plans, specifications, and other bid documents, copies of which may be obtained at the Department of Public Works - Special Districts, Telephone No. (909) 386-8823. There is a non-refundable cost of $20.00 per Electronic CD. Plans and specifications will be mailed upon request if accompanied by check or money order and bidder's Fed-Ex account number. The plans, specifications, and other bid documents are also available at no cost to the bidder in ePro.

2. ADDRESS AND MARKING OF HARD COPY SUBMISSIONS INCLUDING BID PROPOSAL

A. The envelope enclosing the bid proposal shall be sealed and addressed to:

Department of Public Works - Special Districts
San Bernardino County
222 W. Hospitality Lane, 2nd Floor
San Bernardino, CA 92415-0450

B. The envelope shall be plainly marked with the name and address of the bidder in the upper left hand corner and labeled "Sealed Bids: **BIG BEAR TENNIS COURT REHAB PROJECT**."

C. Bids can also be submitted through the Electronic Procurement Network (ePro) https://epro.sbcounty.gov/bso/. However, hard copy documents that require separate submission will be delivered to the Department of Public Works - Special Districts Office prior to date and time set for the bid opening.

3. SUBMITTING THE BID PROPOSAL

A. Bid proposals submitted after the time set forth for receiving bid proposals at the place so named herein will returned unopened. It is the sole responsibility of the bidder to submit the bid proposal in accordance with all of the provisions contained herein.

B. Bid proposals may be withdrawn upon the written request of the bidder prior to the time set forth for receiving and opening bid proposals without forfeiture of the bid security and/or bond. If a bid is submitted through ePro, then the bid may also be withdrawn in ePro prior to the scheduled time for receipt of bids. Bid proposals withdrawn after bid opening will cause the forfeiture of said bond and/or security as damages.

C. Opening of Bids: Bids will be publicly opened in person and/or via virtual link at the Department's Administrative Office, 222 W. Hospitality Lane, 2nd Floor, San Bernardino, California, 92415. Due to the Covid-19 pandemic and to ensure compliance with social distancing requirements, the bid opening will also be conducted virtually via GoToMeeting. Bids (both paper and ePro) shall be opened and read aloud at the place and time set in the Advertisement for Bids.

The Call-In Number, Access Code, and link information will be provided after the establishment of the bid list following the Mandatory Pre-Bid meeting

D. The District reserves the right to reject any or all bids, and to waive technical errors, discrepancies or informalities of a bid not affected by law, if to do so is in the best interest of the District.

E. Submitting via ePro – Once the contractor is registered in ePro and logged into the project for which contractor is submitting a bid on, contractor can enter the quote in the *"Quote Tab"* and then click *Save and Continue*. Contractor then must acknowledge and click yes on the terms and conditions in the "*Terms and Conditions"* tab. To submit and send the bid, contractor needs to access the *"Summary Tab"*, scroll to the bottom of the page and then click the "*Submit Quote*" button prior to date/time set for bid opening. Failure to complete all tabs may result in the bid not being submitted electronically. If contractor has any questions, they may contact the District's Senior Project Manager to get further directions.

4. BID BOND OR CHECK

The bid must be accompanied by a certified or cashier's check or bidder's bond issued by a surety company acceptable to the District, for not less than ten percent (10%) of the amount of the TOTAL BASE BID, made payable to the order of the District, given as a guarantee the bidder will secure the requisite insurance and bonds and enter into contract within ten (10) calendar days after being requested to do so by the District. If the bid is submitted to the Department of Public Works - Special Districts, the bid security shall be enclosed in the sealed and marked envelope along with the bid proposal. If the bid is submitted through the Electronic Procurement Network (ePro) then scan the bid security (bid bond/check) and submit the scanned copy with your bid submittal in ePro, additionally, mail or submit the original bid security, in a separate sealed envelope labeled "Bid Bond" with the title of the work and the name of the bidder clearly marked on the outside to: Department of Public Works - Special Districts, 222 W. Hospitality Lane, Second Floor, San Bernardino, California, 92415-0450. **Any mailed or submitted bid security must be received on or before the time set for the opening of the bids.**

Within sixty (60) calendar days after the award of the Contract, the District will return to each bidder the bid proposal security submitted with the bid proposal in the form of cash, cashier's check or certified check, except such security that may have been forfeited in accordance with the provisions stated herein. Bid bonds will be returned within sixty (60) calendar days after the award of the Contract, upon the bidder's written request to the District, except such bid bonds which may have been forfeited in accordance with the provisions stated herein.

5. REGISTRATION OF CONTRACTORS

All bidders shall be licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California and possess a California "A" (General Engineering), "B" (General Building), C-8 (Concrete), C-12 (Earthwork and Paving), 'C-13' (Fencing), and/or 'C-50' (Reinforcing Steel) Contractor's License at the time of the scheduled bid opening.

6. LIST OF SUBCONTRACTORS FILED WITH BID AND REGISTERED CONTRACTORS/SUBCONTRACTORS

Under the provisions of Section 4100 through 4113 inclusive of the Public Contract Code of the State of California, each bidder shall submit with their bid proposal the name, location of place of business, and California contractor's license number of each proposed subcontractor who will perform work or labor or render service to the principal Contractor in an amount above ½ of one percent (.5%) of the principal Contractor's bid, and shall state the portions of the work which each such subcontractor will do.

The contractor and all listed subcontractor(s) must be registered with the Department of Industrial Relations under Labor Code section 1725.5. The contractor agrees that no contractor or subcontractor may be awarded a contract for public work or perform work on a public works project unless registered with the Department of Industrial Relations according to Labor Code section 1725.5.

7. LOWEST RESPONSIBLE BIDDER

The contract shall be awarded to the lowest responsive, responsible bidder based on the BASE BID. In order to be deemed responsive, the bidder must list, in the bid forms, at least three (3) projects with similar size and scope of work that it has completed over the last five years.

8. INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

Suppose any bidder doubts the true meaning of any requirements of drawings or specifications or finds any discrepancies in or omissions from the drawings or specifications. In that case, the bidder may submit a written request to the engineer for an interpretation or correction. The written request must be received by **May 01, 2024, at 10:00 AM**. The person making the request will be responsible for its prompt delivery. Interpretations or corrections will be made only by addenda to specifications or dated revisions or drawings, with a copy of each addition or change being furnished through the District to each prospective bidder. Only a written interpretation or correction by Addendum shall be binding.

Bidders shall examine all the bid documents, including the drawings, and perform their own estimates for the proposed work, taking into account local conditions, the uncertainty of the weather, and all laws, ordinances, rules, and regulations of any federal, state, County, municipal or other governmental agency that has jurisdiction over the work. The more stringent requirement shall always prevail.

9. LOCAL AND SITE CONDITIONS

A. Bidders shall read the specifications, examine the drawings and the bid documents, and make their own estimates of the existing conditions and the difficulties that will attend the execution of the work called for by the proposed contract, including uncertainty of weather and other contingencies prior to submitting bid proposals for the work.

B. Bidders shall satisfy themselves by personal examination of the location of the proposed work and by such means as they may choose as to actual conditions, limitations, and requirements that may affect the execution of the work and as to the accuracy of the quantities stated in the Bid Sheet(s). Submitting a bid proposal shall be conclusive evidence that the Bidder has investigated the Project site and is aware of and acknowledges the conditions to be encountered.

Information derived from the maps, plans, specifications, profiles, and drawings, or from the Engineer or the Engineer's assistants shall not relieve the bidder of this responsibility.

C. The failure or omission of any bidder to receive or examine any form, instrument, addendum, or other document, or failure to visit and to be acquainted with the conditions at the proposed project site, shall in no respect relieve the bidder from any obligation imposed by the bid or by the contract. The submittal of a bid shall be taken as prima facie evidence of compliance with all instructions contained herein. Any or all addendums issued during the bid process must be submitted with the bid document or the bidder will be disqualified.

D. The quantities of work or material stated in the unit price items of the Bid Sheet(s) are supplied only to indicate the general scope of work; the District does not expressly or by implication agree that the actual amount of work or material will correspond therewith but reserves the right to increase or decrease the amount of any unit price item or to omit portions of such work as may be deemed necessary or expedient by the Engineer without a change in the unit price.

E. Bidders shall not at any time after the submittal of a bid make or have any claim for damages or anticipated profits or loss of profit or otherwise because of any difference between the quantities of work actually done and material furnished and those stated in said unit price items of the Bid Sheet(s).

10. GEOLOGIC AND SOILS CONDITIONS

It shall be the bidder's responsibility to make all examinations, borings, and field studies necessary for required excavation and embankment construction operations and to fully determine all cost factors related thereto, which shall be included in the bid price for the work. The submittal of a bid will be accepted as prima facie evidence that in compliance herewith, the bidder accurately and fully informed itself of all geological and soil conditions that will influence the cost of performing the work and that due consideration of all such factors was taken prior to making the bid.

The Contractor shall promptly notify the District, in writing, if any subsurface or latent physical conditions are encountered at the site differing from those indicated, if material is found that the contractor believes may be hazardous waste, or if unknown physical conditions are encountered of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract.

11. EXECUTION OF CONTRACT AND BONDS

The successful bidder shall execute a written contract with the District in the form attached hereto and shall secure the payment of Workers' Compensation and the successful bidder shall also furnish a certificate of insurance evidencing the contractor has the required insurance at the time contractor executes the agreement, and approved bonds as required in the following paragraphs, all in accordance with the

provisions hereof within ten (10) calendar days or such additional time as may be allowed by the Engineer from the date of the mailing of a notice from the District to the bidder according to the address given, of the acceptance of the bid proposal. If a bidder to whom the award is made fails or refuses to enter into the Contract as herein provided, or to conform to any of the stipulated requirements in connection therewith, the money represented by the cashier's check or Bidder's Bond shall become the property of the District as provided in Section 4, hereof, the award will be annulled and at the discretion of the District, the contract may be awarded to the next lowest qualified bidder. Such bidders shall fulfill every stipulation embraced herein as if the parties to whom the first award was made. A corporation to which an award is made may be required before the contract is finally executed to furnish evidence of its corporate existence, of its right to do business in California and of the authority of the officer signing the contract and bonds for the corporation.

A. The successful bidder shall furnish a bond with a responsible corporate surety or corporate sureties authorized to do business in California conditioned upon the bidder's faithful performance of all covenants and stipulations in the contract. Said bond, hereinafter referred to as the Faithful Performance Bond, shall be in the form approved by the District and shall not be less than one hundred percent (100%) of the total amount of the Contract Sum named in the contract.

B. The bidder to whom the contract is awarded shall also furnish a Labor and Material Payment Bond, approved by the District, in accordance with the provisions of Civil Code Sections 8150-8154 inclusive and Sections 9550- 9566 inclusive. Said labor and material bond shall not be less than one hundred percent (100%) of the total amount of the Contract Sum named in the contract.

C. The surety on all bonds furnished must be satisfactory to the District. The party required to furnish bonds pursuant to these instructions shall furnish such bonds at their own cost and expense. The District shall reject any bond if the surety's acknowledgment is not in the form included in the Contract documents.

D. Permits – The Contractor shall secure, at his own expense, all permits and/or licenses necessary for the prosecution of the contract work, except for any permits and/or licenses that have been secured and paid for by the District. The Contractor shall obtain and pay for all licenses required by cities, state, or federal laws. The Contractor shall also be liable for any expense of any kind associated with any permit or license for any expense of any kind associated with any permit or license, including those obtained by the District, in excess of payments made by the District prior to Contract Award.

The Contractor shall comply with the applicable requirements of all necessary permits and/or licenses, all at no additional cost to the District. Any inspection and/or testing fees required in connection with any governing permit and/or license shall be the responsibility of the contractor at no additional cost to the District.

12. INDEMNIFICATION, INSURANCE

The Contractor shall indemnify the District and provide the required insurance as set forth in the Contract Documents.

13. PREVAILING WAGES

Bidders are hereby notified that this Project is subject to state prevailing wage guidelines. The prime Contractor and all subcontractors are required to pay their laborers and mechanics employed under this Contract, a wage not less than the wage applicable for their work classification, as specified in the wage guidelines. The District has obtained the general prevailing rate of per diem wages in accordance with the law to be paid for the construction of the above Project. The schedules have been obtained from the Director of the California Department of Industrial Relations (DIR), and reference is hereby made to copies thereof on file with the Special District Department at 222 W. Hospitality Lane, 2nd Floor, Street, San Bernardino. CA 92415-0450, which said copies are available to any interested party upon request and included in these bid documents. Further, a copy shall be posted at each job site during the course of construction.

Contractor shall be registered with the DIR at time of bid submission and shall indicate its registration number as well as the registration number for all of its subcontractors that will be working on the project. Contractor acknowledges that the project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

As required by Labor Code section 1771.1(a) **"**A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded."

14. NON-COLLUSION DECLARATION

The District requires all bidders to execute a Non-collusion Declaration in the form attached hereto. The District also reserves the right to require that the principal Contractor shall, before awarding any subcontract, secure from the proposed subcontractor(s) a Non-collusion Declaration in the form also attached.

15. SCHEDULE

Prior to signing the Construction Contract, the Contractor shall submit on a form acceptable to the District and representative of an overall construction schedule for the work. The construction start date will begin when the "Notice to Proceed" is issued and the completion date will be **75 calendar days** after the "Notice to Proceed" is issued by the Department of Public Works - Special Districts.

16. ASSIGNMENT OF CONTRACT AND SUBSTITUTION OF SUBCONTRACTORS

No assignment by the Contractor of any Contract, or any part thereof, to be entered into in accordance with the Bid Documents and these Instruction to Bidders, or of funds to be received thereunder, will be recognized by the awarding authority unless

such assignment has had the prior written approval of the awarding authority and the surety has had notice of such assignment in writing and has given written consent thereto.

No contractor shall substitute any person as a subcontractor in place of the subcontractor designated in the original bid; or permit any such subcontract to be assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the bid; or sublet or subcontract any portion of the work in excess of one-half of one percent (0.5%) of the contractor's total bid in which the original bid did not designate a subcontractor; except as provided by Section 4100 et. seq. of the Public Contract Code of the State of California.

17. PAYMENTS

Payments will be made as outlined in the General Conditions. The Contractor must sign and submit the Affidavit of Completion prior to the Notice of Completion being recorded and retention paid. Progress payments shall be made no more than once every thirty (30) calendar days, nor shall the amount paid be in excess of ninety-five percent (95%) of the total contract at the time of completion. At the request and expense of the successful Bidder, the District will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300. Final payment shall be processed sixty (60) calendar days after the filing of the Notice of Completion. In addition, all payments shall be approved by the Division Engineer for the Department of Public Works - Special Districts.

18. TIME LIMITS OF WORK

The contract work shall be completed within **75 calendar days** after the Notice to Proceed. In case all the work called for under the Contract still needs to be finished or completed within the number of calendar days as outlined in the bid proposal, the Contractor shall forfeit to the District a specified sum of money to be deducted from any payments due to the Contractor. The sum of money shall be **$ 750.00** per calendar day more than the Contract Time as Liquidated Damages per Section 8.5 of the General Conditions.

19. GOVERNING DOCUMENTS

Where a conflict of requirements exists between the various conditions of these documents, the more restrictive of the requirements shall apply.

20. EXPLANATION OF BID ITEMS

The monies to be paid for the various items of work included in the Bid Sheet(s) shall constitute the total obligation of the District as described in the Contract Documents, with the exception of costs specifically delegated to the District by the Contract Documents and no additional compensation will be allowed therefore.

21. SUBCONTRACTOR ELIGIBILITY

Ineligible Subcontractors – Pursuant to the provisions of Section 1777.1 of the California Labor Code, the Labor Commissioner publishes and distributes a list of contractors' ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the DIR website at http://www.dir.ca.gov/dlse/debar.html. Any contract entered into between a contractor and a debarred contractor subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract, and any public money that may have been paid to a debarred subcontractor by a contractor on the project shall be returned to the District. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

22. BID PROTEST

Any Bidder submitting a Bid to the District for this Project may file a protest of the District's proposed award of a construction contract for this Project, provided that each and all of the following are complied with:

1. The bid protest is in writing.

2. The bid protest is submitted to and received by the Department of Public Works - Special Districts, 222 W. Hospitality Lane, Second Floor, San Bernardino, CA, 92415- 0450 before 4:00p.m. of the fifth business day following the bid opening. Failure to timely submit a written protest shall constitute grounds for the District's denial of the bid protest without consideration of the grounds stated in the bid protest and a waiver of the right to protest. Untimely protests will not be accepted or considered.

3. The written bid protest shall set 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), the form of relief required and the legal basis for such relief. 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. The bid protests shall include the name of the project manager and the name and number of the bid Project. Any bid protest not conforming to the foregoing shall be rejected as invalid.

If a valid protest is timely filed and complies with the above requirements, the Department shall review and evaluate the bid protest. All bidders, including the protesting bidder, shall have three business days to respond to the Department and to provide any information requested by the Department. The Department shall respond to the protesting bidder and state the Department's findings regarding the bid protest. The Department Director's decision shall be final, unless overturned by the Governing Board of the District.

BIDDER INFORMATION FORM

(TO BE COMPLETED AND SUBMITTED WITH BID)

A. INFORMATION ABOUT BIDDER

Failure to complete all information may render your bid non-responsive. [**Indicate not applicable ("N/A") where appropriate.**]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

_____

_____

_____

Facsimile Number Telephone Number

4.0 How many years has Bidder's organization been in business as a Contractor? _____

5.0 How many years has Bidder's organization been in business under its present name? _____

5.1 Under what other or former names has Bidder's organization operated? _____

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President's Name: _____

6.4 Vice-President's Name(s): _____

6.6 Treasurer's Name: _____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

_____

_____

_____

8.0 If other than a corporation or partnership, describe organization and name principals:

_____

_____

9.0 List other states in which Bidder's organization is legally qualified to do business.

_____

_____

_____

10.0 What type of work does the Bidder normally perform with its own forces?

_____

_____

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

_____

_____

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

_____

_____

13.0 List Trade References:

_____

_____

_____

_____

14.0 List Bank References (Bank and Branch Address):

_____

_____

_____

_____

15.0 Name of Bonding Company and Name and Address of Agent:

_____

_____

_____

B. LIST OF CURRENT PROJECTS (Backlog)

[**Duplicate Page if needed for listing additional current projects.**]

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work	Contact Name/ Phone Number

C. THREE (3) PROJECTS OF SIMILAR SIZE AND SCOPE COMPLETED OVER THE LAST FIVE YEARS

In order for Bidder's bid to be considered responsive, Bidder must list at least three projects completed within the last five years of similar size and scope below. Failure to complete this section shall render a bid nonresponsive.

Project Client	Description of Bidder's Work	Period of Performance	Cost of Bidder's Work	Contact Name/ Phone Number

D. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

   _____

   _____

   _____

2. Summarize each person's specialized education:

   _____

   _____

   _____

3. List each person's years of construction experience relevant to the project:

   _____

   _____

   _____

4. Summarize such experience:

   _____

   _____

   _____

Bidder agrees that personnel named in this Bid will remain on this Project in their designated capacities until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the County.

E. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized officer of the Bidder:

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

Name of Bidder _____

Signature _____

Name _____

Title _____

Dated _____

BID PROPOSAL

PROJECT: **BIG BEAR TENNIS COURT REHAB PROJECT**

LOCATION: 2080 ERWIN RANCH RD, BIG BEAR, CALIFORNIA 92314

OWNER: BIG BEAR VALLEY RECREATION AND PARK DISTRICT

REVISED BID OPENING DATE: MAY 27, 2025 @ 2:00 PM
This change replaces the previously scheduled dates of May 8, 2025, May 15, 2025, and May 22, 2025.

MANDATORY PRE-BID MEETING DATE: APRIL 17, 2025 @ 10:00 AM

BID OPENING LOCATION: DEPARTMENT OF PUBLIC WORKS – SPECIAL DISTRICTS
222 W. HOSPITALITY LANE, 2nd FLOOR
SAN BERNARDINO, CA 92415-0450

Big Bear Valley Recreation and Park District ("District")
In compliance with the Bid Documents, the undersigned has carefully examined the drawings and other documents on file with the Clerk of the Board for the **BIG BEAR TENNIS COURT REHAB PROJECT** at 2080 Erwin Ranch Road, Big Bear, California 92314 and fully understands the scope and meaning of the bid documents and has attended the **Mandatory pre-bid meeting.** The undersigned has also examined the site of the proposed work and is familiar with the local conditions at the place where the work is to be done.

ITEMIZED BID SHEET
In the blanks provided, fill in the unit prices at which you propose to accomplish the work, including all labor, materials, tools, apparatus, facilities, transportation, equipment, methods, and procedures necessary to fully complete the work. Prices are inclusive of all applicable taxes, fees, bonds, insurance and required compensation pursuant to the laws of the State of California and San Bernardino County.

When discrepancies occur between words and figures, the words shall govern. When discrepancies occur between itemized bid and total bid, the detailed item shall govern. In the case of a discrepancy between the written bid or numerical bid set forth on the bid proposal and the numerical bid set forth in the ePro system, the information on the bid proposal shall prevail. Bidders are advised that they must include a proportional amount of overhead, profit, etc., within these bid amounts.

CONTRACTOR: _____

ITEMIZED REVISED BID PROPOSAL

ITEMIZED BID SCHEDULE:					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**UNIT COST**	**TOTAL EXTENSION**
1.0	Mobilization, Demobilization, Bonds and Insurance	1	LS		$
2.0	**Two (2) New Tennis Courts (Location "A" – See Section G – Contract Drawing):**				
2.1	Excavate and compact subbase and base course (minimum at least 95% FDT) with proper slope (no less than 0.83% and no more than 1% on an actual plane, going down to the north side of the court) and proper storm drainage surface.	1	LS		$
2.2	Provide a new 5" thick dark, green-colored concrete slab, 3,000 psi @ 28 days, with #5 reinforcement deformed bars in both directions and be placed 12 inches apart, moisture/vapor barriers, non-extruded ¾" thick expansion joint filler material, non-sag sealant or self-levelling sealant to fill the gaps for either the expansion joint or the sawed joint, pavement markings and stripping paint.	1	LS		$
2.3	Provide and install concrete pipe sleeves and footings for tennis net posts.	1	LS		$
2.4	Provide and install 78' length x 4' high chain link fence, including any necessary repair to access the existing chain-link fence when complete.	1	LS		$
2.5	Provide a 3- to 5-foot-wide earth swale or re-grade the low-lying spots along the perimeter side of the newly poured concrete slab.	1	LS		$
2.6	Remove and replace the existing concrete entryway, 4' wide x 6' in length, "in-kind", including the height adjustment of the current fence gate.	1	LS		$
3.0	**Single Tennis Court that will be utilized as a multi-purpose court (Location "B" – See Section G – Contract Drawing):**				
3.1	Remove and replace the existing fence (30'L x 10'H) for access and necessary repair when complete.	1	LS		$
3.2	Remove and dispose of all construction debris materials, existing asphalt pavement tennis court & tennis posts.	1	LS		$
3.2	Excavate and compact the subbase and base course materials with proper slope (no less than 0.83% and no more than 1% on an actual plane,	1	LS		$

	away from the center of the court) and storm drainage surface.				
3.4	Provide a new 5" thick dark, green-colored concrete slab, 3,000 psi @ 28 days, with #5 reinforcement deformed bars in both directions and be placed 12 inches apart, moisture/vapor barriers, non-extruded ¾" thick expansion joint filler material, non-sag sealant or self-levelling sealant to fill the gaps for either the expansion joint or the sawed joint, pavement markings and stripping paint.	1	LS		$
3.5	Provide a 3- to 5-foot-wide earth swale or re-grade the low-lying spots along the perimeter side of the newly poured concrete slab.	1	LS		$
	TOTAL BASE BID				**$**

The undersigned hereby agrees to furnish all materials, labor, tools, equipment, apparatus, facilities, and transportation necessary to complete all work in strict conformity with the drawings and specifications and to execute the contract to the satisfaction of the County at the following cost(s):

Total Project Bid: Base Bid of Items 1-3

$_____(Dollars)

The above-mentioned TOTAL PROJECT BID includes applicable California state sales tax, bonds, fees, insurance and all other costs required to perform all the work described in the project drawings and specifications.

The quantities listed in the Itemized Bid Proposal are only an estimate for each of the items. The actual quantities encountered may be different and compensation will be based on the unit prices established above. In case of discrepancies between the "Unit Cost" and the "Total Extension", the "Unit Cost" shall prevail.

The District requires bids to include prices for items that may be added to, or deducted from, the scope of work in the contract for which the bid is being submitted. Pursuant to Public Contract Code Section 20103.8(b), for the purpose of determining the lowest bid price, the District shall determine the low bid to be the lowest total of the bid prices on the TOTAL PROJECT BID (Total Base Bid + Total Additive Bid). If awarded, the contract shall be awarded to the lowest responsive, responsible bidder. This Section does not preclude the District from adding to or deducting any of the additive or deductive items after the lowest responsible bidder has been determined. **Failure to provide a cost for the additive or deductive bid items shall render the bid non-responsive.**

BID DEPOSIT

There is enclosed herewith, a certified check or surety bond in the amount of ten percent (10%) of the TOTAL PROJECT BID, or, more specifically, _____ Dollars ($_____), made payable to the District. The undersigned agrees that in the event of the failure by the undersigned to execute the necessary contract and furnish the required contract bonds and insurance, the certified check or surety bond and the money payable thereon shall be, and remain, the property of District. If the bid is accompanied by a certified or cashier's check, the check shall be deposited by District, and a District warrant for the full amount shall be issued to the undersigned within sixty (60) days from the time the Contract award is made by the District.

If the bid is submitted through the County Electronic Procurement Network (ePro) then scan the bid security (bid bond) and submit the scanned copy with your bid submittal in ePro, additionally, mail or submit the original bid security, in a separate sealed envelope labeled “Bid Bond” with the title of the work and the name of the bidder clearly marked on the outside, to: Department of Public Works – Special Districts, 222 W. Hospitality Lane, Second Floor, San Bernardino, California, 92415-0450. **Any mailed or submitted bid security must be received on or before the time set for the opening of the bids.**

TIME

If the proposal is accepted, the undersigned agrees to execute the required agreement and furnish complete insurance certificates with all endorsements along with the returned signed agreements within ten (10) calendar days of the District providing the Contract to bidder. The undersigned agrees to supply the required bonds within ten (10) calendar days from the date of the execution of the Contract.

TIME OF COMPLETION

The undersigned agrees to complete the Work in **75 CALENDAR DAYS** after the "Notice to Proceed" is issued by the District. Refer to Bid Package for additional information and completion schedule requirements.

LIQUIDATED DAMAGES

Pursuant to the provisions of Government Code section 53069.85 and in the event that all the Work called for in this Contract is not completed within the number of calendar days set forth, the Contractor shall forfeit and pay to the District the sum of **$750.00 per calendar day** for each calendar day the work remains incomplete. The sum shall be deducted from any payments due or to become due to the Contractor, or if that sum is insufficient, will be paid by the Contractor to the District (See General Conditions).

REJECTION OF BIDS

The undersigned agrees that the District reserves the right to reject any or all bids, and reserves

the right to waive informalities in a bid not affected by law, if to do so seems to best serve the public interest.

VALIDITY OF BIDS
The undersigned agrees that this bid will remain valid for 60 days after the bid opening.

STATE LICENSES
The undersigned hereby certifies that it is currently the holder of a valid California Class 'A' (General Engineering), 'C-8' (Concrete), Class 'C-12' (Earthwork and Paving), 'C-13' (Fencing), 'C-32' (Parking and Highway Improvement), and/or 'C-50'(Reinforcing Steel) contractor's license as a contractor in the State of California and that the license is the correct class of license for the work described in the project drawings and specifications. The undersigned also certifies that all subcontractor(s) listed under the Designation of Subcontractors section of the Bid Proposal are currently the holder of a valid contractor's license(s) in the State of California and the license is the correct class of license for the work to be performed by the subcontractor(s).

INSURANCE
The undersigned agrees to furnish certified copies of all insurance policies and endorsements; all certificates of comprehensive, general, and auto liability insurance; Workers' Compensation insurance; and such other insurance that will protect the undersigned and District from claims for damages and personal injury, including death, which may arise from operations under the contract, whether such operation is by the undersigned or by any subcontractor of the undersigned, or anyone directly or indirectly employed by the undersigned or any subcontractor of the undersigned in accordance with the General Conditions. The undersigned agrees to provide the Certificates of Insurance and Endorsements to the District at the time the Contractor executes the contract. All policies (excluding Workers' Compensation) shall name the District as additional insureds. All coverage shall be subject to approval by the District for adequacy of protection.

BONDS AND CONTRACT
The undersigned agrees to execute the required standard contract and to furnish the District with a satisfactory labor and material bond and faithful performance bond, each bond in an amount equal to 100% of the Contract Sum. The bonds shall be secured from a surety company, or surety companies, satisfactory to the District within ten (10) calendar days of the contract award and shall be on District-approved bond forms.

DEPOSIT SECURITIES
The contractor may, upon written request, and at their expense and after approval by the District, deposit substitute securities as described in Public Contract Code section 22300, in lieu of retention monies withheld to ensure performance.

FORMER COUNTY OFFICIALS
The contractor agrees to provide or has already provided information on former San Bernardino County administrative officials (as defined below) who are employed by or represent the Contractor. The information provided includes a list of former county administrative officials who terminated county employment within the last five years and who are now officers, principals, partners,

associates, or members of the business. The information also includes the employment with or representation of a contractor. For purposes of this provision, “county administrative official” is defined as a member of the Board of Supervisors or such officer’s staff, Chief Executive Officer or member of such officer’s staff, county department or group head, assistant department or group head, or any employee in the Exempt Group, Management Unit or Safety Management Unit.

INACCURACIES OR MISREPRESENTATIONS

If, during the course of the administration of this agreement, the District determines that the Contractor has made a material misstatement or misrepresentation or that materially inaccurate information has been provided to the District, this Contract may be immediately terminated. If this contract is terminated according to this provision, the District is entitled to pursue any available legal remedies.

VISITING THE SITE

The undersigned has thoroughly examined the drawings, specifications, and signed addenda (if any), has visited the site and is thoroughly familiar with the contents and all of the conditions thereof.

DESIGNATION OF SUBCONTRACTORS

In compliance with the provisions of Section 4100-4108 of the Public Contract Code of the State of California, and any amendments thereof, the undersigned shall list on the designated form, the name, location of the place of business, the California contractor license number and the Department of Industrial Relations registration number of each proposed subcontractor who will perform work or labor or render services to the principal Contractor in an amount greater than one-half of one percent (.5%) of the total bid; and shall state the portions of the Work which each such subcontractor will do.

If the undersigned fails to specify a subcontractor for any work to be performed under the contract, the undersigned agrees to perform the work and shall not be permitted to subcontract that work except in cases of public emergency, and then only after written finding as public record by the Governing Board of the District.

The undersigned certificates that all subcontractor(s) listed are currently the holders of valid contractor’s license(s) in the state of California, and the license(s) is the correct class of license for the work to be performed by the subcontractor(s).

The undersigned certifies that it and all subcontractor(s) listed have registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The undersigned agrees that no contractor or subcontractor may be awarded a contract for public work or perform work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The undersigned acknowledges that the project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

As required by Labor Code section 1771.1(a) “A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.”

Where a hearing is required for a decision on the substitution of subcontractors, pursuant to the provisions of Chapter 4, Part 1, Division 2, of the Public Contract Code, (commencing with Section 4100-4108) by the awarding authority, or a duly appointed hearing officer, the Director of Special Districts or his/her designee, shall prepare and certify a statement of costs incurred by the District for investigation, and to conduct the hearing, including the costs of any hearing officer and shorthand reporter appointed. For the purposes of a hearing for the substitution of subcontractors (pursuant to the Public Contract Code commencing with Section 4100), the awarding authority shall be the Director of the Department of Public Works - Special Districts, or his/her designee.

The statement of costs shall be sent to the undersigned, who shall reimburse the District for all costs. If not paid separately, such reimbursement shall be deducted from monies due and owing to the undersigned prior to acceptance of the project.

ADDENDA:
If any addendums are issued during the bid solicitation period, the bidder shall be responsible for ensuring that they have received all addenda issued for the Project. The submittal of a bid shall be deemed to be based on the Bid Documents, as modified and/or clarified by any and all addenda.

DECLARATION

The undersigned has submitted with the bid proposal a non-collusion declaration, signed under penalty of perjury. The undersigned agrees to furnish the District non-collusion declarations for subcontractors signed under penalty of perjury and states that this is a genuine proposal and is neither collusive nor made in the interest of any other person, and has not induced anyone to submit a sham bid or refrain from bidding.

The undersigned acknowledges it has registered with the ePro system prior to the date and time to receive sealed bids or it will be disqualified.

The undersigned declares that the only person or parties interested in this proposal as principles are those named herein; that this bid is made without any connection with any other person or persons making a bid for the same work, except for another division of the undersigned which may submit an independent bid; that the bid is in all respects fair and without collusion or fraud; that the undersigned has read the Advertisement for Bids and the Instructions to Bidders and agrees to all the stipulations contained therein; that the undersigned has examined the form of Contract

(including the specifications, drawings, and other documents incorporated therein by reference); that in the event this bid as submitted, including the incorporated bidding documents, be accepted by the District, the undersigned shall execute a Contract to perform the work as outlined herein.

If the undersigned is a corporation, the proposal must be signed by an authorized officer of the corporation.

If the bid proposal is submitted through ePro the undersigned acknowledges that its electronic signature is legally binding.

Check one: ( ) Sole Proprietor ( ) Partnership ( ) Corporation ( ) Other

Name of Bidder: _____

Address: _____

Phone:(____)_____ Fax No.: (____) _____

Contractor's License No.:_____Primary Class _____

Expiration Date of Contractor's License_____

DIR Registration #_____

Federal Employee ID No.: _____

E-mail Address: _____

1. Attached is the required bid security in the amount of not less than 10% of the Total Bid Price.
2. Attached is the fully executed Non-Collusion Declaration form.
3. Attached is the completed Designation of Subcontractors form.
4. Attached is the completed Bidder Information Form.
5. Attached is the completed Iran Contracting Act Certification.

I hereby certify under penalty of perjury under the laws of the State of California that all of the information submitted in connection with this Bid and all of the representations made herein are

true and correct.

Authorized Signature:_____Title: _____

Print Name:_____Date: _____

BID BOND

The makers of this bond are,_____, as Principal, and_____, as Surety and are held and firmly bound unto Big Bear Valley Recreation and Park District, hereinafter called the District, in the penal sum of TEN PERCENT (10%) OF THE TOTAL PROJECT BID PRICE of the Principal submitted to District for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated_____, 20___, for _____

_____

(INSERT PROJECT NAME).

If the Principal does not withdraw its bid within the time specified in the Contract Documents; and if bid is rejected or, in the alternate, the Principal is awarded the Contract, signs the Contract and provides all documents to the District as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect and upon default of the Principal shall be forfeited to the District, it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal shall be the amount of this obligation as herein stated, as liquidated damages.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this __day of_____, 20__, the name and corporate seal of each corporation.

(Corporate Seal)

_____

Contractor/ Principal

By_____

Title _____

_____

(Corporate Seal) Surety

By _____

Attorney-in-Fact

(Attach Attorney-in-Fact Certificate) Title _____

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

The undersigned declares:

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

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

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

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

_____
(Signature)

_____
(Print Name)

_____
(Print Title)

_____
(Date)

END OF NON-COLLUSION DECLARATION

CONTRACTOR CERTIFICATION

CALIFORNIA AIR RESOURCES BOARD (CARB)

IN-USE OFF-ROAD DIESEL-FUELED FLEET CERTIFICATION OF COMPLIANCE

I hereby certify that Contractor is familiar with the requirements of California Code of Regulations (CCR) Title 13 sections 2449, 2449.1, and 2449.2, In-Use Off-Road Diesel Fueled Fleet Regulation (Off-Road Regulation) Compliance (CARB), and that Contractor shall comply with these requirements:

1. **Certification of Compliance.** I hereby certify that I and all of my subcontractors will conform to the California Air Resource Board ("CARB") In-Use Off-Road Diesel-Fueled Fleets requirements for all work involving the use of vehicles subject to the regulations, including, without limitation, as applicable, the Contracting Requirements in Title 13 CCR section 2449, subdivision (i), subparts (1) – (4), and the Prime Contractor Requirements in Title 13 CCR section 2449, subdivision (j), subparts (1) – (5).

2. **Instructions.** Check one (1) box below.

   ☐ Contractor's current CARB issued Certificate of Reported Compliance accompanies this Certification. (If this box is checked, the valid Certificate(s) Reported Compliance with this Regulation for In-Use Off-Road Disel-Fueled Fleet provided by CARB for the fleet selected for the contract and their listed subcontractors, if applicable ***must*** be provided with this form.)

   ☐ Contractor certifies that its work on the Project (including work of its Subcontractors) does not involve the use of vehicles subject to the CARB In-Use Off-Road Diesel-Fueled Fleets requirements.

3. I further certify that each of the Contractor's listed subcontractors is familiar with these requirements and shall also comply.

***Note:** All Subcontractor(s) Certificate of Reported Compliance Number(s) shall be listed on the Designation of Subcontractors form.
Failure to submit this form or comply with any of the above requirements may result in the bid to be found non-responsive and the bid bond forfeited. Bidder shall ensure that their fleet, as well as all rental fleets and subcontractor fleets, maintain their active and current CARB certification for the duration of the project.
The Bidder certifies under penalty of perjury under the laws of the State of California that the information provided in this form is true and correct.

Bidder's Company Name: _____

Signature: _____ Title: _____

Print Name: _____ Date: _____

LIST OF SUBCONTRACTORS FORM

In compliance with the Subletting and Subcontracting Fair Practices Act of the Public Contract Code of the State of California, each bidder shall set forth below: (a) the name, contractor's license number and the location of the place of business of and (b) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work in an amount in excess of one-half of one percent (1/2%) of the Contractor's Total Bid Price. Notwithstanding the foregoing, if the work involves streets and highways, then the Contractor shall list each subcontractor who will perform work or labor or render service to Contractor in or about the work in an amount in excess of one-half of one percent (1/2%) of the Contractor's Total Bid Price or $10,000, whichever is greater. The District may, within its sole discretion, grant additional time to provide the below-requested information.

If no subcontractor is specified for a portion of the Work, or if more than one subcontractor is specified for the same portion of Work, to be performed under the Contract in excess of one-half of one percent (1/2%) of the Contractor's Total Bid Price or $10,000, whichever is greater, or if the work involves streets or highways, then the Contractor shall be deemed to have agreed that it is fully qualified to perform that Work, and that it shall perform that portion itself.

Portion of Work	Subcontractor	Location of Business	License Number	DIR Registration No.	CARB Certificate of Compliance No

Portion of Work	Subcontractor	Location of Business	License Number	DIR Registration No.	CARB Certificate of Compliance No.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

END OF LIST OF SUBCONTRACTORS FORM

IRAN CONTRACTING ACT CERTIFICATION

(Public Contract Code section 2200 *et seq.*)

As required by California Public Contract Code section 2204, the Contractor certifies, subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code section 2200 *et seq.*) is true and correct:

☐ The Contractor is not:

(i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code section 2203; or

(ii) a financial institution that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ District has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, District will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

☐ The amount of the Contract payable to the Contractor for the Work does not exceed $1,000,000.

Signed_____

Titled_____

Firm_____

Date_____

Note: In accordance with Public Contract Code section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of $250,000 or twice the Contract Price, termination of the Contract and/or ineligibility to bid on contracts for three years.

END OF IRAN CONTRACTING ACT CERTIFICATION

Section F -
Technical Specifications,
page 6 of 7.R

SAN BERNARDINO COUNTY

www.SBCounty.gov

SECTION F

TECHNICAL SPECIFICATIONS (R)

BIG BEAR TENNIS COURT REHAB PROJECT

FOR

BIG BEAR VALLEY RECREATION AND PARK DISTRICT
BIG BEAR, CALIFORNIA

PROJECT NO.: 30.30.0164

Big Bear Tennis Court Rehab Project
Big Bear Valley Recreation and Park District
Big Bear, California

Technical Specifications (R)

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Coordination and project conditions.
2. Field engineering.
3. Preconstruction meeting.
4. Site mobilization meeting.
5. Progress meetings.
6. Pre-installation meetings.
7. Cutting and patching.
8. Special procedures.
9. Construction staking.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

C. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

A. Employ Land Surveyor registered in State of California and acceptable to the Engineer.

B. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.

C. Control datum for survey is that shown on Drawings. Verify its accuracy with the existing improvements elevation.

D. Verify setbacks and easements; confirm drawing dimensions and elevations.

E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

F. Submit copy of site drawing signed by Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.

G. Maintain complete and accurate log of control and survey work as Work progresses.

H. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

I. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.4 PRECONSTRUCTION MEETING

A. Owner or Engineer will schedule meeting after Notice of Award.

B. Attendance Required: Owner, Engineer, and Special Subconsultants Contractor.

C. Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, schedule of values, unit costs and progress schedule.
5. Designation of personnel representing parties in Contract, inspection and Engineer.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Scheduling activities of Geotechnical Engineer and other technical subconsultants.

D. Record minutes and distribute copies within two (2) days after meeting to participants, with copies to Engineer, Owner, and those affected by decisions made.

1.5 SITE MOBILIZATION MEETING

A. This meeting could be the same as the pre-construction meeting. Engineer or Owner will schedule meeting at Project site prior to Contractor occupancy.

B. Attendance Required: Owner, Engineer, Geotechnical Engineer, Surveyor, or other Special Consultants, Contractor, Contractor's Superintendent, and major Subcontractors.

C. Agenda:

1. Use of premises by Owner and Contractor.
2. Owner's requirements and partial occupancy.

3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.

D. Record minutes and distribute copies within two 2 days after meeting to participants, with copies to Engineer, Owner, and those affected by decisions made.

1.6 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at a maximum of monthly intervals.

B. Contractor will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, or as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Review of requests for information (RFI).
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to Work.

E. Record minutes and distribute copies within two (2) days after meeting to participants, with copies to Engineer, Owner, and those affected by decisions made.

1.7 PRE-INSTALLATION MEETINGS

A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

C. Notify Engineer four (4) days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.

E. Record minutes and distribute copies within two (2) days after meeting to participants, with copies to Engineer, Owner, and those affected by decisions made.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection.

H. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

3.2 SPECIAL PROCEDURES

A. Materials: As specified in product sections; match existing with new products and salvaged products for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to permit installation of new work and finishes.

G. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.

H. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

I. Where change of plane of 1/4 inch or more occurs, submit photograph with recommendation for providing smooth transition; to Engineer for review request instructions from Engineer.

J. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

3.3 CONSTRUCTION STAKING

A. All improvements to be surveyed by an engineer/surveyor licensed in the State of California to provide surveying services.

B. Contractor to provide to District/Engineer all cut sheets, stake-out sheets upon request.

END OF SECTION 01 30 00

SECTION 01 31 00
MOBILIZATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the "Standard Specifications for Public Works Construction," Latest Edition, Sections 7, 8, and 9, apply except as modified herein.

1.2 SCOPE OF WORK

A. Mobilization shall consist of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all offices, buildings, and other facilities necessary for work on the project and for all other work and operations which must be performed or costs incurred prior to beginning work on the project site.

PART 2 - MATERIALS

2.1 CONSTRUCTION FENCING

A. Prior to beginning any site work the contractor shall install a 6' tall (min.) temporary construction fence around the entire perimeter of the work as shown on plans. The fence shall be galvanized chainlink (new or used), free of openings or breaks in the fabric, with fence posts at 10' o.c. maximum. The fabric shall be minimum 2" diamond mesh, interwoven, 11 gauge twisted tight top and bottom. The posts shall be minimum 2" dia. schedule 40 galvanized pipe installed 24" into the ground. A concrete footing is not required.

B. A gate or gates are to be located in such a way as to allow adequate access ofworkers and work vehicles. Site is to be kept secure, gates locked, at all times when work is not being performed at the site.

C. The fence shall be maintained in place throughout the construction period and through to the end of the maintenance period. The temporary fence shall be removed prior to the final inspection/project acceptance at the end of the maintenance period.

2.2 TEMPORARY UTILITIES

A. The Contractor shall furnish temporary water, and power complete with connecting piping, wiring, lamps, meters, and similar equipment as required for the work. Install, maintain, and remove temporary lines upon completion of the work. All expenses in connection with temporary services and facilities shall be paid by the Contractor.

B. Subsequent to the setting of the permanent utility meters, the Contractor will be responsible for payment of utility bills rendered for utility service through the respective permanent meters until acceptance of project by the city. The Contractor shall make all arrangements for setting permanent meters.

2.3 TEMPORARY TOILETS

A. The Contractor shall install and maintain in a sanitary condition suitable toiletsfor the use of workers. Toilets shall be portable and shall be removed from the job site at the end of each work day. There shall be a minimum of one (1) toilet for each multiple of twenty (20) Contractor's employees or fractional part thereof working at the job site.

2.4 TEMPORARY OFFICE

A. The Contractor shall provide and maintain a watertight office on the premises where directed, for own and Subcontractor's use. Building/trailer shall be heated, provided with operating windows, doors with locks, tables, chairs, racks for drawings, and file drawers. This office shall have a minimum floor space of 120 square feet.

2.5 TEMPORARY TELEPHONE

A. The Contractor shall provide at his own expense a non-pay telephone for use of the Contractor and Subcontractor, as well as for the use of the Landscape Architect and the City. The Landscape Architect's and the City's use will be for local calls only. For toll calls, all charges will be reversed.

2.6 OFFICE EQUIPMENT

A. Contractor shall furnish and maintain necessary office equipment, including a copy machine and fax phone. Cost for use of office equipment for the duration of the project shall be borne by the Contractor.

2.7 TRASH REMOVAL AND CLEANING

A. The Contractor shall provide trash receptacles for collecting debris and shall remove debris from the job site at regular intervals not less than weekly. The Contractor shall not park equipment on the street after work hours or overnight.

PART 3 - EXECUTION

3.1 PAYMENT

A. Payment for mobilization will be at the lump sum price bid for mobilization. Payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work in mobilization and demobilization as herein specified, 10% retention shall apply to all mobilization work.

END OF SECTION 01 31 00

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal procedures.
2. Construction progress schedules.
3. Proposed products list.
4. Product data.
5. Shop drawings.
6. Samples.
7. Design data.
8. Test reports.
9. Certificates.
10. Manufacturer's instructions.
11. Manufacturer's field reports.
12. Construction photographs.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal with Engineer accepted form.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Identify Project, Contractor, subcontractor and supplier, pertinent drawing and detail number, and specification section number, appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project and deliver to District’s Project Manager. Coordinate submission of related items.

F. For each submittal for review, allow seven (7) calendar days excluding delivery time to and from Contractor.

G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Engineer review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedules within fifteen (15) days after date of Owner-Contractor Agreement or as established in Notice to Proceed. After review, resubmit required revised data within ten (10) days.

B. Submit revised Progress Schedules with each Application for Payment.

C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

E. Submit computer generated horizontal bar chart with separate line for each section of Work, identifying first workday of each week.

F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

G. Indicate estimated percentage of completion for each item of Work at each submission.

H. Submit separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and products identified under Allowances, and dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.

I. Indicate delivery dates for Owner furnished products and products identified under Allowances.

J. Revisions To Schedules:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect (including effect of changes on schedules of separate contractors).

1.4 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Owner-Contractor Agreement or as stated in the Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

A. Product Data: Submit to Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Submit one (1) electronic copy.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit to Engineer if necessary or requested in construction documents for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.

1. Include signed and sealed calculations to support design.
2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. Submit number of opaque reproductions Contractor requires, plus one (1) copy Engineer will retain.

E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.7 SAMPLES – Not Used

1.8 DESIGN DATA

A. Submit for Engineer's knowledge as contract administrator or for Owner.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.9 TEST REPORTS

A. Submit for Engineer's knowledge as contract administrator or for Owner.

B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.12 CONSTRUCTION PHOTOGRAPHS – Not

Used PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 33 00

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section Includes:

1. Quality control and control of installation.
2. Tolerances.
3. References.
4. Labeling.
5. Mock-up requirements.
6. Testing and inspection services.
7. Examination.
8. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

1.3 TOLERANCES

A. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on Contract Documents except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.5 LABELING

A. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.

1. Model number.
2. Serial number.
3. Performance characteristics.

1.6 MOCK-UP REQUIREMENTS – Not Used

1.7 TESTING AND INSPECTION SERVICES

A. Public Works Field Inspector shall be assigned to conduct inspections for compliance.

PART 2 - PRODUCTS - Not

Used PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION 01 40 00

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Products.
2. Product delivery requirements.
3. Product storage and handling requirements.
4. Product options.
5. Product substitution procedures.
6. Equipment electrical characteristics and components.

1.2 PRODUCTS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

C. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

E. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during bidding period to requirements specified in this section.

B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that Bidder:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for Substitution as for specified product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner [and Engineer] for review or redesign services associated with re-approval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
3. Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 - PRODUCTS – Not

PART 3 - EXECUTION - Not Used

END OF SECTION 01 60 00

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality Assurance – all work
2. Closeout procedures.
3. Final cleaning.
4. Protecting installed construction.
5. Project record documents.
6. Product warranties and product bonds.

1.2 QUALITY ASSURANCE – ALL WORK

A. All work performed under these specifications and construction drawings shall conform as a minimum with the latest edition of the following requirements:

1. Standard Specifications for Public Works Construction (SSPWC)
2. California Building Standards Codes, Title 24, 2019 Edition (CBC-19).

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.

B. Provide submittals to Engineer and District.

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

D. District will occupy all areas constructed and landscaped.

1.4 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean site: sweep paved areas, rake clean landscaped surfaces.

C. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.5 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Prohibit traffic from landscaped areas.

1.6 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following approved documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. All documents are to be reviewed, approved, and permits issued by the District IOR. One set of approved construction documents shall be used onsite for construction purposes.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.
4. All documents are to be reviewed, approved, and permits issued by the District IOR. One set of approved construction documents shall be used onsite for construction purposes.

F. Record Drawings and Shop Drawings, if applicable: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish surface datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Field changes of dimension and detail.
4. Details not on original Contract drawings.

G. Submit documents to Engineer with claim for final Application for Payment.

1.7 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of work.

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Submit prior to final Application for Payment.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 01 70 00

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formwork for cast-in place concrete.
2. Shoring, bracing, and anchorage.
3. Form accessories.
4. Form stripping.

B. Related Sections:

1. Section 32 13 13 – Concrete Paving

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Formwork (Vertical Structures):

1. Basis of Measurement: By the square foot.
2. Basis of Payment: Includes form materials, placement, placing accessories, stripping.

B. Formwork (Horizontal Supported Structures):

1. Basis of Measurement: By the square foot.
2. Basis of Payment: Includes form materials, placement, placing accessories, stripping.

1.3 REFERENCES

A. American Concrete Institute:

1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
2. ACI 301 - Specifications for Structural Concrete.
3. ACI 318 - Building Code Requirements for Structural Concrete.
4. ACI 347 - Guide to Formwork for Concrete.

B. American Forest and Paper Association:

1. AF&PA - National Design Specifications for Wood Construction.

C. The Engineered Wood Association:

1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.

D. American Society of Mechanical Engineers:

1. ASME A17.1 - Safety Code for Elevators and Escalators.

E. ASTM International:

1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
2. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

F. West Coast Lumber Inspection Bureau:

1. WCLIB - Standard Grading Rules for West Coast Lumber.

G. Standard Specifications for Public Works Construction (SSPWC).

H. California Building Standards Codes, Title 24, 2022 Edition (CBC-22).

1.4 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 318 and to conform to design SSPWC requirements to achieve concrete shape, line and dimension as indicated on Drawings.

1.5 PERFORMANCE REQUIREMENTS

A. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96, Procedure A.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on void form materials and installation requirements.

1.7 QUALITY ASSURANCE

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. Perform Work in accordance with ACI 347, ACI 301 and ACI 318.

C. For wood products furnished for work of this Section, comply with AF&PA.

D. Perform Work in accordance with SSPWC and the CBC-22

E. Maintain one (1) copy of each document on site.

1.8 QUALIFICATIONS – Not Used

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver void forms and installation instructions in manufacturer's packaging.

B. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.10 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

PART 2 - PRODUCTS

2.1 WOOD FORM MATERIALS

A. Form Materials: At discretion of Contractor and as approved by Engineer.

2.2 PREFABRICATED FORMS

A. Manufacturers:

1. Aluma-Systems Inc., Burke Co.
2. Economy Forms Corp.
3. Molded Fiber Glass Concrete Forms Co.
4. Sonoco Products Co.
5. Symons Corp.
6. Western Forms, Inc.
7. Substitutions: Permitted as approved by Engineer.

2.3 FORMWORK ACCESSORIES

A. Form Ties: Removable type, galvanized metal, adjustable length, with waterproofing washer, free of defects.

B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.

C. Form Anchors and Hangers:

1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
3. Penetration of structural steel members is not permitted.

D. Form Release Agent: Colorless mineral oil that will not stain concrete or absorb moisture.

1. Manufacturers:
    a. Arcal Chemical Corporation Arcal-80.
    b. Industrial Synthetics Company Synthex.
    c. Nox-Crete Company Nox-Crete Form Coating.
    d. Substitutions: Permitted as approved by Engineer.

E. Corners: Fillet or Chamfer, rigid plastic or wood strip maximum possible lengths, size per drawings.

F. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, release tape sealed slots, anchors for securing to concrete formwork.

G. Vapor Retarder: Where indicated on Drawings, 8 mil thick polyethylene sheet.

H. Bituminous Joint Filler: ASTM D1751.

I. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.

J. Water Stops: Rubber or Polyvinyl chloride, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

2.4 COATINGS

A. Coatings for Aluminum: Polyamide epoxy finish coat with paint manufacturer's recommended primer for aluminum substrate. Apply one coat primer and one coat finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.

C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

3.2 INSTALLATION

A. Earth Forms – Not Allowed

B. Formwork - General:

1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
5. Complete wedging and bracing before placing concrete.

C. Forms for Smooth Finish Concrete:

1. Use steel, plywood or lined board forms.
2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
3. Install form lining with close-fitting square joints between separate sheets without springing into place.
4. Use full size sheets of form lines and plywood wherever possible.
5. Tape joints to prevent protrusions in concrete.

6. Use care in forming and stripping wood forms to protect corners and edges.
7. Level and continue horizontal joints.
8. Keep wood forms wet until stripped.

D. Forms for Surfaces to Receive Membrane Waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.

E. Framing, Studding and Bracing:

1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.
2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Construct beam soffits of material minimum of 2 inches thick.
4. Distribute bracing loads over base area on which bracing is erected.
5. When placed on ground, protect against undermining, settlement or accidental impact.

F. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301 and ACI 318.

G. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

H. Install fillet and chamfer strips on external corners if indicated in drawings.

I. Install void forms in accordance with manufacturer's recommendations.

J. Do not reuse wood formwork more than three (3) times for concrete surfaces to be exposed to view unless approved by Engineer. Do not patch formwork.

3.3 APPLICATION – FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

D. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION – INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Install formed openings for items to be embedded in or passing through concrete work.

B. Locate and set in place items required to be cast directly into concrete.

C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Install water stops continuous without displacing reinforcement.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

H. Form Ties:

1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
2. Place ties at least 1 inch away from finished surface of concrete.
3. Leave inner rods in concrete when forms are stripped.
4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.

I. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

J. Construction Joints:

1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
4. Arrange joints in continuous line straight, true and sharp.

K. Embedded Items:

1. Make provisions for pipes, sleeves, anchors, inserts, anchor slots, nailers, water stops, and other features.
2. Do not embed wood or uncoated aluminum in concrete.
3. Obtain installation and setting information for embedded items furnished under other Specification sections.
4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.

L. Screeds:

1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
2. Slope slabs to drain where required or as shown on Drawings.
3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Engineer.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

D. Leave forms in place for minimum number of days as specified in ACI 347.

3.7 ERECTION TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301 and ACI 318.

3.8 FIELD QUALITY CONTROL

A. All inspections are to be conducted by Owner IOR.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

C. Notify Engineer after placement of reinforcing steel in forms, but prior to placing concrete.

D. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION 03 10 00

SECTION 30 20 00
CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reinforcing bars.
2. Welded wire fabric.
3. Reinforcement accessories.

B. Related Sections:

1. Section 03 10 00 – Concrete Forming and Accessories.
2. Section 03 30 00 – Cast-In-Place Concrete.
3. Section 04 20 16 – Reinforce Unit Masonry.
4. Section 33 05 13 – Manholes and Structures.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Bar Reinforcement:

1. Basis of Measurement: By the ton.
2. Basis of Payment: Includes reinforcement, placement, and accessories.

B. Welded Wire Fabric Reinforcement:

1. Basis of Measurement: By the square foot.
2. Basis of Payment: Includes welded wire reinforcement, placement, and accessories.

1.3 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 318 - Building Code Requirements for Structural Concrete.
3. ACI 530.1 - Specifications for Masonry Structures.
4. ACI SP-66 - ACI Detailing Manual.

B. ASTM International:

1. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
3. ASTM A496 - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
4. ASTM A497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

5. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
6. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
7. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
8. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
9. ASTM A775/A775M - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
10. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
11. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
12. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
13. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars.

C. American Welding Society:
1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

D. Concrete Reinforcing Steel Institute:
1. CRSI - Manual of Standard Practice.
2. CRSI - Placing Reinforcing Bars.

E. Standard Specifications for Public Works Construction (SSPWC).

F. California Building Code, 2022 Edition (CBC-22).

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices.

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
1. Submit certified copies of mill test report of reinforcement materials analysis.

1.5 QUALITY ASSURANCE

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. Perform Work in accordance with ACI 301 and ACI 318.

C. Prepare shop drawings in accordance with ACI SP-66.

D. Perform Work in accordance with SSPWC and CBC-22.

E. Maintain one (1) copy of each document on site.

1.6 QUALIFICATIONS

A. Welders: AWS qualified within previous 12 months.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 - PRODUCTS

2.1 REINFORCEMENT

A. Deformed Reinforcement: # 5 reinforcement deformed bars in both directions are placed 12 inches apart. ASTM A615/A615M; 60 ksi or 40 ksi yield strength, steel bars, unfinished.

B. Welded Deformed Wire Fabric: ASTM A497; in flat sheets or coiled rolls; unfinished.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor retarder puncture.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces type; size and shape to meet Project conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcement in accordance with ACI 318.

B. Form standard hooks for bends as indicated on Drawings.

C. Form reinforcement bends with minimum diameters in accordance with ACI 318.

D. Fabricate column reinforcement with offset bends at reinforcement splices.

E. Form ties and stirrups as indicated in drawings.

F. Weld reinforcement in accordance with AWS D1.4 if specified in drawings.

G. Locate reinforcement splices not indicated on Drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

2.4 SOURCE QUALITY CONTROL

A. Make completed reinforcement available for inspection at manufacturer’s factory prior to packaging for shipment. Notify Architect/Engineer at least seven days before inspection is allowed.

B. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.

1. Do not weld crossing reinforcement bars for assembly except as permitted by Architect/Engineer.

B. Do not displace or damage vapor retarder.

C. Accommodate placement of formed openings.

D. Space reinforcement bars with minimum clear spacing in accordance with ACI 318 of one bar diameter, but not less than 1 inch.

1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

E. Maintain concrete cover around reinforcement in accordance with ACI 318 as follows:

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches
Concrete exposed to earth or weather	No. 6 bars and larger	2 inches
	No. 5 bars and smaller	1-1/2 inches
Supported Slabs, Walls, and Joists	No. 14 bars and larger	1-1/2 inches
	No. 11 bars and smaller	3/4 inches
Beams and Columns		1-1/2 inches
Shell and Folded Plate Members	No. 6 bars and larger	3/4 inches
	No. 5 bars and smaller	1/2 inches

F. Splice reinforcing where indicated on Drawings in accordance with splicing device manufacturer’s instructions.

3.2 ERECTION TOLERANCES

A. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches	plus or minus 3/8 inch	minus 3/8 inch
Less than 8 inches	plus or minus 1/2 inch	minus 1/2 inch

B. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls and retaining walls.

3.3 FIELD QUALITY CONTROL

A. All inspections are to be conducted by Owner IOR.

B. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Reinforcement Inspection:

1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
2. Welding: Inspect welds in accordance with AWS D1.1. (If required in drawings).
3. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.

END OF SECTION 30 20 00

SECTION 30 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 GENERAL PROVISIONS:

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01000 – GENERAL REQUIREMENTS, which are hereby made part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK:

A. Work Included: This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes for the following:

1. Exterior slabs-on-grade.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 01450, STRUCTURAL TESTS AND INSPECTIONS
2. Section 01000.14, EARTHWORK; Excavation and establishment of subgrade elevations.

1.03 UNIT PRICE – MEASUREMENT AND PAYMENT:

A. Concrete – Slab – on – fill or grade:
1. Basis of Measurement: By the square foot.
2. Basis of Payment: Includes concrete steel reinforcing, placement accessories, consolidating and leveling, trowelling, curing.

B. Concrete – Vertical in Forms:
1. Basis of Measurement: By the square foot.
2. Basis of Payment: Includes concrete steel reinforcement, placement accessories, consolidating, curing.

C. Concrete – Miscellaneous Locations:
1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes concrete steel reinforcing, placement accessories, consolidating and leveling, troweling, curing.

D. Concrete – Grouting:
1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes preparation of substrate, grout, placement, consolidating, troweling, curing.

1.04 SUBMITTALS:

A. Refer to Section 01 33 00 – Submittal Procedures: Submittal procedures.

B. Refer to Section 3.8, SUBMITTALS of the Greenbook "Standard Specifications for Public Works Construction 2021 Edition" for submittal provisions and procedures.

C. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, curing compounds, and others if requested by the Engineer.

D. Shop drawings for reinforcement detailing, fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing and supports for concrete.

E. Concrete mix design for each mix specified. Supporting test data shall be submitted if requested.

   a. Submit alternate mix designs when the characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

   b. Indicate the amounts of mixing water to be withheld for later addition at the Project site.

   c. All mix designs shall be in accordance with Section 201 of SSPWC.

F. Proposed method of curing and associated products.

G. Proposed precautions for hot weather and cold weather concreting.

H. Laboratory test reports for concrete materials and mix design test.

I. Material test reports for the following, from a qualified testing agency, indicating compliance with specification requirements:

   a. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

I. Material certificates for each of the following, signed by the manufacturers:
   1. Cementitious material.
   2. Admixtures
   3. Form materials and form-release agents.
   4. Steel reinforcement and accessories.
   5. Non-metallic shrinkage resistant grout.
   6. Curing compounds.
   7. Floor and slab treatments.
   8. Bonding agents.
   9. Adhesives.
   10. Semi-rigid joint filler.
   11. Joint-filler strips.
   12. Repair materials.

J. Qualification Data: For Installer and Manufacturer.

1.04 CLOSEOUT SUBMITTALS:

A. Section 01 70 00 – Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Accurately record actual location of embedded utilities and components concealed from view in finished construction.

1.05 QUALITY ASSURANCE:

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. All mix designs, mix uses and other works shall conform to Section 201 of the SSPWC.

C. Perform Work in accordance with ACI 301 and ACI 318.

D. Conform to ACI 305 when concreting during hot weather.

E. Confirm to ACI 306.1 when concreting during cold weather.

F. Acquire cement and aggregate from one source for Work.

G. Installer Qualifications: A qualified installer who employs on the Project personnel qualified as ACI certified Flatwork Technician and Finisher and a supervisor who is an ACI certified Concrete Flatwork Technician.

H. Manufacturer Qualifications: A firm experienced in manufacturing ready-mix concrete products that comply with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

I. Testing Agency for Mix Design Qualifications: An independent agency, registered in the State of California as an approved testing agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade 1. The Testing Agency Laboratory supervisor shall be an ACI certified Concrete Laboratory Testing Technician – Grade II.

J. Source Limitations: Obtain each type of class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

K. ACI Publications:

1. Comply with the following unless modified by requirements in the Contract Documents:
   a. ACI 117, “Standard Specifications for Tolerances for Concrete Construction and Materials.”
   b. ACI 211.1, “Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete.” c. ACI 214, “Evaluation of Strength Test Results of Concrete.”
   c. ACI 301, “Specification for Structural Concrete.”
   d. ACI 304, “Guide for Measuring, Mixing, Transporting and Placing Concrete.”
   e. ACI 305, “Hot Weather Concreting.”
   f. ACI 306, “Cold Weather Concreting.”
   g. ACI 308, “Guide to Curing Concrete.”
   h. ACI 309, “Guide for Consolidation of Concrete.”
   i. ACI 311.1, “ACI Manual of Concrete Inspection.”
   j. ACI 315, “Details and Detailing of Concrete Reinforcement.”
   k. ACI 318, “Building Code Requirements for Structural Concrete and Commentary.”
   l. ACI 347, “Guide for Formwork for Concrete.”

2. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed to be mandatory under this Contract.

L. American Society for Testing and Materials (ASTM):

1. ASTM C31/C31M – “Standard Practice for Making and Curing Concrete Test Specimen in the Field.”
2. ASTM C33 – “Standard Specification for Concrete Aggregates.”
3. ASTM C39 – “Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.”
4. ASTM C94/C94M – “Standard Specification for Ready-Mixed Concrete.”
5. ASTM C150 – “Standard Specification for Portland Cement.”
6. ASTM C172 – “Standard Specification for Sampling Freshly Mixed Concrete.”
7. ASTM C173/C173M – “Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.”
8. ASTM C231 – “Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.”
9. ASTM C260 – “Standard Specification for Air – Entraining Admixtures for Concrete.”
10. ASTM C309 – "Liquid Membrane-Forming Compounds for Curing Concrete."
11. ASTM C494 –"Standard Specification for Chemical Admixtures for Concrete."
12. ASTM C979 –"Standard Specification for Pigments for Integrally Colored Concrete."
13. ASTM D994 – “Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).”
14. ASTM D1751 – “Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).”
15. ASTM D1752 – “Standard Specification for Sponged Rubber and Cork Expansion Joint Filler for Concrete Paving and Structural Construction.”

16. ASTM D6690 – "Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements."
17. ASTM E1643 – “Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.”
18. ASTM E1745 – “Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.”

M. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M194 – "Chemical Admixtures."

N. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 – “Adhesive and Sealant Applications.”

O. Standard Specifications for Public Works Construction (SSPWC).

P. California Building Standards Codes, Title 24, 2022 Edition (CBC – 22).

1.06 DELIVERY, STORAGE, AND HANDLING:

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT:

A. Reinforcing Bars: ASTM A 615, Grade 60 or Grade 40, deformed.

B. Plain Steel Wire: ASTM A 82, as drawn.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as drawn steel wire into flat sheets.

2.02 REINFORCEMENT ACCESSORIES:

A. Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Bar Supports: Bolster, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI’s “Manual of Standard Practice”, of greater of compressive strength than concrete and as follows:

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs. Concrete bricks may be used to support reinforcing steel where application allows.

2.03 CONCRETE MATERIALS:

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout the Project:

1. Portland Cement: ASTM C 150, Type I/II. Supplement with the following:

B. Fly Ash: ASTM C 618, Class C or F.

C. Ground Granulated Blast Furnace Slag: ASTM C 989, Grade 100 or 120.

D. Cementitious Materials: Percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash or Ground Granulated Blast Furnace Slag: 25 percent, minimum.

2. Combined Fly Ash and Pozzolan: 35 percent, maximum.

3. Ground Granulated Blast Furnace Slag: 50 percent, maximum.

4. Combined Fly Ash or Pozzolan and Ground Granulated Blast Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 35 percent.

E. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse Aggregate Size: ¾-inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

F. Water: ACI 318, ASTM C 94 and potable, without deleterious amount of chloride ions conforming to Section 201 of the SSPWC.

2.04 ADMIXTURES:

A. Furnish materials in accordance with SSPWC and CBC – 22.

B. Air-Entraining Admixture: ASTM C 260, if approved by Engineer.

C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494, Type A.

2. Retarding Admixture: ASTM C 494, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

D. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor,; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494, Type C.

a. Products:

i. Euclid Chemical Company; Eucon CIA.

ii. Grace Construction Products, W.R. Grace & Co.; DCI.

iii. BASF Admixtures, Inc.; Rheocrete CNI.

iv. Sika Corporation; Sika CNI.

E. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set- accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

a. Products:

i. Grace Construction Products, W.R. Grace & Co.; DCI-S.

F. Fly Ash (Calcined Pozzolan): ASTM C618 Class F.

G. Silica Fume: ASTM C1240, if approved by Engineer.

H. Slag: ASTM C989; Grade 100; ground granular blast furnace slag, if approved by the Engineer.

I. Plasticizing: ASTM C1017/C1017M Type I, plasticizing or Type II, plasticizing and retarding, if approved by the Engineer.

2.05 CURING MATERIALS:

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlappolyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor coverings.

1. Products:

a. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; High Seal.

b. Dayton Superior Corporation; Safe Cure and Seal (J-19).

c. Euclid Chemical Company; Diamond Clear VOX.

d. Lambert Corporation; Glazecote Sealer-20.

e. L&M Construction Chemicals, Inc.; Dress & Seal WB.

f. Meadows, W.R., Inc.; Vocomp-20.

g. Nox-Crete Products Group, Kinsman Corporation; Cure & Seal 200E.

h. Sonneborn, Div. Of ChemRex; Kure-N-Seal.

i. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.

E. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Products:

a. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.

b. Euclid Chemical Company; Super Diamond Clear VOX.

c. Lambert Corporation; UV Safe Seal.

d. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.

e. Meadows, W.R., Inc.; Vocomp-30.

f. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.

2.06 RELATED MATERIALS:

A. Expansion and Isolation Joint Filler Strips: ASTM D1751, ASTM D 1752, ASTM D994 cork or self-expanding cork; Asphalt impregnated fiberboard or felt, or as approved by the Engineer.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Sealant: ASTM D6690.

2.07 CONCRETE MIXTURES, GENERAL:

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 and Section 201 of SSPWC.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on trial mixtures.

B. Select Concrete Class or alternate Class according to the type of construction conforming to table 201 – 1.1.2 (A) of the latest editions of the SSPWC.

C. Select Concrete aggregates combined gradation types A, B, C, D, or E conforming to table 201 – 1.3.2 (A) of the latest editions of the SSPWC.

D. Do not use calcium chloride unless otherwise approved by the Engineer.

E. Use a water-cement ratio by weight sufficient to obtain the required slump, not to exceed 0.50.

F. Use Cement Type II or V.

G. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Ground Granulated Blast-Furnace Slag: 50 percent.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent.

H. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

I. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water cementitious materials ratio below 0.50.
4. Use retarding admixture in combination with Set accelerating Corrosion Inhibitor. Retarder is not required for non-set accelerating corrosion inhibitor.
5. Use corrosion inhibiting admixture in concrete mixtures where indicated.

J. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M or ASTM C685/C685M.

2.08 CONCRETE MIXTURES FOR BUILDING ELEMENTS:

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.

3. Slump Limit: 4-inches for concrete with verified slump of 2-inch to 4-inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1-inch.

4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4- inch nominal maximum aggregate size.

B. Exterior slabs-on-grade and sidewalks: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength (fc'): 3,000 psi at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.40.

3. Slump Limit: 4-inches for concrete with verified slump of 2-inch to 4-inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1-inch.

4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4- inch nominal maximum aggregate size

5. Corrosion Inhibiting Admixture: Apply to all slabs at a rate of 4 gallons per cubic yard of concrete.

2.10 FABRICATING REINFORCEMENT:

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice".

2.11 CONCRETE MIXING:

A. Ready-Mix Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94, and furnish batch ticket information.

B. When air temperature is between 85 and 90 degrees F, reduce mixing and delivery time from 1- 1/2 hours to 75 minutes; when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3 – EXECUTION

3.01 GENERAL:

A. Coordinate the installation of joint materials and other related materials with placement of forms and reinforcing.

3.02 EXAMINATION:

A. Section 01 30 00 – Administrative Requirements: Coordination and project conditions.

B. Verify requirements for concrete cover over reinforcement.

C. Verify anchors, seats, plates, reinforcement, water vapor barrier, and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.03 PREPARATION:

A. Prepare previously placed concrete by cleaning with streel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

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. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.

3.04 FORMWORK:

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows: 1. Class A, 1/8-inch for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage concrete surfaces.

F. Set edge forms for slabs to achieve required elevations and slopes in finished concrete surfaces. Use strike-off templates or compacting-type screeds.

G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.05 EMBEDDED ITEMS:

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

3.06 REMOVING AND REUSING FORMS:

A. General: Formwork that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form removal operations and curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Apply new form release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets.

3.07 STEEL REINFORCEMENT:

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire ties.

3.08 JOINTS:

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

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or approved by the Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2-inches into concrete.
3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one- fourth of concrete thickness as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, and other locations, as indicated.

1. Terminate full-width joint filler strips not less than ½-inch or more than 1- inch below finished concrete surface where joint sealants, specified in Division 7 Section “Joint Sealants”, are indicated.
2. Install joint filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.09 CONCRETE PLACEMENT:

A. Place concrete in accordance with ACI 301 and ACI 318.
B. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.
C. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
D. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
E. Separate slabs on grade from vertical surfaces with ¾” inch thick joint filler.
F. Place joint filler in pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
G. Extend joint filler from bottom of slab to within 1/8-inch of finished slab surface.
H. Install construction joint devices in coordination with floor slab pattern placement sequence.
I. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.
J. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
K. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6-inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
L. Deposit and consolidate concrete for slabs in continuous operation, within limits of construction joints, until placement of panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

M. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 degrees F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
4. Do not interrupt successive placement; do not permit cold joints to occur.

N. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, providing water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing of concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
3. Do not interrupt successive placement; do not permit cold joints to occur.

O. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

P. Place floor slabs in saw cut pattern indicated.

Q. Saw cut joints within 12 hours after placing. Use 3/16" thick blade, cut into ¼ depth of slab thickness.

S. Screed slabs on grade level, maintaining surfaces flatness and with a proper slope (minimum of 1% toward away from the center of the court) and maintain proper storm drainage surface.

3.08 FINISHING SLABS:

A. General: Comply with ACI 301 and ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraightening until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film finish coating system.
2. Finish surfaces to the following tolerances, according to ASTM E 1155 for a randomly trafficked floor surface:
3. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.

D. Broom Finish: Apply a broom finish to exterior platforms, steps, and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber- bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.09 MISCELLANEOUS CONCRETE ITEMS:

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
C. Equipment Bases and Foundations: Provide equipment bases and foundations as shown on Drawings. Set anchor bolts at correct elevations, complying with diagrams or templates from manufacturer furnishing equipment.

3.10 CONCRETE PROTECTING AND CURING:

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures, and mechanical injury. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   1. Moisture Curing: Curing all slabs in the project with moisture curing. Keep surfaces continually moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
   2. Moisture-Retaining Cover Curing: Cover concrete surfaces with moisture retaining cover for curing concrete, placed in the widest practicable width, with sides and ends lapped at least 12- inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subject to heavy rainfall within three hours after initial applications. Maintain continuity of coating and repair damage during curing period.
   a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
4. Curing and Sealing Compound: Apply uniformly to slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subject to heavy rainfall within three hours after initial application. Repeat the process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 JOINT FILLING:

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
   1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.12 CONCRETE SURFACE REPAIRS:

A. Defective Concrete: repair and patch defective areas when approved by the Engineer. Remove and replace concrete that cannot be repaired and patched to the Engineer's approval.
B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
C. Repairing Unformed Surfaces: Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, pop outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01- inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
   2. After concrete has cured at least 14-days, correct high areas by grinding.
   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
   4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Repair defective areas, except random cracks and single holes 1-inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least ¾-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72-hours.

D. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.
E. Repair materials and installation not specified above may be used, subject to the Engineer's approval.

3.13 FIELD QUALITY CONTROL:

A. All inspections are to be conducted by Owner or Special Districts IOR.
B. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with ACI 318 unless otherwise specified in the contract documents.
C. Provide free access to Work and cooperate with appointed firm.
D. Submit proposed mixed design of each class of concrete to Engineer and an inspection and testing firm for review prior to commencement of Work.
E. Inspections:
   1. Steel reinforcement placement.
   2. Steel reinforcement welding.
   3. Verification of use of required design mixture.
   4. Concrete placement, including conveying and depositing. Inspect for proper installation and procedures.
   5. Curing procedures and maintenance of curing temperature. Inspect for specified curing temperature and procedures.
C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
   1. Testing Frequency: Obtain one composite sample of each day's pour of each concrete mixture exceeding 5 cubic yards, but less than 25 cubic yards, plus one set for each additional 50 cubic yards or fraction thereof.
   2. Slump: ASTM C 143; one test at the point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 degrees F and below and when 80 degrees F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31.
6. Cast and laboratory cure five standard cylinder specimens for each composite sample.
7. Compressive Strength Tests: ASTM C 39; test one set of two-laboratory cured specimens at 7 days and one set of two specimens at 28 days. Test remaining specimen at 28 days if previous results are satisfactory or retain this specimen for 56-day testing if results are not satisfactory.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive strength tests equals or exceeds specified compressive strength and no compressive strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to the Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
   1. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as the sole basis for approval or rejection of concrete.
   2. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as required by the Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as required by the Engineer.
   3. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
   4. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents. E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

E. Core Compressive Strength Testing:
   1. Sampling and Testing Procedures: ASTM C42/C42M.
   2. Test Acceptance: In accordance with ACI 318.
   3. Drill three (3) cores for each failed strength test from concrete represented by failed strength test.

3.14 PATCHING:

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
C. Patch imperfections as directed by Engineer and in accordance with ACI 301.

3.15 DEFECTIVE CONCRETE:

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements.
B. Repair or replacement of defective concrete will be determined by Engineer.
C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

3.16 SCHEDULE – CONCRETE TYPES AND FINISHES

A. As stated in Section 201 of the SSPWC.

3.17 SCHEDULE – JOINT FILLERS

A. Slab Perimeter: Joint Filler Type A set 1/8 inch below floor slab elevation.

END OF SECTION 03 30 00

SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the "Standard Specifications for Public Works Construction," latest edition, shall apply except as modified herein.

1.2 SCOPE

A. Work of this Section includes all material, equipment, and labor necessary for and incidental to completing all Metal Fabrication work, as indicated on the Drawings, as reasonably implied or as designated herein, including, but not limited to, the following:

1. Wrought Iron Fencing
2. Miscellaneous Metal Fabrications

1.3 RELATED WORK SPECIFIED ELSEWHERE

1.	Concrete:	Section 03 30 00
2.	Site Furnishings:	Section 32 33 00

1.4 QUALITY ASSURANCE

A. The Contractor shall use adequate numbers of skilled workers who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Welding: Perform all shop and field welding required in connection with the work of this Section, adhering of the American Welding Society.

1.5 SUBMITTALS

A. The following are to be submitted to the Landscape Architect at the pre-construction conference.

1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
3. Shop Drawings of all items proposed to be furnished and installed under this Section. Include plans, sections, elevations, and details as needed.
4. Templates for anchor and bolt installation by other trades.

1.6 PRODUCT HANDLING

A. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the work and materials of all other trades.

B. Replacement: In the event of damage, immediately make all repairs and replacements necessary to the approval of the District.

PART 2 - MATERIALS

All materials shall conform with Section 206 of the Standard Specifications except as modified herein.

2.1 "OR APPROVED EQUIVALENT" PRODUCTS

A. This project is a Public Works project. Sole sourcing of material is not allowed. Any reference or call out on the plans and/or in the specifications to a specific manufacturer shall be interpreted as "or approved equivalent". The District Engineer's and Landscape Architect's approval is required as to whether or not a product meets the District's standard to be an approved equivalent. Bidders shall use the pricing for the products as specified to avoid risks of disapproval. No substitutions will be considered prior to the award of the contract.

2.2 MATERIALS AND COMPONENTS

A. Metal surfaces, general: For fabrication of the work of this Section which will be exposed to view, use only those materials which are smooth and free from surface blemishes including pitting, seam marks, roller marks, rolled trade name, and roughness.

B. Standards: All materials shall comply with:

1. Steel plates, shapes, and bars: ASTM A36.
2. Steel plates to be bent or cold formed: ASTM A283, Grade C.
3. Steel tubing, hot-formed, welded, or seamless: ASTM A501.
4. Steel bars and bar-size shapes: ASTM A306, Grade 65, or ASTM A36.
5. Cold-finished steel bars: ASTM A108, grade as selected by the fabricator.
6. Cold-rolled carbon steel sheets: ASTM A336.
7. Galvanized carbon steel sheets: ASTM A526, with ASTM A525, G90 zinc coating.
8. Stainless steel sheets: Type 302/304 of American Iron and Steel Institute, 24-gauge, with number 4 finish.
9. Gray iron castings: ASTM A48, Class 30.
10. Malleable iron castings: ASTM A47, grade as selected by the fabricator.
11. Steel pipe: ASTM A53, type as selected, Grade A, black finish unless galvanizing is required, standard weight (Schedule 40) unless otherwise indicated.
12. Concrete inserts: Threaded or wedge type, galvanized ferrous castings, either malleable iron ASTM A47 or cast steel ASTM A27. Provide bolts, washers, and shims as required, hot-dip galvanized, ASTM A153.
13. Non-shrink nonferrous grout: CE CRD C588.

2.3 FASTENERS

A. General: Provide zinc-coated fasteners for exterior use and where built into exterior walls. Select fasteners for the type, grade, and class required.

B. Standards: All fasteners shall comply with :

1. Bolts and nuts: regular hexagon-head type, ASTM A307, Grade A, Galvanized.
2. Lag bolts: square-head type, Fed. Spec. FF-B-561, Galvanized.
3. Machine screws: cadmium plated steel Fed. Spec. FF-S-92.
4. Wood screws: flat-head carbon steel, Fed. Spec. FF-W-92.
5. Plain washers: round, carbon steel Fed. Spec. FF-W-92.
6. Masonry anchorage devices: lead expansion shield, Fed. Spec.. FF-S-325.
7. Toggle bolts: tumble-wing type, Fed. Spec. FF-B-588, type, class and style as required.
8. Lock washers: helical spring type carbon steel, Fed. Spec. FF-W-84.

2.4 PAINT

A. Metal primer paint:

1. Use mixed pigment, alkyd varnish, linseed oil paint complying with Fed. Spec. TT-P-86, Type II; or iron oxide, raw linseed oil, alkyd paint, complying with SSPC Paint 2-64, or basic silico chromate base iron oxide, linseed oil, alkyd paint complying with Fed. Spec. TT-P-615, Type II.
2. Primer selected shall be compatible with finish coats of paint. Coordinate selection of metal primer with actual finish paint specified.

B. Galvanizing repair paint: Use a high zinc oxide-zinc dust content paint for re-galvanizing welds in galvanized steel, complying with Military Specifications MIL-P-15145.

2.5 FABRICATION

A. Workmanship:

1. Use materials for size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in the finished product.
2. Work to dimensions shown on the plans, or as shown on the approved Shop Drawings, if submitted, using proven details of fabrication and support.
3. Use type of materials shown or specified for the various components of the Work.
4. Form exposed work true to line and level, with accurate angles and surfaces and with straight sharp edges.
5. Ease the exposed edges to a radius of approximately 0.8 mm (1/32") unless otherwise shown.
6. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

7. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections grind exposed welds smooth and flush; match and blend with adjoining surfaces.

8. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, use Phillips flat-head (counter-sunk) screws or bolts.

9. Provide for anchorage of the type shown. Coordinate with supporting structure. Fabricate and space the anchoring devices to provide adequate support for intended use.

10. Cut, reinforce, drill, and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

B. Galvanizing: Provide a zinc coating for those items shown or specified to be galvanized, as follows:

1. ASTM A153 for galvanizing iron and steel hardware.

2. ASTM A123 for galvanizing rolled, pressed, and forged steel shapes, plates, bars, and strip 3mm (1/8") thick and heavier.

3. ASTM A386 for galvanizing assembled steel products.

C. Shop Painting:

1. Remove oil, grease, and similar contaminants in accordance with Standard Specifications, Section 310.

2. Clean off heavy rust and loose mill scale and other deleterious materials before applying shop coat in accordance with Standard Specifications, Section 310-2.

3. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's recommendations, and at a rate to provide the recommended dry film thickness.

4. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise specified.

5. Use painting methods which will result in full converge of joints, corners, edges, and exposed surfaces.

6. Apply one shop coat to fabricated metal items; except, apply two shop coats to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first coat.

2.6 MISCELLANEOUS METAL FABRICATIONS

A. Rough hardware:

1. Provide bent or otherwise custom fabricated bolts, plates, anchors, hangars, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete and other structures.

2. Manufacture or fabricate items of sizes, shapes, and dimensions required.

3. Provide malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere furnish steel washers.

PART 3 - EXECUTION

A. All work shall conform with Section 304 of the "Standard Specifications," except as modified herein.

3.2 INSPECTION

A. Examine the areas and conditions under which miscellaneous metal items are to be installed, and correct conditions detrimental to the proper and timely completion of the work. Do not proceed until satisfactory conditions have been corrected.

3.3 PREPARATION

A. Furnish setting Drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete construction. Coordinate delivery of such items to project site.

3.4 INSTALLATION

A. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction including threaded fasteners for concrete inserts, toggle bolts, wood screws, and other connectors as required.

B. Cutting, fitting, and placement:

1. Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications.
2. Set work accurately in location, alignment, and elevation, and make plumb, level, true and free from rack, measured from established lines and levels.
3. Provide temporary bracing or anchors in formwork for items which are to be built into concrete similar construction.
4. Fit exposed connections accurately together to form tight hairline joints.
5. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.
6. Grind exposed joints smooth, and touch up shop paint coat. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections, except where required for vandal resistant anchorage.

C. Field welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of weld made and methods in correcting welding work. Tack weld all exposed fasteners to prevent unauthorized removal.

D. Touch-up painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same materials as sued for shop painting. Apply by brush or spray to provide minimum dry film thickness of 0.051 mm (2.0 mils).

3.5 CLEAN-UP

A. Upon completion of the work of this Section, clean up the project work site removing all unused materials, trimmings, cuttings, metal shavings, burrs, or bits and all other miscellaneous debris and trash that results from this work. Wipe down all fabricated items and adjacent improvements to remove cutting oil, grease, or other soil and stains that may result from this work.

3.6 PAYMENT TERMS

A. Payment for metal fabrications will be at the lump sum price bid for metal fabrications. Payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work in metal fabrications as herein specified. A 10% retention shall apply to all metal fabrications work.

END OF SECTION 05 50 00

SECTION 09 90 00
PAINTING AND COATING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes materials and the application of painting and coating systems for the following surfaces:

1. Submerged Metal
2. Exposed Metal
3. PVC, CPVC and FRP
4. Metal in Contact with Concrete
5. Plaster, Wood, Masonry and Drywall

B. This section does not include coating steel tanks and reservoirs.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Standard Drawings.

B. Record Drawings and Submittals: STD SPEC 01300.

1.03 SUBMITTALS

A. Submit submittal packages in accordance with Standard Specification Section 01300.

A. Submit the coating manufacturer's data sheets for the products to be applied. Datasheets shall show the following information:

1. Percent solids by volume.
2. Minimum and maximum recommended dry-film thickness per coat for prime, intermediate, and finish coats.
3. Recommended surface preparation.
4. Recommended thinners.
5. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.
6. Application instructions including recommended equipment and temperature limitations.
7. Curing requirements and instructions.

C. Submit color swatches.

D. Submit certificate identifying the type and gradation of abrasives used for surface preparation.

E. Submit material safety data sheets for each coating.

PART 2 - MATERIALS

2.01 PAINTING AND COATING SYSTEMS

A. Coating products shall conform to San Bernardino Air Pollution Control District, where products cannot contain more than 250 grams per liter of volatile organic compound (VOC) per gallon of coating product as applied. The following index lists the various painting and coating systems by service and generic type.

PAINT COATINGS SYSTEM INDEX

No.	Title	Generic Coating
	Submerged Metal Coating System	
5.	Submerged or Intermittently Submerged Metal, Potable or Recycled Water	Epoxy
	Exposed Metal Coating Systems	
10.	Exposed Metal, Corrosive Environment	High Build Epoxy (2 Coat System) with Polyurethane Topcoat
15.	Exposed Metal, Atmospheric Weathering Environment	Acrylic
20.	Exposed Metal, Exterior	Epoxy with Urethane Topcoat
	PVC, CPVC, and FRP Coating Systems	
41.	PVC, CPVC and FRP, Ultraviolet Exposure	Polyurethane
	Metal in Contact with Concrete Coating System	
51.	Aluminum and Concrete	Epoxy
	Plaster, Wood, Masonry and Drywall Coating System	
60.	Plaster, Wood, Masonry and Drywall	Acrylic Latex

B. These systems are specified in detail in the following paragraphs. For each coating, the required surface preparation, prime coat, intermediate coat (if required), topcoat, and coating thicknesses are described. Mil thicknesses shown are minimum dry-film thicknesses.

2.02 SUBMERGED METAL COATING SYSTEM

System No. 5 -- Submerged Metal, Potable or Recycled Water:

Type: Epoxy

Service Conditions: For use with steel structures, piping, valves, or equipment in potable or recycled water.

Surface Preparation: SSPC SP-10. Coating System: Apply the manufacturer's recommended number of coats to attain the specified minimum coating thickness. Products: Devoe Bar-Rust 233H, Tnemec N140 or 100, Sherwin-Williams Tank Clad HS B62-80, PPG AQUAPON® LT NSF Low-Temperature Epoxy Coatings 95-172, or District approved equal; 12 mils total. Color of topcoat: white. Each coat shall be a different color than the one preceding it.

2.03 EXPOSED METAL COATING SYSTEMS

A. System No. 10 -- Exposed Metal, Corrosive Environment:

Type: High-build epoxy finish coat having a minimum volume solids of 60%, with an inorganic zinc prime coat and a pigmented polyurethane finish coat having a minimum volume solids of 52%.

Service Conditions: For use with metal structures, pipes, or valves subjected to water condensation; chemical fumes; and chemical contact.

Surface Preparation: SSPC SP-10.

Prime Coat: Self-curing, two-component inorganic zinc-rich coating recommended by the manufacturer for overcoating with a high-build epoxy finish coat. Minimum zinc content shall be 12 pounds per gallon. Apply to a thickness of 3 mils. Products: Tnemec 90E-92, Devoe Catha- Coat 304 or 304V, International Interzinc 22HS, Ameron 9HS, SherwinWilliams Zinc-Clad II Plus, PPG METALHIDE® 28 Inorganic Zinc-Rich Primer 97-672, or District approved equal.

Intermediate Coat: Tnemec 104, ICI Devoe Devran 224HS or 231, International Interseal 670HS, Ameron 385, Sherwin-Williams Macropoxy 646 B58-600, PPG PITT-GUARD® Direct-to-Rust Epoxy Mastic Coating 97-145 series, or District approved equal; 5 mils.

Finish Coat: Two-component pigmented acrylic or aliphatic polyurethane recommended by the manufacturer for overcoating a high-build epoxy coating. Apply to a thickness of at least 2 mils. Products: Tnemec Series 1075, ICI Devoe Devthane 379, International Interline 990HS, Ameron 450HS, Sherwin-Williams Hi-Solids Polyurethane B65-300, PPG PITTHANE® Ultra Gloss Urethane Enamel 95-812 series, or District approved equal.

B. System No. 15 -- Exposed Metal, Atmospheric Weathering Environment:

Type: One component acrylic enamel having a minimum volume solids content of 35% with an acrylic inorganic zinc primer.

Service Conditions: For use on interior and exterior metal and piping subject to sunlight, weathering, and water condensation.

Surface Preparation: SSPC SP-10.

Prime Coat: Sherwin-Williams Zinc Clad II Plus primer, ICI Devoe Inorganic Zinc 304V, Tnemec 90E-92, or District approved equal applied to a minimum dry-film thickness of 3 mils.

Finish Coats: Two or more coats of Sherwin-Williams Sher-Cryl B66–300, ICI Devoe Devflex 659, Tnemec Series 28 or 29, or District approved equal. Apply sufficient coats to provide a total minimum dry-film thickness of 8 mils. The thickness of any individual coat shall not exceed 4 mils.

C. System No. 20 -- Exposed Metal, Exterior:

Type: High-build epoxy prime coat with a pigmented high-build aliphatic or acrylic polyurethane finish coat.

Service Conditions: For use on exterior metal piping appurtenances, such as valve box lids, hydrant heads, and guard posts.

Surface Preparation: SSPC SP-10.

Prime Coat: Two-component high-build epoxy. Apply to a thickness of 8 mils. Products: Ameron 400, ICI Devoe 235, Tnemec 104, International Interseal 670HS, Sherwin-Williams Macropoxy 646 B58-600, PPG PITT-GUARD® Direct-to-Rust Epoxy Mastic Coating 97-145 series, or District approved equal.

Finish Coat: Two-component pigmented high-build polyurethane. Apply one or more coats to a total thickness of 5 mils. Products: Ameron “Amershield,” ICI Devoe Devthane 359, Tnemec Series 1075, International Interthane 990HS, Sherwin-Williams Hi-Solids Polyurethane B65-300 series, PPG PITTHANE® Ultra Gloss Urethane Enamel 95-812 series, or District approved equal.

2.04 PVC, CPVC AND FRP COATING SYSTEM

System No. 41 -- PVC, CPVC and FRP, Ultraviolet Exposure:

Type: Epoxy primer with a minimum volume solids of 54% and a pigmented Polyurethane enamel having a minimum volume solids of 52%.

Service Conditions: PVC or CPVC piping and FRP exposed to sunlight.

Surface Preparation: SSPC SP-1. Then lightly abrade the surface with medium-grain garnet paper. OMWD 06-2008 PAINTING AND COATING STD SPEC 09900 - 5

Prime Coat: One coat of Tnemec Series N69 Epoxoline, International 7510, Ameron 385, ICI Devoe Devran 224HS, Sherwin-Williams Macropoxy 646 B58 series, PG PITTGUARD® Direct- to-Rust Epoxy Mastic Coating 97-145 series, or District approved equal. Apply to a minimum dry- film thickness of 4 mils.

Finish Coat: One coat of Tnemec Series 1075, International Interthane 990HS, Ameron 450HS, ICI Devoe Devran 379, Sherwin-Williams Hi-Solids Polyurethane B65-300 series, PPG PITTHANE® Ultra Gloss Urethane Enamel 95-812 series, or District approved equal. Apply to a minimum dry- film thickness of 3 mils.

2.05 METAL IN CONTACT WITH CONCRETE, COATING SYSTEM

System No. 51 -- Aluminum insulation from Concrete and Carbon Steel:

Type: High solids epoxy or phenolic epoxy having a minimum volume solids of 80% (ASTM D2697).

Service Conditions: Coat areas of aluminum grating, stairs, framing, structural members, or aluminum fabrications in contact with concrete or carbon steel with this system.

Surface Preparation: Preparation: Solvent or steam cleaning per SSPC SP-1; do not use alkali cleaning. Then dust blast.

Coating System: Apply three or more coats of Ameron 400, Tnemec Series 135, ICI Devoe Bar- Rust 233H, Sherwin-Williams Macropoxy B58-600, PPG PITT-GUARD® Direct-to-Rust Epoxy Mastic Coating 97-145 series, or District approved equal; 30 mils total. Maximum thickness of an individual coating shall not exceed the manufacturer’s recommendation.

2.06 PLASTER, WOOD, MASONRY AND DRYWALL COATING

SYSTEM System No. 60 -- Plaster, Wood, Masonry and Drywall,

Normal Exposure: Type: Acrylic latex coating having a minimum

volume solids of 40%.

Service Conditions: For use in coating weather-exposed or enclosed concrete masonry, drywall, wood, and plaster.

Surface Preparation: Surfaces shall be dry, clean, and free of contaminants. Prime Coat: Self- priming.

Finish Coats: Two coats of Tnemec Series 6, Tneme-cryl, 2 mils each; two coats of ICI Dulux Professional, 2 mils each; two coats of Sherwin-Williams Metalatex B42 series, 2 mils each; two coats of PPG PITT-TECH® Int/Ext Satin DTM Industrial Enamel 90-474 series, 2 to 3 mils each, or District approved equal.

2.07 ABRASIVES FOR SURFACE PREPARATION

A. Abrasives used for preparation of iron and steel surfaces shall be one of the following:

1. 16 to 30 or 16 to 40 mesh silica sand or mineral grit.
2. 20 to 40 mesh garnet.
3. Crushed iron slag, 100% retained on No. 80 mesh.
4. SAE Grade G-40 or G-50 iron or steel grit.

B. Abrasives used for the preparation of copper and aluminum surfaces shall be one of the following:

1. Crushed slag, 80 to 100 mesh.

2. Very fine silica sand, 80 to 100 mesh.

C. In the above gradations, 100% of the material shall pass through the first stated sieve size and 100% shall be retained on the second stated sieve size.

PART 3 - EXECUTION

3.01 WEATHER CONDITIONS

A. Do not paint in the rain, wind, snow, mist, and fog or when steel or metal surface temperatures are less than 5 degrees F above the dew point.

B. Do not apply paint when the relative humidity is above 85% or the temperature is above 90 degrees F.

C. Do not paint when temperature of metal to be painted is above 120 degrees F.

D. Do not apply paints if air or surface temperature is below 40 degrees F or expected to be below 40 degrees F within 24 hours.

E. Do not apply epoxy, acrylic latex, and polyurethane paints on an exterior or interior surface if air or surface temperature is below 60 degrees F or expected to drop below 60 degrees F in 24 hours.

3.02 SURFACE PREPARATION

A. Remove oil and grease from metal surfaces in accordance with SSPC-SP 1. Use clean cloths and cleaning solvents and wipe dry with clean cloths. Do not leave a film or greasy residue on the cleaned surfaces before sandblasting.

B. Remove weld spatter and weld slag from metal surfaces and grind smoothly rough welds, beads, peaked corners, and sharp edges in accordance with SSPC SP-2 and SSPC SP-3. Grind 0.02 inch (minimum) off the weld caps on pipe weld seams. Grind outside sharp corners, such as the outside edges of flanges, to a minimum radius of ¼ inch.

C. Neutralize welds with a chemical solvent that is compatible with the specified coating materials. Use clean cloths and chemical solvent. Wipe dry with clean cloths. Do not leave a residue on the cleaned surfaces.

D. Do not abrasive blast or prepare more surface area than can be coated in one day. Remove all sharp edges, burrs, and weld spatter. Do not abrasive blast PVC, CPVC, or FRP piping or equipment. Do not abrasive blast epoxy, enamel coated, or fusion-bonded epoxy pipe that has already been factory coated, except to repair scratched or damaged coatings.

E. Surface preparation shall conform with the SSPC specifications as

follows:

Solvent Cleaning	SP-1
Hand Tool Cleaning	SP-2
Power Tool Cleaning	SP-3
White Metal Blast Cleaning	SP-5
Commercial Blast Cleaning	SP-6
Brush-Off-Blast Cleaning	SP-7
Pickling	SP-8
Near-White Blast Cleaning	SP-10

F. Wherever the words "solvent cleaning," "hand tool cleaning," "wire brushing," or "blast cleaning" or similar words are used in these specifications or in paint manufacturer's specifications, they shall be understood to refer to the applicable SSPC (Society for Protective Coatings), surface preparation specifications listed above.

G. Dust blasting is defined as cleaning the surface through the use of very fine abrasives, such as siliceous or mineral abrasives, 80 to 100 mesh. Apply a fine etch to the metal surface to clean the surface of any contamination or oxide and to provide a surface profile for the coating.

3.03 ABRASIVE BLAST CLEANING

A. Use dry abrasive blast cleaning for metal surfaces. Do not use abrasives in automatic equipment that has become contaminated. When shop or field blast cleaning with handheld nozzles, do not recycle or reuse blast particles.

B. After abrasive blast cleaning and before application of a coating, dry clean surfaces to be coated by dusting, sweeping, and vacuuming to remove residue from blasting. Apply the specified primer or touch-up coating within the period of an eight-hour working day. Do not apply a coating over damp or moist surfaces. Reclean before application of primer or touchup coating any blast-cleaned surface not coated within said eight-hour period.

C. Keep the area of the work in a clean condition and do not permit blasting particles to accumulate and constitute a nuisance or hazard.

D. During abrasive blast cleaning, prevent damage to adjacent coatings. Schedule blast cleaning and coating such that dust, dirt, blast particles, old coatings, rust, mill scale, etc., will not damage or fall upon wet or newly coated surfaces.

3.04 PROCEDURES FOR ITEMS HAVING SHOP-APPLIED PRIME COATS

Handle shop-primed items with care during unloading, installation, and erection operations to minimize damage. Do not place or store shop-primed items on the ground or on top of other work unless ground or work is covered with a protective covering or tarpaulin. Place shop-primed items above the ground upon platforms, skids, or other supports.

3.05 FIELD TOUCH-UP OF SHOP-APPLIED PRIME COATS

A. Remove oil and grease surface contaminants on metal surfaces in accordance with SSPC SP-1. Use clean rags wetted with a degreasing solution, rinse with clean water, and wipe dry.

B. Remove dust, dirt, salts, moisture, chalking primers, or other surface contaminants that will affect the adhesion or durability of the coating system. Use a high-pressure water blaster or scrub surfaces with a broom or brush wetted with a solution of trisolium phosphate, detergent, and water. Before applying intermediate or finish coats to inorganic zinc primers, remove any soluble zinc salts that have formed employing scrubbing with a stiff bristle brush. Rinse scrubbed surfaces with clean water.

C. Remove loose or peeling primer and other surface contaminants not easily removed by the previous cleaning methods in accordance with SSPC SP-7. Take care that the remaining primers are not damaged by the blast cleaning operation. The remaining primers shall be firmly bonded to the steel surfaces with blast-cleaned edges feathered.

D. Remove rust, scaling, or primer damaged by welding or during shipment, storage, and erection in accordance with SSPC SP-10. Take care that remaining primers are not damaged by the blast cleaning operation. Remaining primers shall be firmly bonded to the steel surfaces with blast cleaned edges feathered.

E. Use repair procedures on damaged primer which protects adjacent primer. Blast cleaning may require the use of lower air pressure, smaller nozzles, and abrasive particle sizes, short blast nozzle distance from surface, shielding, and/or masking.

F. After abrasive blast cleaning of damaged and deflective areas, remove dust, blast particles, and other debris by dusting, sweeping, and vacuuming; then apply the specified touch-up coating.

G. Surfaces that are shop primed with inorganic zinc primers shall receive a field touch-up of organic zinc primer to cover all scratches or abraded areas.

H. Other surfaces that are shop primed shall receive a field touch-up of the same primer used in the original prime coat.

3.06 PAINTING SYSTEMS

A. All materials of a specified painting system, including primer, intermediate, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.

B. Deliver paints to the jobsite in the original, unopened containers.

3.07 PAINT MIXING

Prepare multiple-component coatings using all of the contents of the container for each component as packaged by the paint manufacturer. Do not use partial batches. Do not use multiple-component coatings that have been mixed beyond their pot life. Provide small quantity kits for touchup painting and for painting other small areas. Mix only the components specified and furnished by the paint manufacturer. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

3.08 PROCEDURES FOR THE APPLICATION OF COATINGS

A. Conform to the requirements of SSPC PA-1. Follow the recommendations of the coating manufacturer including the selection of spray equipment, brushes, rollers, cleaners, thinners, mixing, drying time, temperature and humidity of application, and safety precautions.

B. Stir, strain, and keep coating materials at a uniform consistency during application. Apply each coating evenly, free of brush marks, sags, runs, holidays, and other evidence of poor workmanship. Use a different shade or tint on succeeding coating applications to indicate coverage where possible. Finished surfaces shall be free from defects or blemishes.

C. Do not use thinners unless recommended by the coating manufacturer. If thinning is allowed, do not exceed the maximum allowable amount of thinner per gallon of coating material. Stir coating materials at all times when adding thinner. Do not flood the coating material surface with thinner prior to mixing. Do not reduce coating materials more than is absolutely necessary to obtain the proper application characteristics and to obtain the specified dry-film thicknesses.

D. Remove dust, blast particles, and other debris from blast-cleaned surfaces by dusting, sweeping, and vacuuming. Allow ventilator fans to clean airborne dust to provide good visibility of the working area before coating applications. Remove dust from coated surfaces by dusting, sweeping, and vacuuming before applying succeeding coats.

E. Apply coating systems to the specified minimum dry-film thicknesses as measured from above the peaks of the surface profile.

F. Apply primer immediately after blast cleaning and before any surface rusting occurs, or any dust, dirt, or any foreign matter has accumulated. Reclean surfaces by blast cleaning that have surface colored or become moist prior to coating application.

G. Apply a brush coat of primer on welds, sharp edges, nuts, bolts, and irregular surfaces prior to the application of the primer and finish coat. The brush coat shall be done prior to and in conjunction with the spray coat application. Apply the spray coat over the brush coat.

3.09 SURFACES NOT TO BE COATED

Do not paint the following surfaces unless otherwise noted on the Drawings or in other Standard Specification sections. Protect during the painting of adjacent areas:

A. Cement mortar-coated pipe and fittings.

B. Stainless steel.

C. Metal plates/nameplates or letters.

D. Concrete surfaces.

E. Fencing.

F. Copper tubing, red brass piping and PVC piping except where such piping occurs in rooms where the walls are painted, or required for color coding.

G. Electrical fixtures except for factory coatings.

H. Grease fittings.

I. Buried pipe unless specifically required in the piping specifications.

J. Fiberglass items.

K. Aluminum handrails, stairs and grating, unless in contact with concrete.

3.10 PROTECTION OF SURFACES NOT TO BE PAINTED

Remove, mask, or otherwise protect hardware, lighting fixtures, switchplates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Mask openings in motors to prevent paint and other materials from entering the motors.

3.11 SURFACES TO BE COATED Coat surfaces as described below:

A. Coat mechanical equipment as described in the various mechanical equipment specifications. Color shall match the color of the connecting piping.

B. Coat aboveground and exposed piping or piping in vaults and structures as described in the various piping specifications. Color shall be as indicated or as selected by the District's Representative.

C. Coat valves as described in the various valve specifications. Aboveground valves or valves in vaults and structures shall match the color of the connecting piping.

D. Coat aluminum surfaces in contact with concrete per System No. 51.

E. Coat exposed surfaces of enclosures, guard posts, marker posts, fire hydrants, valve boxes, and test boxes as described in the particular specifications for the above items.

3.12 DRY FILM THICKNESS TESTING

A. Measure coating thickness specified for metal surfaces with a magnetic-type dry-film thickness gage. Test the finish coat (except zinc primer and galvanizing) for holidays and discontinuities with an electrical holiday detector, low-voltage, wet-sponge type. Provide measuring equipment. Provide detector as manufactured by Tinker and Rasor or K-D Bird Dog. Provide dry-film thickness gage as manufactured by Mikrotest or Elcometer. Check each coat for the correct dry-film thickness. Do not measure within eight hours after application of the coating.

B. If the item has an improper finish color or insufficient film thickness, clean and topcoat the surface with the specified paint material to obtain the specified color and coverage. Hand or power-sand visible areas of chipped, peeled, or abraded paint, feathering the edges. Then prime and finish coat in accordance with the specifications. Work shall be free of runs, bridges, shiners, laps or other imperfections.

END OF SECTION 09 90 00

SECTION 31 10 00
SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removing surface debris.
2. Removing designated paving, curbs, gutters and v-ditches.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities.
5. Excavating topsoil.

B. Related Sections:

1. Section 31 22 13 - Rough Grading.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Site Clearing:

1. Basis of Measurement: By square foot.
2. Basis of Payment: Includes clearing site, loading and removing waste materials from site, applying herbicide to designated plant life.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.4 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC).

B. California Building Code 2022 (CBC-22).

1.5 QUALITY ASSURANCE

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. Conform to SSPWC and CBC-22 as a minimum for environmental requirements, disposal of debris and use of herbicides.

C. Perform Work in accordance with SSPWC and these specifications.

1. Maintain one (1) copy of each document on site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Herbicide: As approved by authority having jurisdiction and selected by Owner/Architect/Engineer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify existing plant life designated to remain is tagged or identified.

C. Identify waste area and salvage area for placing removed materials.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three (3) working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

3.3 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as final landscaping as specified in Section 01 50 00 - Temporary Facilities and Controls.

C. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.4 CLEARING

A. Clear areas required for access to site and execution of Work to minimum depth of six (6) inches.

B. Remove trees and shrubs within marked areas. Remove stumps, main root ball, root system to depth of 24 inches, surface rock, and others as specified in demolition plans.

C. Clear undergrowth and deadwood, without disturbing subsoil.

D. Apply herbicide to remaining stumps to inhibit growth.

3.5 REMOVAL

A. Remove debris, rock, and extracted plant life from site.

B. Partially remove paving, curbs, and gutter as indicated on drawings. Neatly saw cut edges at right angle to surface.

C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.

E. Do not burn or bury materials on site. Leave site in clean condition.

3.6 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, re-landscaped, or regraded and marked areas without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Stockpile in area designated and protect from erosion. Stockpile material on impervious material and cover, until disposal.

D. Remove excess topsoil not intended for reuse, from site.

END OF SECTION 31 00 00

SECTION 31 22 13
ROUGH GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Site grading, backfilling, and compacting.
2. Topsoil materials.
3. Subsoil materials.
4. Erosion control.

B. Related Sections:

1. Section 02 00 00 - Site Demolition.
2. Section 31 10 00 - Site Clearing.
3. Document: Geotechnical report; bore hole locations and findings of subsurface materials

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Topsoil Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes excavating existing soil, supplying soil materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

B. Subsoil Fill:

1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes excavating existing subsoil, supplying subsoil materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

C. Structural Fill:

1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes excavating existing subsoil, supplying structural fill materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

D. Granular Fill:

1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes supplying granular fill materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. Standard Specifications for Public Works Construction (SSPWC).

D. California Building Standards Codes, Title 24, 2022 Edition (CBC-22).

E. California Stormwater Quality Association BMP Handbook (CASQA)

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Samples: Submit, in air-tight containers, 10 (ten) lb sample of each type of fill material to testing laboratory.

C. Materials Source: Submit name of imported materials suppliers.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.6 QUALITY ASSURANCE

A. Furnish each fill material from single source throughout the Work.

B. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

C. Perform Work in accordance with SSPWC and CBC-22 as a minimum.

D. Maintain one (1) copy of each document on site.

PART 2 - PRODUCTS

2.1 SUBSOIL AND FILL MATERIALS

A. Comply with the requirements of Section 200 of the SSPWC.

B. Subsoil Type S1 – Unclassified Fill: Conforming to Section 300-4 of the SSPWC

C. Subsoil Type S2:

1. Excavated and re-used material or imported borrow, conforming to Section 300-5 of the SSPWC

2.2 TOPSOIL MATERIALS

The Engineer shall determine the suitability of topsoil prior to use. Topsoil shall be transported from the source to its final destination unless stockpiling is specified.

A. Topsoil Class A (Imported): Conforming to Section 212-1.1.2 of the SSPWC.

B. Topsoil Class B (Selected): Conforming to Section 212-1.1.3 of the SSPWC.

C. Topsoil Class C (Unclassified): Conforming to Section 212-1.1.4 of the SSPWC.

2.3 EROSION CONTROL MATERIALS

A. Conform to Sections 300-9, 300-11 and 308-4.9 of the SSPWC and the CASQA Manual.

2.4 SOURCE QUALITY CONTROL

A. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698, ASTM D1557 or AASHTO T180, as approved by Geotechnical Engineer.

B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D698, ASTM D1557 or AASHTO T180, as approved by Geotechnical Engineer.

C. When tests indicate materials do not meet specified requirements, change material and retest.

D. Furnish materials of each type from same source throughout the Work

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify site conditions.

C. Verify survey benchmark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three (3) working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities, if necessary.

D. Protect utilities indicated to remain from damage.

E. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.

F. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, re-landscaped, or regraded, marked areas, without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Stockpile in area designated on site and protect from erosion. Stockpile material on impervious material and cover, until disposal, or reuse.

D. Remove excess topsoil not intended for reuse, from site.

3.4 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated, re-landscaped, or regraded. and marked areas.

B. Do not excavate wet subsoil.

C. When excavating through roots, perform Work by hand and cut roots with sharp axe.

D. Remove excess subsoil not intended for reuse, from site.

E. Stockpile excavated material in area designated on site.

F. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill material to slope to provide firm bearing.

G. Stability: Replace damaged or displaced subsoil as specified for fill.

3.5 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Place fill material in continuous layers and compact in the maximum compacted depth approved by Geotechnical Engineer.

C. Maintain optimum moisture content of fill materials to attain required compaction density.

D. Slope grade away from building minimum two (2) percent slope for minimum distance of 10 ft, unless noted otherwise.

E. Make grade changes gradual. Blend slope into level areas.

F. Install Work in accordance with SSPWC and CBC-22 as a minimum.

3.6 TOLERANCES

A. Top Surface of Subgrade ±0.10 foot from required elevation.

3.7 STOCKPILING

A. Stockpile materials on site as designated by Architect/Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Stockpile topsoil eight (8) feet high maximum, unless otherwise approved by Engineer.

E. Prevent intermixing of soil types or contamination.

F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

G. Stockpile unsuitable and hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.8 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.9 EROSION CONTROL

A. Place erosion control measures as shown on construction drawings and conforming to Sections 300-9, 300-11 and 308-4.9 of the SSPWC.

3.10 FIELD QUALITY CONTROL

A. All inspections are to be conducted by Owner IOR.

B. Perform laboratory material tests in accordance with SSPWC, ASTM D1557 or ASTM D698, as approved by the Geotechnical Engineer.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

E. Frequency of Tests:

1. Perform tests as frequent as required by the Geotechnical Engineer.

END OF SECTION 31 22 13

SECTION 31 23 17
TRENCHING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. Related Sections:

1. Section 03 30 00 - Cast-In-Place Concrete: Concrete materials.
2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 33 11 16 - Site Water Utility Distribution Piping.
4. Section 33 41 00 - Storm Utility Drainage Piping.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Trenching:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes excavating to required elevations, protecting excavation, and stockpiling excavated materials removing excavated materials from site. Over Excavating: Payment is not made for over excavated work nor for replacement materials.

B. Subsoil Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

C. Structural Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, shaping substrate surface, placing where required, and compacting.

D. Granular Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

E. Concrete Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing materials, forming, mixing and placing where required, and curing.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft3 (2,700 kN-m/m3)).
5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. Standard Specifications for Public Works Construction (SSPWC).

D. California Building Code 2022 (CBC-22).

1.4 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

C. Product Data: Submit data for geotextile fabric indicating fabric and construction.

D. Materials Source: Submit name of imported fill materials suppliers.

E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. Perform Work in accordance with SSPWC and CBC-22 as a minimum.

C. Maintain one (1) copy of each document on site.

1.7 QUALIFICATIONS

A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of California.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Provide fill materials conforming to Section 200 of the SSPWC.

B. If the material from site excavations is intended for reuse, shall be approved by Geotechnical Engineer.

2.2 ACCESSORIES

A. Geotextile Fabric: Non-biodegradable, non-woven.

1. Alkzo Nobel Geosynthetic Co.
2. Huesker, Inc.
3. TC Mirafi.
4. Tenax Corp.
5. Tensar Earth Technologies, Inc.
6. Substitutions: Permitted with prior approval from Owner or Engineer.

PART 3 - EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

1. Engineer and Owner reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

B. Use laser-beam instrument with qualified operator to establish lines and grades, if available.

C. Maintain grade alignment of pipe using string line parallel with grade line and vertically above centerline of pipe.

1. Establish string line on level batter boards at intervals of not more than 25 feet.
2. Install batter boards spanning trench, rigidly anchored to posts driven into ground on both sides of trench.

3. Set three adjacent batter boards before laying pipe to verify grades and line.
4. Determine elevation and position of string line from elevation and position of offset points or stakes located along pipe route.
5. Do not locate pipe using side lines for line or grade.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three (3) working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control and detours when trenching is performed in public right- of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 TRENCHING

A. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard, measured by volume.

B. Perform excavation within 24 inches of existing utility service.

C. Do not advance open trench more than 200 feet ahead of installed pipe.

D. Cut trenches to width indicated on Drawings sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

E. Excavate bottom of trenches maximum two (2) feet wider than outside diameter of pipe.

F. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

G. Do not interfere with 45 degree bearing splay of foundations.

H. When Project conditions permit, slope side walls of excavation starting two (2) feet above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section.

I. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Engineer until suitable material is encountered notify Engineer, and request instructions.

J. Cut out soft areas of subgrade not capable of compaction in place. Backfill with acceptable fill material and compact to density equal to or greater than requirements for subsequent backfill material.

K. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.

L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.

M. Remove excess subsoil not intended for reuse, from site.

N. Stockpile subsoil in area designated on and protect from erosion.

3.4 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than four (4) feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be left in place as part of the completed Work, cut off minimum 18 inches below finished grade.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place geotextile fabric following manufacturer's specifications if required on drawings.

D. Place fill material in continuous layers and compact conforming to SSPWC.

E. Employ placement method that does not disturb or damage foundation perimeter drainage, or utilities in trench.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Do not leave more than 50 feet of trench open at end of working day.

H. Protect open trench to prevent danger to Owner and the public.

3.6 TOLERANCES

A. Top Surface of Backfilling Under Paved Areas: Plus or minus ½ inch from required elevations.

B. Top Surface of General Backfilling: Plus or minus one (1) inch from required elevations.

3.7 FIELD QUALITY CONTROL

A. All inspections are to be conducted by Owner IOR.

B. Perform laboratory material tests in accordance with ASTM D1557.

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922, as directed by Geotechnical Engineer.
2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

E. Frequency of Tests: As required by Geotechnical Engineer.

3.8 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.

B. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.9 SCHEDULE

A. Storm and Sanitary Piping:

1. Cover pipe and bedding with fill material to subgrade elevation.
2. Compact uniformly to minimum 95 percent of maximum density.

END OF SECTION 31 23 17

SECTION 32 13 13
CONCRETE PAVING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aggregate subbase and base course.
2. Concrete paving for:
    a. Concrete pavement.
    b. Concrete curbs.
    c. Curb ramps.

B. Related Sections:

1. Section 03 10 00 – Concrete Forming and Accessories.
2. Section 03 30 00 – Cast-In-Place Concrete
3. Section 31 22 13 – Rough Grading.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Concrete Paving:

1. Basis of Measurement: By cubic yard,
2. Basis of Payment: Includes forms, reinforcing, concrete, accessories, placing, finishing, curing, and testing.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

B. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

C. ASTM International:

1. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
3. ASTM A497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

5. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
6. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
7. ASTM A775/A775M - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
8. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
9. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
10. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
11. ASTM C33 - Standard Specification for Concrete Aggregates.
12. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
13. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
14. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
15. ASTM C150 - Standard Specification for Portland Cement.
16. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
17. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
18. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
19. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
20. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
21. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
22. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
23. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
24. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
25. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
26. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
27. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
28. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
29. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

30. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
31. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
32. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
33. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
34. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
35. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
36. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
37. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
38. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. Standard Specifications for Public Works Construction (SSPWC).

E. California Building Standards Codes, Title 24, 2022 Edition (CBC-22).

1.4 PERFORMANCE REQUIREMENTS

A. Paving: Designed for pedestrian and light vehicle traffic.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit data on concrete materials, joint filler, admixtures, and curing compounds.

C. Design Data:

1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
    a. Hot and cold weather concrete work.
2. Identify mix ingredients and proportions, including admixtures.
3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

D. Samples: Submit samples illustrating exposed aggregate finish as required by Engineer.

1.6 QUALITY ASSURANCE

A. Inspections shall be requested to County of San Bernardino Special Districts Department (Owner).

B. Perform Work in accordance with ACI 301 and requirements of Section 03 10 00 and Section 03 20 00.

C. Obtain cementitious materials from same source throughout.

D. Perform Work in accordance with SSPWC and CBC-22.

E. Maintain one (1) copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years documented experience and approved by manufacturer.

1.8 MOCKUP – Not Used

1.9 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Form Materials: Conform to ACI 301 and as specified in Section 03 10 00.

B. Joint Filler: ASTM D1751; Asphalt impregnated fiberboard or felt, 1/4 inch thick.

2.2 REINFORCING

A. Not Used.

2.3 CONCRETE MATERIALS

A. Concrete Materials: As specified in Section 03 30 00. Provide in accordance with SSPWC Section 201.

2.4 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

B. Joint Sealers: Specified in Section 03 30 00.

2.5 CONCRETE MIX

A. Design mix and deliver concrete in accordance with Section 03 30 00 – Cast-In-Pace Concrete.

2.6 SOURCE QUALITY CONTROL AND TESTS

A. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of Work.

B. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.

C. Test samples in accordance with Section 03 30 00 – Cast-In-Place Concrete.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify compacted subgrade subbase is dry and ready to support paving and imposed loads.

1. Proof roll subbase with compaction roller approved by Engineer in minimum two (2) perpendicular passes to identify soft spots.
2. Remove soft subbase and replace with compacted fill as specified in these specifications.

C. Verify gradients and elevations of base are correct.

3.2 SUBBASE or BASE COURSE

A. Prepare subbase or base course in accordance with SSPWC.

3.3 PREPARATION

A. Moisten substrate to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole catch basin frames with oil to prevent bond with concrete paving.

C. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

3.4 FORMING

A. Place and secure forms and screeds to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Conform to requirements of Section 03 10 00 – Concrete Forming and Accessories.

3.5 REINFORCING

A. Place reinforcing as indicated on Drawings.

B. Interrupt reinforcing at contraction and expansion joints.

C. Place reinforcing to achieve paving and curb alignment as detailed.

D. Provide doweled joints at regular spacing at interruptions of concrete with one end of dowel set in capped sleeve to allow longitudinal movement.

3.6 PLACING CONCRETE

A. Place concrete in accordance with ACI 301 and as specified in Section 03 30 00.

B. Place concrete in accordance with SSPWC and CBC-22.

C. Ensure reinforcing, inserts, embedded parts, formed joints are not disturbed during concrete placement.

D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

E. Place concrete to pattern indicated on drawings.

3.7 JOINTS

A. Place expansion joints at 20-foot intervals unless otherwise directed by Engineer. Align curb, gutter, and sidewalk joints.

B. Place joint filler between paving components and building or other appurtenances.

C. Provide sawn joints as specified on drawings.

D. Provide keyed joints as indicated on drawings.

E. Seal joints as indicated on Drawings.

3.8 FINISHING

A. Sidewalk Paving: Light broom, radius to ¼-inch radius, and trowel joint edges. Wood float.

B. Curbs and Gutters: Light broom, radius to ½-inch radius.

C. Direction of Texturing: Parallel to paving direction.

D. Place curing compound on exposed concrete surfaces immediately after finishing.

3.9 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Cure floor surfaces in accordance with ACI 301 and SSPWC. See Section 03 30 00.

3.10 ERECTION TOLERANCES

A. Maximum Variation of Surface Flatness: ¼-inch in 10 ft.

B. Maximum Variation from True Position: ¼-inch.

3.11 FIELD QUALITY CONTROL

A. All inspections are to be conducted by Owner IOR.

B. See Section 03 30 00, Subsection 3.6.

3.12 PROTECTION

A. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian or vehicular traffic over paving for seven (7) days minimum after finishing or until 75 percent design strength of concrete has been achieved.

3.13 SCHEDULES

A. Per Table 201-1.1.2(A) of the SSPWC.

END OF SECTION 32 13 13

SECTION 32 31 13
CHAIN LINK FENCE AND GATE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. DIVISION 01 - GENERAL REQUIREMENTS: Drawings, quality, product and performance requirements, general and supplemental conditions apply as applicable to the project and project documents.

1.2 SUMMARY

A. This Section includes industrial/commercial chain link fence and gates specifications:
   1. Galvanized steel-coated chain link fabric
   2. Galvanized steel framework and fittings
   3. Gates: swing and cantilever slide
   4. Barbed wire
   5. Installation

1.3 REFERENCES

A. ASTM A121 Specification for Metallic-Coated Carbon Steel Barbed Wire

B. ASTM A392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric

C. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

D. ASTM F552 Standard Terminology Relating to Chain Link Fencing

F. ASTM F567 Standard Practice for Installation of Chain Link Fence

G. ASTM F626 Specification for Fence Fittings

H. ASTM F900 Specification for Industrial and Commercial Swing Gates

I. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework

J. ASTM F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

K. ASTM F1184 Specification for Industrial and Commercial Horizontal Slide Gates

L. ASTM F2200 Specification for Automated Vehicular Gate Construction

M. UL325 Automatic operators: Door, Drapery, Gate, Louver and Window

1.4 SUBMITTALS

A. Shop drawings: Site plan showing layout of fence location with dimensions, location of gates and opening size, cleared area, elevation of fence, gates, footings and details of attachments.

B. Material samples: When required, provide representative samples of chain link fabric, framework and fittings.

C. Specification Changes: May not be made after the date of bid.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Framework, posts, rails, fabric, and fittings for chain link fence system:

1. MERCHANTS METALS®
   www.merchantsmetals.com
   Tech-Info@merchantsmetals.com
   Phone: (888) 260-1600
2. WHEATLAND TUBE CO.®
   www.wheatland.com
   fence@wheatland.com
   Phone: (800) 343-0124

2.2 CHAIN LINK FABRIC

A. Steel Chain Link Fabric: [Height or heights indicated on drawings] < Select from table below and insert ASTM serial designation, mesh size, wire gauge, coating specification, including class and color when applicable, top/bottom selvage >

1. Zinc-Coated Steel Fabric: ASTM A392 hot dipped galvanized before weaving (GBW) or after weaving (GAW).
   a. Class 1 - 1.2 oz/ft² (366 g/m²)
   b. Class 2 - 2.0 oz/ft² (610 g/m²) <available 9 and 6 gauge>
2. Fabric Selection Table: Steel chain link mesh sizes and gauges produced in One-piece widths 3 feet (910 mm) to 12 feet (3660 mm)

Mesh Size In. (mm)	6 gauge core 0.192 in.	9 gauge core 0.148 in.	11 gauge core 0.120 in.	11 1/2 gauge core 0.113 in.	12 Gauge core 0.105 in.	Notes
	4.88 mm	3.76 mm	3.05 mm	2.87 mm	2.67 mm	N/A = Not applicable for
2 (50)	yes	yes	yes	N/A	N/A	industrial/commercial
1 ¾ (44)	yes	yes	yes	N/A	N/A	applications
1 (25)	N/M	yes	yes	N/A	N/A	N/M = Not manufactured
5/8 (16)	N/M	yes	yes	yes	yes*	*12 ga. only per F668
1/2 (13)	N/M	yes	yes	yes	yes*	
3/8 (10)	N/M	N/M	yes	yes	yes*	

	2170 lbf	1290 lbf	850 lbf	750 lbf	650 lbf	Wire Break Strength
	(9650 N)	(5740 N)	(3780 N)	(3340 N)	(2895 N)	

3. Fabric salvage:
   Standard fabric salvage for 2 in (50 mm) mesh 72 in. (1.8 m) high and higher is knuckle finish at one end, twist at the other. Fabric less than 72 in (1.8 m), knuckle finish top and bottom, K&K. [Manufacturing and installation issues dictate all mesh sizes less than 2 in. (50 mm) have a knuckle selvage for both top and bottom, K&K.]

2.3 ROUND STEEL PIPE FENCE FRAMEWORK

A. Round steel pipe and rail: Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/ ft² (550 g/m²) hot dip galvanized zinc exterior and 1.8 oz/ft² (550 g/m²) hot dip galvanized zinc interior coating.
   Regular Grade: Minimum steel yield strength 30,000 psi (205 MPa)
   High Strength Grade: Minimum yield strength 50,000 psi (344 MPa)
   [Specify Grade: Regular or High Strength]
   1. Line post <Insert outside diameter, zinc coating, weight >
   2. End, Corner, Pull post <Insert outside diameter, zinc coating, weight >
   3. Top, brace, bottom and intermediate rails, 1.660 in. (42.2 mm) OD: <Insert outside diameter, zinc coating, weight>

B. Typical post and rail size for normal Commercial / Industrial applications

Item	Fence Height	Outside Diameter Inches (mm)		*F1083 Schedule 40 Weight lb/ft (kg/m)	
Line post	up to 6 ft. (1.8 m)	1.900	(48.3)	2.72	(4.0)
	over 6 to 8 ft. (1.8 to 2.4 m)	2.375	(60.3)	3.65	(5.4)
	over 8 to 12 ft. (2.4 to 3.7 m)	2.875	(73.0)	5.79	(8.6)
	over 12 to 16 ft. (3.7 to 4.9 m)	4.000	(101.6)	9.11	(13.6)
Terminal post	up to 6 ft (1.8 m)	2.375	(60.3)	3.65	(5.4)
	over 6 to 8 ft. (1.8 to 2.4 m)	2.875	(73.0)	5.79	(8.6)
	over 8 to 12ft. (2.4 to 3.7 m)	4.000	(101.6)	9.11	(13.6)
	over 12 to16 ft. (3.7 to 4.9 m)	6.625	(168.3)	18.97	(28.2)
		8.625	(219.1)	28.58	(42.5)

Rails		1.660 (42.2)	2.27 (3.4)

*Regular Grade F1083 Schedule 40

Framework Wind Load Caution:
Fences containing windscreens or privacy slats (Priva-Max®) and fences greater than 8 feet (2.4 m) in height using, 1 in. (25 mm) mesh or smaller - recommend a wind load force analysis for post selection and post spacing. See Chain Link Manufactures Institute – Wind Load Guide CLFMI: WLG 2445. An interactive Wind load Fence Post Calculator is available at www.wheatland.com]

2.4 TENSION WIRE

A. Metallic Coated Steel Marcelled Tension Wire: 7-gauge core (0.177 in.) (4.50 mm) marcelled wire complying with ASTM A824.

1. Type II Zinc-Coated, ASTM A817 Class 4 - 1.2 oz/ft² (366 g/m²)
2. Type II Zinc-Coated, ASTM A817 Class 5 - 2.0 oz/ft² (610 g/m²)

2.5 BARBED WIRE

A. Metallic Coated Steel Barbed Wire: Comply with ASTM A121, Design Number 12-4-5-14R, double 12-½ gauge (0.099 in.) (2.51 mm) twisted strand wire, with 4 point 14 gauge (0.080 in.) (2.03 mm) round barbs spaced 5 inches (127 mm) on center.

1. Coating Type Z - Zinc-coated: Strand wire coating Type Z, Class 3, 0.80 oz/ft² (254 g/m²), barb coating 0.70 oz/ft² (215g/m²).

2.6 FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.) (2.67 mm), minimum width of 3/4 in. (19 mm) and minimum zinc coating of 1.20 oz/ft² (366 g/m²). Secure bands with 5/16 in. (7.94 mm) galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Tops, Rail and Brace Ends, Boulevard Clamps, Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft² (366 g/m²).

C. Truss Rod Assembly: In compliance with ASTM F626, 3/8 in. (9.53 mm) or 5/16” (7.94 mm) diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft² (366 g/m²), assembly capable of withstanding a tension of 2,000 lbs. (970 kg).

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. (50 mm) less than the fabric height. Minimum zinc coating 1.2 oz. /ft² (366 g/m²).

1. [Bars for 2 in. (50 mm) and 1 ¾ in. (44 mm) mesh shall have a minimum cross-section of 3/16 in. (4.8 mm) by 3/4 in. (19 mm)]

2. [Bars for 1 in. (25 mm) mesh shall have a cross-section of 1/4 in. (6.4 mm) by 3/8 in. (9.5 mm)]

3. [Small mesh 3/8 in. (10 mm), 1/2 in. (13 mm) and 5/8 in. (16 mm) shall be attached (sandwiched) to the terminal post using a galvanized steel strap having a minimum cross section of 2 in. (51 mm) by 3/16 in. (4.8 mm) with holes spaced 15 in. (381 mm) on center to accommodate 5/16 in. (7.9 mm) carriage bolts which are to be bolted thru the strap the mesh and thru the terminal post.]

E. Barbed Wire Arms: In compliance with ASTM F626, pressed steel galvanized after fabrication, minimum zinc coating of 1.20 oz. /ft² (366 g/m²), capable of supporting a vertical 250 lb (113 kg) load. [Type I – three strands 45 degree (0.785 rad) arm] [Type II – three-strand vertical arm] [Type III – "V" shaped six-strand arm]

2.7 TIE WIRE AND HOG RINGS

A. Basic commercial/industrial applications - specify 9 gauge core aluminum alloy ties and hog rings per ASTM F626.

B. Added security or fence containing privacy (Priva-Max®) slats specify 9 gauge core (0.148) (3.76 mm) steel Galvanized Before Weave (GBW) with preformed power fastened wire ties and preformed hog rings having minimum zinc coating 1.20 oz/ft² (366 g/m²) per ASTM F626.

2.8 SWING GATES

A. Swing Gates: Galvanized steel pipe welded fabrication in compliance with ASTM F900. Gate frame members 1.900 in. OD (48.3 mm) ASTM F 1083 schedule 40 galvanized steel pipe Frame members spaced no greater than 8 ft. (2440 mm) apart vertically and horizontally. Welded joints are protected by applying zinc-rich paint in accordance with ASTM Practice A780. Positive locking gate latch, pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Provide lockable drop bar and gate holdbacks with double gates. Gateposts per ASTM F1083 schedule 40 galvanized steel pipe. <Select the gatepost diameter from table 2.9 B. See the yellow highlighted colors below.

B. Gateposts: Regular Grade ASTM F1083 Schedule 40 pipe

Gate fabric height up to and including 6 ft. (1.2m)		
Gate leaf width	Post Outside Diameter	Weight
up to 4 ft. (1.2 m)	2.375 in. (60.3 mm)	3.65 lb/ft (5.4 kg/m)
over 4 ft. to 10ft. (1.2 to 3.05 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 10 ft. to 18 ft. (3.05 to 5.5 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)

Gate fabric height over 6 ft. to 12 ft. (1.2 to 2.4m)		
Gate leaf width	Post Outside Diameter	Weight
up to 6 ft. (1.8 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 6 ft. to 12 ft. (1.8 to 3.7 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)
over 12 ft. to 18 ft. (2.4 to 5.5 m)	6.625 in. (168.3 mm)	18.97 lb/ft (28.2 kg/m)
over 18 ft. to 24 ft. (5.5 to 7.3 m)	8.625 in. (219.1 mm)	28.58 lb/ft (42.5 kg/m)

A. Chain Link 2" Fabric: Galvanized After Weaving

B. Finish - choose one: Natural Aluminum or Polymer coated horizontal slide gates and posts shall match the coating type and color as that specified for the fence framework, available colors - black, green, or brown.

C. Gateposts, 4" O.D. (101.6 mm) schedule 40 weighing 9.11 lb/ft (13.6 kg/m). Single gates with single tracks require 3 gate posts. (1 latch post and 2 support posts) Single gates with dual tracks require 5 gate posts. (1 latch and 2 dual support posts) Double gates require twice the number of support posts but do not have a latch post.

D. Electrically operated horizontal slide gates must be manufactured and installed to comply with the safety requirements of ASTM F2200 and UL 325.

2.9 CONCRETE

Concrete for post footings shall have a 28-day compressive strength of 2,500 psi. (17.2 MPa).

PART 3 EXECUTION

3.1 CLEARING FENCE LINE

Clearing: Surveying, clearing, grubbing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence <Insert project requirement> [is included in the earthwork contractor's contract under the provisions of Division 31 - Earthwork.] [is not included in the earthwork contractor's contract and is the responsibility of the fence contractor in accordance with the provisions of Division 31 - Earthwork.] The contract drawings indicate the extent of the area to be cleared and grubbed.

3.2 FRAMEWORK INSTALLATION

A. Posts: Posts shall be set plumb in concrete footings in accordance with ASTM F567. Minimum footing depth, 24 in. (609.6 mm) plus an additional 3 in. (76.2 mm) depth for each 1 ft. (305 mm) increase in the fence height over 4 ft. (1220 mm). Minimum footing diameter four times the largest cross-section of the post up to a 4.00" (101.6 mm) dimension and three times the largest cross- section of the post greater than a 4.00" (101.6

mm) dimension. 24"Ø x 36" Depth > <Local codes, site soil conditions, local frost depth,

fence height and wind load may require larger diameter or deeper footings - See Chain Link Manufactures Institute – Product Guide and Wind Load Guide CLFMI: WLG 2445> Top of concrete footing to be [at grade crowned to shed water away from the post or 6 inches (152 mm) below grade] <Insert footing grade requirement> crowned to shed water away from the post. Line posts installed at intervals not exceeding 10 ft. (3.05 m) on center.

B. Top rail: When specified, install 21 ft. (6.4 m) lengths of rail continuous thru the line post or barb arm loop top. Splice rail using top rail sleeves minimum 6 in. (152 mm) long. Rail shall be secured to the terminal post by a brace band and rail end. Bottom rail or intermediate rail shall be field cut and secured to the line posts using boulevard clamps or brace band with rail end. <Fences 12 feet (3.66 m) high or higher require mid rail>

C. Terminal posts: End, corner, pull and gate posts shall be braced and trussed for fence 6 ft. (1.8 m) and higher and for fences 5 ft. (1.5 m) in height not having a top rail. The horizontal brace rail and diagonal truss rod shall be installed in accordance with ASTM F567.

D. Tension wire: Shall be installed 4 in. (101.6 mm) up from the bottom of the fabric. Fences without top rail shall have a tension wire installed 4 in. (101.6 mm) down from the top of the fabric. Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Secure the tension wire to each line post with a tie wire. <Install the top tension wire through the barb arm loop for fences having barbed wire and no top rail.>

3.3 CHAIN LINK FABRIC INSTALLATION

Chain Link Fabric: Install fabric to [outside or inside] of the framework, maintaining a ground clearance of no more than 2 inches (50 mm). Attach the fabric to the terminal post by threading the tension bar through the fabric; secure the tension bar to the terminal post with tension bands and 5/16 in. (7.94 mm) carriage bolts spaced no greater than 12 inches (304.8mm) on center. Small mesh fabric less than 1 in. (25 mm), attach to terminal post by sandwiching the mesh between the post and a vertical 2 in. wide (50mm) by 3/16 in. (4.76 mm) galvanized steel strap using carriage bolts, bolted thru the bar, mesh and post spaced 15 in. (381 mm) on center. Chain link fabric to be stretched taut free of sag. Fabric to be secured to the line post with tie wires spaced no greater than 12 inches (304.8 mm) on center and to horizontal rail spaced no greater than18 inches (457.2 mm) on center. [Aluminum alloy tie wire shall be installed following ASTM F567: Wrap the tie around the post or rail and attached to a fabric wire picket on each side of the post or rail by twisting the tie wire around the fabric wire picket two full turns, cut off excess wire and bend over to prevent injury.] [Preformed 9 gauge power-fastened wire ties shall be installed following ASTM F626: Wrap the tie a full 360° around the post or rail and fabric wire picket, using a variable speed drill, twist the two ends together three full turns, cut off any excess wire and bend over to prevent injury.] Secure the fabric to the tension wire by crimping hogs rings around a fabric wire picket and tension wire.

3.4 BARBED WIRE INSTALLATION

Barbed Wire: Stretched taut between terminal posts and secured in the slots provided on the line post barb arms. Attach each strand of barbed wire to the terminal post using a brace band. <Indicate type of barb arm, Type I, II or III and direction [inward] [outward] for installation of Type I arm. >

3.5 GATE INSTALLATION

A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F 567. Direction of swing shall be [inward or outward.] Gates shall be plumb in the closed position having a bottom clearance of 3 in. (76 mm), grade permitting. Hinge and latch offset opening space shall be no greater than 3 in. (76 mm) in the closed position. Double gate drop bar receivers shall be set in concrete footings with a minimum of 6 in. (152 mm) diameter and 24 in. (609.6 mm) deep. Gate leaf holdbacks shall be installed for all double gates. Electrically operated gates must be manufactured and installed in compliance with ASTM F2200 and UL 325.

3.6 NUTS AND BOLTS

Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.7 ELECTRICAL GROUNDING

Grounding: Grounding of the fence and gates is not the responsibility of the fence contractor and not included in the fencing scope of work for this contract. Grounding, when required, shall be specified and included in Contract Section 33 79 00 Site Grounding. A licensed electrical contractor shall install grounding when required.

3.8 CLEAN UP

Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

END OF SECTION 32 31 13

SECTION 32 33 00
SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The work of this section shall conform to the "Standard Specifications for Public Works Construction", latest edition, except as modified herein.

1.2 SCOPE OF WORK

A. Work of this Section includes all materials, labor and equipment necessary to provide and install the Site Furnishings as shown on the drawings, as reasonably implied or as specified herein. The equipment shall be assembled on site as per manufacturer's recommendations and this section. All work and equipment provided shall be subject to approval of the Project Inspector.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete: Section 03 30 00

1.4 SUBMITTALS

A. Contractor shall submit a complete list of materials along with manufacturer's catalog data for all materials proposed for use in the work at the pre-construction conference. Proposals for substitution of those materials specified herein shall be submitted and reviewed.

B. Manufacturer's Product Data: Submit three (3) copies of manufacturer's literature for each item of site furnishings.

C. Shop Drawings: Manufacturer's shop Drawings shall be provided for all prefabricated items. Shop Drawings which show complete details shall be furnished in quadruplicate for all items requiring shop fabrication in accordance with Section 2-5.3 of the Standard Specifications.

1.5 GUARANTEE & LIABILITY INSURANCES

A. Manufacturer shall guarantee all materials and workmanship for a period of one (1) year exclusive of vandalism. Manufacturer will be required to provide product liability insurance coverage in the minimum amount of $10,000,000 per incident. Manufacturer or his representative shall inspect all installation work and provide written certification that equipment has been installed in accordance with the manufacturer's specifications.

B. Each Manufacturer will be required to provide complete installation drawings including specifications and a replacement parts list for all products.

C. Contractor shall provide a written guarantee on his firm's letterhead for all materials and workmanship for a period of one (1) year exclusive ofvandalism. Written guarantee shall be submitted to the District at the final inspection prior to final acceptance of the work.

1.6 PROPOSED SUBSTITUTIONS

A. Products proposed for substitutions as "equals" to those specified are subject to the approval of the District. If at the time proposed equals are delivered to the site, it is determined by the District that they are not equal to those specified, they shall be removed and products as specified shall be provided by the Contractor at no additional cost to the District.

1.7 LOCATION INSPECTION

A. No equipment or apparatus or foundations for same shall be placed until location stakes have been inspected for recommended approval by the Landscape Architect and/or Project Inspector.

ALL MATERIALS SHALL BE AS CALLED FOR ON PLANS

PART 2 - MATERIALS

2.1 EXECUTION: "OR APPROVED EQUIVALENT" PRODUCTS

A. This project is a Public Works project. Sole sourcing of material is not allowed. Any reference or call out on the plans and/or in the specifications to a specific manufacturer shall be interpreted as "or approved equivalent". The District Engineer's and Landscape Architect's approval is required as to whether or not a product meets the District's standard to be an approved equivalent. **Bidders shall use the pricing for the products as specified to avoid risks of disapproval. No substitutions will be considered prior to the award of the contract.**

PART 3 - EXECUTION

3.1 LAYOUT

A. Contractor shall stake/mark locations for all slabs equipment or apparatus or foundations for same and shall obtain the acceptance of their location from Landscape Architect and/or Park Inspector prior to commencing any digging. Locations shall be adjusted to provide minimum clear distances required from all edges of slabs, trees, irrigation heads, or other obstructions.

3.2 CONCRETE WORK

A. All concrete foundation work shall be performed in accordance with the Standard Specifications, Section 201. Contractor shall obtain the acceptance of all forming from the Park Inspector prior to pouring any concrete. Foundations holes shall be inspected and accepted by the Inspector prior to pouring concrete.

3.3 STEEL FABRICATION AND WELDING

A. All steel members shall be thoroughly hand cleaned and solvent cleaned to remove all rust, scale, oil, grease, and foreign material prior to welding. All welds shall be continuous fillet welds along all abutting surfaces. Sand all welds smooth. Galvanized steel shall be touched up after welding with Galvicon paint.

3.4 SITE FURNISHINGS

A. All Site Furnishings shall be installed plumb, at a height above the finish surface as recommended by the manufacturer. Minimum footing size shall conform to the manufacturer's recommendations. All footings shall be installed prior to placement of concrete slabs, where they occur. **No "block outs" will be permitted.**

3.5 PAINTING

A. All items to be painted shall be properly primed prior to application of a minimum of two (2) finish coats.

B. After installation, all site furnishings and play equipment shall be touched-up as necessary. Touch-up paint shall be as supplied by the manufacturer.

3.6 CLEAN-UP

A. Contractor shall clean up and legally dispose of all unused materials, excess soil, and debris at regular intervals throughout the duration of the work, and as directed by the District.

3.7 PAYMENT TERMS

A. Payment for site furnishings will be at the lump sum price bid for site furnishings. Payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work in site furnishings as herein specified.

END OF SECTION 32 31 13

END OF TECHNICAL SPECIFICATIONS