TWAIN HARTE COMMUNITY SERVICES DISTRICT
PROJECT DOCUMENTS FOR

TWAIN HARTE MEADOWS PARK

DISTRICT PROJECT

150-57-0001

TWAIN HARTE COMMUNITY SERVICES DISTRICT

22912 Vantage Pointe Drive
Twain Harte, CA 95383

PROJECT DOCUMENTS

for construction of

DISTRICT PROJECT 150-57-0001

TWAIN HARTE MEADOWS PARK

Approved for Construction:

Tom C. Trott, P.E.
General Manager

Eileen Mannix
Board President

June 2023

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PART I
NOTICE INVITING BIDS

TWAIN HARTE MEADOWS PARK
PROJECT 150-57-0001

NOTICE IS HEREBY GIVEN THAT the Board of Directors of the Twain Harte Community Services District (District), Twain Harte, California, invites and will receive sealed bids for furnishing all labor, equipment, materials, and services specified for the construction of District Project 150-57-0001, Twain Harte Meadows Park, in conformance with the Contract.

The work generally consists of constructing a new one-acre park and recreation area for the community of Twain Harte, including demolition, earthwork, underground utilities, decorative boulders, stormwater bioswales and detention, rain tanks, permeable parking lot, permeable ADA pathways, pedestrian boardwalks, outdoor pavilion, prefabricated restroom pad, electrical, lighting, Christmas tree, and other related items as specified within the Project Documents. **The engineer's estimated cost for construction is $950,000.**

A mandatory pre-bid meeting to discuss the Project will be held on Tuesday, June 27, 2023, at 10:00 a.m., local time, at the Project site – 22945 Meadow Drive, Twain Harte, CA 95383.

The District will receive bids at its receptionist area until 3:00 p.m., local time, Thursday, July 6, 2023, at 22912 Vantage Pointe Drive, Twain Harte, California, at which time and place, in the District's Board Meeting Room, accepted bids will be publicly opened and declared aloud by the Secretary of the District, and before the General Manager, or his representatives. Bids may also be mailed to 22912 Vantage Pointe Drive, Twain Harte, CA 95383 so long as they are received prior to the above bid time. **NO LATE BIDS WILL BE ACCEPTED.**

Project Documents, addenda (if any) are available for viewing without charge through the District website at www.twainhartecsd.com and may be examined or obtained at the District's offices at 22912 Vantage Pointe Drive, Twain Harte, California, from 8:00 a.m. to 4:00 p.m., Monday through Friday. The bid results will be available on the District website after the bid opening.

Copies of the Project Documents and addenda may be obtained at the District's reception area or by calling the District at (209) 586-3172. A complete set of Project Documents on CD is available at no cost; each complete paper set of Project Documents is available for a nonrefundable fee of $20. Payment must be made at the time the documents are obtained in the form of a check (payable to Twain Harte Community Services District) or cash.

Inquiries regarding further information about the Project may be directed to Tom Trott, General Manager, (209) 586-3172 or ttrott@twainhartecsd.com.

Inquiries regarding directions to the District office and the location of the pre-bid meeting may be directed to the District's receptionist at (209) 586-3172.

All bidders and subcontractors to bidders must be registered and qualified to perform public work pursuant to Section 1725.5 of the California Labor Code, subject to limited legal exceptions under California Labor Code Section 1771.1.

Notice is hereby given that, pursuant to Part 7, Chapter 1, Article 2, Section 1770 et. seq. of the

Labor Code of the State of California, the successful bidding contractor and its subcontractors shall pay their labor forces not less than the general prevailing rate of per diem wages as determined by the State of California Director of Industrial Relations, and travel and subsistence pay as such are defined in applicable collective bargaining agreements filed in accordance with Section 1773.8 of said Labor Code, for work needed and performed on this Project. Said determinations, in effect at the time of publishing this notice, are available at the above identified District office, or may be reviewed or examined by going to www.dir.ca.gov. It shall, pursuant to the provisions of Section 1773.2 of said Labor Code, be a requirement of the work for the successful bidding contractor to post and maintain a copy of said wages' determination at the Project site throughout duration of the work. Pursuant to California Labor Code Section 1771.4, this Contract is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

Bids to receive consideration must be signed by the bona fide prime contractor who proposes to undertake the work and who is properly licensed in accordance with the Contractor's License Law as provided beginning at Section 7000 of the Business and Professions Code of the State of California. The license classification(s) required for the work are as follows: **Class A**. The Bidder shall have the required license(s). Each bid submitted (hard copy) must be on the forms furnished herein and in accordance with California Public Contract Code section 20683 must be accompanied by cash, a certified or cashier's check made payable to the District or Bidder's bond for an amount not less than ten percent (10%) of the aggregate total bid. A form bidder's bond is included in this bid packet. Pursuant to California Code of Civil Procedures Section 995.311, the District will verify all bonds for this Project are issued and executed by a California admitted surety.

The Contractor shall be allowed to substitute securities for any monies withheld to ensure performance under this Contract pursuant to Section 22300 of the California Public Contract Code.

The District Board of Directors reserves the right to reject any or all bids for the work and waive any non-material irregularities or omissions in the bids received.

Dated at Twain Harte, California, June 14, 2023.

Kimberly Silva, Board Secretary
Twain Harte Community Services District

PART II
INSTRUCTIONS TO BIDDERS

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PART II
INSTRUCTIONS TO BIDDERS

SECTION 1 – PREPARATION AND SUBMISSION OF BIDS

Bids shall be prepared on the forms included in Part III, Bid Forms. All bid forms shall be properly executed and all blank spaces shall be filled in. Any modifications to Bidder-supplied information shall be initialed by the Bidder. Failure to comply with these requirements may, at the discretion of the District, be grounds for rejection of the bid.

Any changes by the Bidder to the District-printed bid forms may, at the discretion of the District, be grounds for rejection of the bid.

All forms in Part III, Bid Forms shall be submitted in their entirety in a sealed envelope. The sealed "Bid" envelope shall be in the District's possession by the time stipulated in the Notice Inviting Bids, Part I. Partial or incomplete bids will not be considered. Bids shall be in strict conformity with Parts I, II, and III for District Project 150-57-0001 and any Addenda thereto.

Each bid shall be enclosed in a sealed envelope distinctly marked "Bid" and bearing the District's project number, title as given, and the name and address of the Bidder. Bids shall either be (1) delivered in person at the Twain Harte Community Services District, 22912 Vantage Pointe Drive, Twain Harte, California, during normal business hours, being 8 a.m. to 4 p.m., Monday through Friday, or, (2) mailed to "Twain Harte Community Services District, 22912 Vantage Pointe Drive, Twain Harte, CA 95383, Attention: Secretary of the District" by the time and date restrictions listed in Part I, Notice Inviting Bids.

Where "days" is used in the Project Documents it shall mean calendar days unless stated otherwise.

Each bid shall show the full legal name and business address of the Bidder, including street address if it differs from its mailing address, and shall be signed with the usual signature of the person or persons authorized to bind the Bidder and shall be dated. Bids by a partnership or joint venture shall list the full names and addresses of all partners or joint ventures. The state of incorporation and corporate number shall be provided. The name of each signatory shall be typed or otherwise clearly imprinted below each signature where requested. When requested by the District, satisfactory evidence of the authority of any signatory on behalf of the Bidder shall be furnished.

The preparation of a bid shall be by and at the expense of the Bidder.

Bids shall be firm for sixty (60) days from and after the stated closing time, or until a Contract is fully executed by the District and a Bidder, whichever is earlier.

SECTION 2 – EXAMINATION OF DOCUMENTS AND EXPLANATION TO BIDDERS

The Project Documents consist of Notice Inviting Bids (Part I), Instructions to Bidders (Part II), Bid Forms (Part III), Contract and Bonds (Part IV), General Conditions (Part V), Special Conditions (Part VI), Technical Specifications (Part VII) and Project Drawings (Part VIII).

Any Bidder planning to submit a bid is responsible for examining with appropriate care the complete Project Documents and all Addenda, and is also responsible for informing itself with respect to all conditions, which might in any way affect the cost or the performance of any work. Failure to do so will be at the sole risk of the Bidder, and no relief can be given for errors or omissions by the Bidder.

All questions relative to the Contract prior to the issuance of the Notice of Award shall be directed to Tom Trott, Twain Harte Community Services District, 22912 Vantage Pointe Drive, Twain Harte, CA 95383.

Should the Bidder find discrepancies in or omissions from the Project Documents, or should the intent or meaning of the documents appear unclear, the Bidder shall at once notify the District of such findings. Questions received less than seven (7) days prior to the date for opening of the bids may not be answered. If the Bidder asks a question within five (5) days prior to the date for opening of the bids, the Bidder shall notify the District in writing of such question before the opening of the bids. The Bidder making notifications shall be solely responsible for their timely receipt by the District. Should the Bidder find patent ambiguities in the Project Documents, the Bidder shall at once notify the District of such findings in writing prior to opening of the bids. Replies to such notification of patent ambiguities may be made in the form of Addenda, which will be issued simultaneously to all persons who have obtained a copy of the Project Documents from the District. Failure of the Bidder awarded the Contract to notify the District of such patent ambiguity shall eliminate any and all recourse, including time extensions and Contract price adjustments the Bidder may have, against the District occurring as a result or arising out of such patent ambiguity.

The Bidder, by submission of its bid, confirms it has familiarized itself with the Project Documents and has found them fit and sufficient for the purpose of preparing its bid.

Copies of the Project Documents, preliminary engineering and geotechnical reports (if any), are available for examination without charge during normal business hours (8 a.m. – 4 p.m., Monday through Friday) at the office of the:

Twain Harte Community Services District
22912 Vantage Pointe Drive
Twain Harte, CA 95383

At the time each Bidder obtains a copy of the Project Documents, it shall designate the address to which Addenda are to be sent. Such address shall be a street address. If the Bidder obtains the Project Documents online, the Bidder shall provide such address via email to the Project Manager at ttrott@twainhartecsd.com. Post office boxes alone are not acceptable. The Bidder shall also supply the telephone number, fax number, and email address.

SECTION 3 – SITE INSPECTION AND CONDITIONS

In addition to examination of the Project Documents, each prospective Bidder shall become fully informed regarding all existing and expected conditions and matters which could affect any work or performance of any work.

The Bidder shall investigate and acquaint itself with the nature and location of work and the general and local conditions, and particularly, but without limitation, with respect to the following: those affecting transportation, access, disposal, handling, and storage of materials; availability and quality of labor, water, and electric power; availability and condition of roads; climatic conditions and seasons; river hydrology and river stages; physical conditions at the work sites and the Project

areas as a whole; topography and ground surface conditions; equipment and facilities needed preliminary to and during performance of the Contract; and all other matters that can in any way affect performance of the Contract. The failure of the Bidder to acquaint itself with any applicable condition will not relieve it from the responsibility for properly estimating either the difficulties or the costs of successfully performing the Contract.

Where the District has made investigations of conditions in areas where work is to be performed under the Contract, such investigations are made only for the purpose of study and design. The use of such investigations shall be at the sole risk of the Bidder. Any such investigations in these Project Documents are provided for the benefit of Bidders, and Bidders shall assume all risks concerning use of the investigations in preparing their bids. The Bidder shall make whatever other reasonable investigations as are necessary to determine to the Bidder's satisfaction, the character and amount of work to be performed.

The District assumes no responsibility whatsoever in respect to the sufficiency or accuracy of its investigations, the records thereof, or of the interpretations set forth therein or made by the engineer thereof; and there is no warranty or guaranty, either expressed or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unforeseen development may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

All Project work is located on property owned by the District. Bidders may access the Project site at will; however, arrangements for access to the adjacent well house and associated facilities must be made one working day in advance of planned access by contacting the District's Operations Manager, Lewis Giambruno, at telephone number (209) 586-4988 or lgiambruno@twainhartecsd.com.

Any failure to fully investigate the sites or the foregoing conditions shall not relieve the Bidder from responsibility by estimating properly the difficulty or cost of successfully performing any work. Neither the District nor any of the District's representatives or agents assumes any responsibility for any verbal representation regarding all existing and excepted site conditions.

SECTION 4 – ADDENDA TO THE PROJECT DOCUMENTS

The District may modify any provision or part of the documents at any time prior to three (3) days before closing time, provided that the closing time set forth in Part I, Notice Inviting Bids, may be extended by the District at any time prior to said closing time. Such revisions, if any, will be in the form of Addenda, which will be issued as set forth in this Part II, Section 2, Examination of Documents and Explanation to Bidders.

Contractor failure to properly acknowledge all Addenda issued (including if none) may, at the discretion of the District, be grounds for rejection of the bid. This acknowledgement shall be provided by completing and signing the form included in Part III, Bid Forms, Section 1, Bid, herein. Each Bidder shall submit this acknowledgement as a part of its bid, but in no circumstances will the acknowledgement be accepted subsequent to the closing time for bids.

SECTION 5 – REGISTRATION OF CONTRACTORS

All Bidders and their Subcontractors must be registered and qualified to perform public work pursuant to Section 1725.5 of the California Labor Code. Bids will not be accepted nor any contract entered into without proof that the Bidder and its subcontractors are registered with the California

Department of Industrial Relations to perform public work pursuant to California Labor Code Section 1725.5, subject to limited legal exceptions.

All Bidders shall have the required license(s) under the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California to do the type of work contemplated in the Project and shall be skilled and regularly engaged in the general class or type of work called for under the Contract.

Each Bidder shall set forth in its bid the number, classification, and date of expiration of such license(s).

SECTION 6 – SCHEDULE OF BID

The quantities included in the bid are estimates of the work to be completed.

Bids shall be prepared on the form contained in Part III, Bid Forms, Section 2, Schedule of Bid. The total bid shall constitute full compensation for furnishing all materials and doing all work in the Contract. Bids must be provided for both Base Bid items and Additive Bid Items.

No substitution of materials, methods, or listed alternatives not specified in the Specifications shall be permitted.

SECTION 7 – NOT USED

SECTION 8 – COMPARISON OF BIDS

Bids will be compared on the basis of the total bid stated in Part III, Section 2, Schedule of Bid.

For the purpose of initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies and conflicts found on the face of the bidding schedule as submitted by Bidders:

a. In case of discrepancy between unit price and extended price, the unit price will govern and will be used to correct the extension of unit prices.

b. Apparent errors in addition of lump-sum and extended prices will be corrected.

c. If no monetary symbol ($ or ¢) is entered with a unit price, lump sum, or extension, a dollar sign ($) will be assumed to be the Bidder's intent.

The District will recalculate the total bid based on the resolution of any arithmetic discrepancies and conflicts found. The lowest bid will be determined after any required recalculations.

Any bid that, in the opinion of the District, is so unbalanced between the various Contract items as to be detrimental to the best interests of the District will be rejected.

SECTION 9 – BIDDER'S STATEMENT OF SUBCONTRACTORS

In the form entitled Section 4, Bidder's Statement of Subcontractors, provided within Part III of this Project Manual, and pursuant to Section 4100 et seq. of the Public Contract Code, the Bidder shall submit the name, California State License Board (CSLB) license number, city, and state of the place of business of each subcontractor who will perform work or labor or render service to the

prime contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to the Project Documents, in an amount in excess of one-half of one percent (½%) of the bid total as set forth in the Schedule of Bid, Part III, Section 2. The prime contractor shall indicate the portion that will be done by each such subcontractor for each such portion as is defined by the subcontractor in its bid.

Failure to list subcontractors in Part III, Bid Forms, Section 4, Bidder's Statement of Subcontractors, is an express statement by the Bidder that it will perform that portion of the work with its own forces. The prime contractor may not substitute any person or subcontractor for a listed subcontractor without first obtaining written permission of the District's General Manager pursuant to provisions of Section 4107 of the Public Contract Code.

SECTION 10 – QUALIFICATION OF BIDDERS

Each Bidder shall submit with its bid an experience statement, substantially in the form included herein as Part III, Bid Forms, Section 7, Bidder's Statement of Experience.

A qualified bidder shall have experience moving and placing 2-5' boulders in stacked, natural and artistic formations. The Bidder shall provide references listing at least two (2) projects completed by the Bidder and/or the Bidder's subcontractors, displaying this experience.

If Bidder is a corporation, it shall submit its state of incorporation and corporate number in addition to its business address; if a partnership or joint venture, full names of all partners or joint venturers shall be given in the form included herein as Part III, Bid Forms, Section 1, Bid.

The District expressly reserves the right to reject any bid if it determines that the Bidder's business and technical organization, financial resources, safety information, plant and equipment to be used in performing work, or lack of successful experience in performing similar work is such that it is not in the District's best interest to accept the Bidder's bid.

Contractors or subcontractors who have been determined to have violated any public work laws and who are declared ineligible to perform work on public works projects by the Labor Commissioner as set forth in the Labor Code of the State of California, Section 1777.1 or 1777.7, are ineligible to bid or be awarded a contract for any public works project or to perform work as a subcontractor on a public works project.

SECTION 11 – CERTIFICATION OF COMPLETION REQUIREMENTS

By signing Part III, Bid Forms, Section 1, Bid, the Bidder acknowledges acceptability of the construction time frame as set forth in Part IV, Contract and Bonds, Section 1, Contract, "Time of Performance." The time specified for this work shall be deemed to start from the receipt of the Notice to Proceed. Contractor must submit a reasonable construction schedule describing how the Contractor will meet the construction time frame requirements.

SECTION 12 – BID SECURITY

No bid will be considered unless it is accompanied by bid security in the form of cash, a certified check or a cashier's check, payable to the order of the Twain Harte Community Services District, for a sum not less than ten percent (10%) of the bid total as set forth in the Bidder's Schedule of Bid, Part III, Section 2, or a Bidder's bond in the same amount executed as surety by a corporation

acceptable to the District and authorized to issue such surety bond in the State of California. Such bond shall be in conformity with the form included as Section 9 of Part III, Bidder's Bond, of the Project Documents.

Upon an award to the lowest bidder, the security of an unsuccessful bidder shall be returned in a reasonable period of time, but in no event shall that security be held by the District beyond 60 days from the time the award is made.

SECTION 13 – BIDDER'S MODIFICATION AND WITHDRAWAL OF BIDS

A Bidder may, without prejudice to itself, modify or withdraw its bid by written request, provided that the request is received by the District prior to the time when bids are to be received. Following withdrawal of its bid, the Bidder may submit a new bid, provided that such new bid is received prior to the stated closing time.

SECTION 14 – BID OPENING AND AWARD OF CONTRACT

Bids will be kept unopened until the time stated for opening of bids. At such time, the contents of each bid will be made public. No responsibility shall attach to the District or any of its officers, employees, or representatives for the premature opening of a bid. All Bidders or their authorized representatives are invited to be present at the bid opening.

After opening the bids and prior to award of the Contract, the District will review the bids submitted and make a determination of the responsiveness of bids received. If the District Board of Directors or General Manager determines any bid to be nonresponsive, it reserves the rights to reject any or all bids. The District reserves the rights to reject any or all bids and to waive any non-material irregularities or omissions in bids received.

The successful Bidder will be notified in writing by the District of the Award of Contract as soon as practical and within ten (10) days after opening of bids. Accompanying the District's Notice of Award will be the Contract, in duplicate, which the successful Bidder will be required to sign and return together with the Performance Bond, Payment Bond, and the required number of copies of insurance certificates and endorsements to the District within ten (10) days following receipt of such Notice of Award. The District will promptly determine whether such Contract, bonds, and insurance certificates and endorsements are acceptable, and upon such determination will forward a fully signed copy of the Contract to the successful Bidder. The District may issue a Notice to Proceed at any time prior to or after forwarding the Contract. The failure of any Bidder to whom the District may award the Contract as aforesaid to sign and return to the District the Contract, together with the required Performance Bond, Payment Bond, and insurance certificates and endorsements within the specified time period, shall entitle the District to declare a breach of Contract by such Bidder, to award the Contract to another Bidder, and to declare a forfeiture of the Bidder's bid security accompanying the bid.

In the event of such failure, the District will suffer damage, the amount of which is difficult, if not impossible, to ascertain; and the District shall, therefore, be entitled to retain the amount of such cashier or certified check submitted by the Bidder as bid security, or to enforce the provisions of the Bidder's Bond in the amount thereof, as liquidated damages for such breach of Contract, as provided by applicable law.

SECTION 15 – RELIEF OF BIDDERS

Should a Bidder claim a mistake was made in its bid, the Bidder shall give the Secretary of the District written notice within five (5) business days after bid opening of the alleged mistake, and detail in said notice the circumstances under which the mistake occurred, all in accordance with Public Contract Code, Section 5103. Final determination of relief of Bidders shall be made by the District Board of Directors. Should the District Board of Directors accept the Bidder's claim for relief, the Bidder will be released from all obligations and further requirements, and its bid security will be returned as applicable.

SECTION 16 – BONDS

The Bidder to whom the Contract award is made shall, at the time of execution of the Contract, furnish to the District a Performance Bond and a Payment Bond, executed as surety by a corporation acceptable to the District and authorized to issue such surety bonds in the State of California. Such bonds shall be substantially in the form included in Sections 2 and 3, respectively, of Part IV of the Project Documents. Such Performance Bond and Payment Bond shall be for one hundred percent (100%) of the bid total as set forth in the Bidder's Schedule of Bid, Part III, Section 2. The entire cost of these bonds shall be borne by the successful Bidder.

If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its right to do business is terminated, or it ceases to meet the requirements of the above paragraph, the Contractor shall, within five (5) business days thereafter, notify the District and substitute another bond and surety, both of which must be acceptable to the District.

SECTION 17 – NONDISCRIMINATION IN EMPLOYMENT

Contracts for work under this Bid will obligate the Contractor and subcontractors not to discriminate in employment practices.

SECTION 18 – AGREEMENT TO ASSIGN (BIDDERS)

The Bidder's attention is directed to the provisions of Government Code Section 4552, which requires that in submitting a bid to a public purchasing body, Bidders offer to assign all rights arising from violations of antitrust regulations to the public entity if the bid is accepted. In pertinent part, Government Code Section 4552, reads as follows:

> In submitting a bid to a public purchasing body, the Bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, materials, or services by the Bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the Bidder.

SECTION 19 – PROJECT DOCUMENTS TO SUCCESSFUL BIDDER

The Bidder to whom award is made may obtain three (3) sets of Project Documents for the work at no extra cost. It is the Contractor's responsibility to provide its own set(s) of conformed Project Documents.

SECTION 20 – BID PROTESTS

Any protest of the proposed award of Contract to the Bidder with the lowest responsive bid must be submitted in writing to the Secretary of the District, no later than 4 p.m. of the second (2nd) business day following the date of the Bid opening. All protests shall comply with the following procedures:

1. The initial protest must contain a complete statement of the basis for the protest.

2. The protest must state the facts and refer to the specific portion of the document or the specific statute that form the basis for the protest. The protest must include the name, address, and telephone number of the person representing the protesting party.

3. The party filing the protest must concurrently transmit a copy of the initial protest to the Bidder deemed the lowest Bidder.

4. The party filing the protest must have actually submitted a Bid on the Project. A subcontractor of a party filing a Bid on this Project may not submit a Bid Protest. A party may not rely on the Bid Protest submitted by another Bidder, but must pursue its own protest in a timely manner.

5. The procedure and time limits set forth in this Section are mandatory and are the Bidder's sole and exclusive remedy in the event of a Bid Protest. The Bidder's failure to fully comply with these procedures shall constitute a waiver of any right to further pursue the Bid Protest, including filing of a challenge of the award pursuant to the California Public Contract Code, filing of a claim pursuant to the California Government Code, or filing of any other legal proceedings.

6. The District shall review all timely protests prior to formal award of the Contract. The District shall not be required to hold an administrative hearing to consider timely protest, but may do so at the option of the General Manager. At the time of the District Board of Directors' consideration of the award of the Contract, the District Board will also consider the merits of any timely protests. The District Board of Directors may either accept the protest and award the Contract to the next lowest Bidder, or reject the protest and award to the lowest Bidder.

7. These bid protest procedures shall not limit the District Board of Directors' or the General Manager's ability to reject all bids.

PART III
BID FORMS

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PART III
BID FORMS

SECTION 1 – BID

In response to the Notice to Contractors, Part I, dated June 14, 2023, and in accordance with the accompanying Instructions to Bidders, Part II, the undersigned hereby proposes to the Twain Harte Community Services District, sometimes referred to as "District," to furnish all plant, labor, technical and professional services, supervision, materials, and equipment (other than materials and equipment specified as furnished by the District), and to perform all operations necessary and required for construction of District Project 150-57-0001, Twain Harte Meadows Park in accordance with the Project Documents, Parts I through VIII, inclusive, and any Addenda thereto, for District Project 150-57-0001, and at the prices stated opposite the respective items set forth in Part III, Bid Forms, Section 2, Schedule of Bid, attached hereto.

This Bid constitutes a firm offer to the District, which cannot be withdrawn for sixty (60) days from and after the date set for opening of bids, or until a contract is fully executed by the District, whichever is earlier.

The undersigned Bidder hereby certifies that it has examined and is fully familiar with all of the provisions of the Project Documents and records of investigations, where applicable; has carefully checked all of the words and figures shown on its Schedule of Bid, Part III, Section 2; has carefully reviewed the accuracy of all statements in this Bid and attachments hereto; and understands and agrees that the District will not be responsible for any errors or omissions on the part of the undersigned in preparing this Bid.

The undersigned Bidder has, by careful examination of the Project Documents and records of geotechnical investigations, where applicable, and by examination of the actual site conditions, satisfied itself as to the nature and location of all work, the general and local conditions to be encountered in the performance of any work, the requirements of the Contract, and all other matters that can in any way affect the work or the cost thereof.

If awarded the Contract, the undersigned agrees to execute and deliver to the District within ten (10) days after receipt of District's Notice of Award, the Contract and the necessary Performance Bond, Payment Bond, and insurance certificates and endorsements.

Attached hereto and by this reference incorporated herein and made a part of this Bid are the following, which have been completed and executed by the undersigned Bidder:

Part III, Section 2 -	Schedule of Bid
Part III, Section 3 -	Bidder's License Certification and Department of Industrial Relations Registration
Part III, Section 4 -	Bidder's Statement of Subcontractors
Part III, Section 5 -	Noncollusion Declaration to be Executed by Bidder and Submitted With Bid
Part III, Section 6 -	Bidder's Bond
Part III, Section 7 -	Bidder's Statement of Experience

Enclosed herewith is a bid security in the form of a Bidder's Bond in favor of, or a certified check or a cashier's check payable to Twain Harte Community Services District, or cash in an amount not less than ten percent (10%) of the amount of the Bid total as set forth in the Schedule of Bid, Part III, Section 2, which shall be and remain the property of the District in the event of failure of the undersigned to execute and deliver the Contract and to furnish the necessary bonds and insurance certificates and endorsements in accordance with Part IV, Contract and Bonds. It is further understood by the undersigned that such failure will cause substantial injury to the District, including delay in its construction program, which injury is not easily reduced to monetary terms; and it is, therefore, agreed that the amount of the Bidder's Bid security is proper to be considered as liquidated damages for such injury and will be retained by the District in the event of such a failure.

The undersigned Bidder certifies that it is now registered with the Department of Industrial Relations (DIR) to do public work pursuant to California Labor Code Section 1725.5. The District reserves the right to require proof of registration.

The undersigned Bidder acknowledges receipt, understanding, and full consideration of the following Addenda:

ADDENDA NO(S). _____
(Indicate none if no Addenda issued)

BIDDER:

Name of Company	Business Address
	Phone
	Email
By: Authorized Signature	Date
Name: Print	Corporate Number (if Bidder is a Corporation)
Title:	State of Incorporation:

(If person executing on behalf of a Corporation is not the President or Vice President, evidence of authority to sign on behalf of Corporation must be attached.)

If Joint Venture

The undersigned certify that they have full authority to sign this Bid on behalf of the Joint Venture named above as Bidder.

Name of Joint Venture

By: Authorized Signature	By: Signature
Name: Print	Name: Print
Title:	Title:
Date:	Date:

(Submit statement explaining the nature of the individual entities that comprise the Joint Venture and evidence of authority of individuals who sign this Bid to do so on behalf of the Joint Venture.)

Joint Venture License No.:

Date of Expiration:

Classification:

SECTION 2 – SCHEDULE OF BID

Unit Price Schedule of Prices for Construction of the Twain Harte Meadows Park, in accordance with the Project Documents. The Bidder shall provide an amount in numbers for each item listed below (see Part II, Instructions to Bidders). Failure to comply with these requirements may be grounds for finding the bid nonresponsive.

Item No.	Item Description	Quantity	Unit	Unit Price	Total Price
1	**MOBILIZATION, DEMOBILIZATION AND CONSTRUCTION COORDINATION** for the lump-sum (LS) price of	1	LS	$_____	$_____
2	**DEMOLITION** for the lump-sum (LS) price of	1	LS	$_____	$_____
3	**EARTHWORK AND ROUGH GRADING** for the lump-sum (LS) price of	1	LS	$_____	$_____
4	**ROCK MULCH AND COBBLE PLACEMENT** for the per cubic yard (CY) price of	91	CY	$_____	$_____
5	**BOULDER PLACEMENT (1' to 2')** for the per each (EA) price of	78	EA	$_____	$_____
6	**BOULDER PLACEMENT (2' to 4')** for the per each (EA) price of	32	EA	$_____	$_____
7	**BOULDER PLACEMENT (4' to 5')** for the per each (EA) price of	21	EA	$_____	$_____
8	**PERMEABLE PATHWAY** for the per square foot (SF) price of	5,656	SF	$_____	$_____
9	**PEDESTRIAN BOARDWALKS** for the lump sum (LS) price of	1	LS	$_____	$_____
10	**PERMEABLE PARKING LOT** for the per square foot (SF) price of	2,672	SF	$_____	$_____
11	**CURB AND CURB RAMP INSTALLATIONS** for the lump sum (LS) price of	1	LS	$_____	$_____
12	**PREFABRICATED RESTROOM PREPARATION/COORDINATION** for the lump sum (LS) price of	1	LS	$_____	$_____
13	**PAVILION** for the lump sum (LS) price of	1	LS	$_____	$_____

14	**ELECTRICAL WORK** for the lump sum (LS) price of	1	LS	$_____	$_____
15	**UNDERGROUND UTILITIES (SANITARY AND WATER)** for the lump sum (LS) price of	1	LS	$_____	$_____
16	**UNDERGROUND UTILITIES (IRRIGATION, RAINWATER CONVEYANCE, HDPE PIPING)** for the lump sum (LS) price of	1	LS	$_____	$_____
17	**CHRISTMAS TREE** for the lump sum (LS) price of	1	LS	$_____	$_____
18	**POLY RAIN TANKS (TANK-1)** for the lump sum (LS) price of	1	LS	$_____	$_____
19	**CORRUGATED RAIN TANKS (TANK-2)** for the lump sum (LS) price of	1	LS	$_____	$_____
20	**SOLAR STREETLIGHTS** for the per each (EA) price of	3	EA	$_____	$_____

$_____

TOTAL BASE BID IN NUMBERS

_____

TOTAL BASE BID IN WORDS

SECTION 3 – BIDDER'S LICENSE CERTIFICATION AND DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION

Pursuant to the Business and Professions Code of the State of California, Section 7030:

> "Contractors are required by law to be licensed and regulated by the Contractor's State License Board. Any questions concerning a contractor may be referred to the Registrar, Contractor's State License Board, 3132 Bradshaw Road, Sacramento, California, Mailing Address: P.O. Box 26000, Sacramento, California 95826."

By executing its bid, Bidder certifies that it is now licensed in accordance with the provisions of the Contractor's License Law of the State of California, and license information is as follows:

License Number – Class A: _____

License Expiration – Class A: _____

Pursuant to California Labor Code section 1725.5, a contractor shall be registered to 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 public work contract.

By executing its bid, Bidder certifies that it is now registered in accordance with the provisions of California Labor Code section 1725.5, and has received the following number:

DIR Registration Number: _____

SECTION 4 – BIDDER'S STATEMENT OF SUBCONTRACTORS

The undersigned Bidder submits herewith a list of subcontractors the Bidder proposes to employ on the work. Said subcontractors will each perform work in an amount greater than one half of one percent (½%) of the total bid. This list shall include the proper firm name, their license number and class, their DIR registration number, city and state of each subcontractor, and the portion of the work to be done by each subcontractor with the understanding that failure to name such subcontractors shall be witness that the Contractor shall have agreed to perform such portion of the work; and that the Contractor shall not subcontract said portion of the work; and if a subcontractor is listed, there shall be no substitution of that subcontractor without first obtaining written permission of the District Board of Directors pursuant to the provisions of Section 4107 of the Public Contract Code. The Contractor shall list only one subcontractor for each portion of the work to be done as defined by the Contract.

Portion of Work to be Done	Subcontractor Name	Contractor License Number	DIR Registration Number	Place of Business (City/State)

SECTION 5 – NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

State of California)
) ss.
County of _____)

_____, being first duly sworn, deposes and says that he or she is _____ of _____, the party making the foregoing Bid that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive of sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the Contract of anyone interested in the proposed Contract; that all statements contained in the Bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

By: _____
Authorized Signature

Name: _____
Print

_____
Company

_____
Date

SECTION 6 - BIDDER'S BOND

We, _____, as Principal, and _____, as Surety, are firmly held and bound unto the Twain Harte Community Service District, a community services district organized and existing under the laws of the State of California, sometimes referred to as the District, in the sum of $_____ (which is a sum not less than ten percent (10%) of the amount of the accompanying Bid total) for the payment of which 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 to the District the accompanying Bid under a public Notice to Contractors Inviting Sealed Bids for District Project Twain Harte Meadows Park, at 22945 Meadow Drive, Twain Harte, CA.

NOW, THEREFORE, if the accompanying Bid of the Principal is accepted and award be made by the District to the Principal; and if the Principal withdraws said Bid within the period specified in said Bid during which period said Bid cannot be withdrawn, or if the Principal shall fail, refuse, or neglect for any reason whatsoever within ten (10) days after receipt from the District of Notice of Award of the Contract to enter into the Contract with the District in accordance with the Principal's Bid and the Instructions to Bidders for said Project, and to give bond with good and sufficient surety, and to furnish the insurance certificates and endorsements as stated in said Bid and the Instructions to Bidders for said Project, then the sum guaranteed by this Bond is forfeited to the District.

It is agreed between Principal and Surety that such failure or neglect would result in injury to District, which is impracticable or extremely difficult to fix, and that such sum is considered by Principal and Surety as liquidated damages for such injury.

In the event suit is brought upon this Bond by the District and judgment is recovered, the Surety or Sureties shall pay all costs incurred by the District in such suit, including attorneys' fees to be fixed by the court.

_____ _____

Date Company Name

_____

Principal (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF PRINCIPAL'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s) **who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.** **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	**CAPACITY CLAIMED BY SIGNER** ☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s) ☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

_____ _____

Date Company Name

_____

Surety (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF SURETY'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss	**CAPACITY CLAIMED BY SIGNER**
On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s)	☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s)
who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument. **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

SECTION 7 – BIDDER'S STATEMENT OF EXPERIENCE

The undersigned Bidder submits, as a part of its Bid, the following statements as to its experience qualifications. The Bidder certifies that all statements and information set forth below are true and accurate. FAILURE TO COMPLETE THE FORM, AND/OR FAILURE TO PROVIDE INFORMATION FOR THE MINIMUM NUMBER OF PROJECTS MAY CAUSE BIDDER'S BID TO BE REJECTED AS NONRESPONSIVE.

A qualified bidder shall have experience moving and placing 2-5' boulders in stacked, natural and artistic formations. The Bidder shall provide references listing at least two (2) projects completed by the Bidder and/or the Bidder's subcontractors, displaying this experience.

Years of specialized experience: _____

PROJECT TITLE AND DESCRIPTION OF QUALIFIED EXPERIENCE	PERFORMED FOR		
	AGENCY	CONTACT	PHONE
Project #1: Date Completed: Description:			
Project #2: Date Completed: Description:			
Project #3: Date Completed: Description:			

PART IV
CONTRACT AND BONDS

INDEX

Section Title

PART IV
CONTRACT AND BONDS

SECTION 1 – CONTRACT

This Contract is entered into as of the _____ day of _____, 2023, between _____ **(Contractor)** and the **Twain Harte Community Services District (District).** For and in consideration of the payment to be made to Contractor, as hereinafter provided, Contractor shall perform all work specified below in accordance with all the provisions of the Contract, consisting of the following documents, which comprise the entire agreement between the District and Contractor, concerning the work, herein:

Part I – Notice Inviting Bids
Part II – Instructions to Bidders
Part III – Bid Forms
Part IV – Contract and Bonds
Part V – General Conditions
Part VI – Special Conditions
Part VII – Technical Specifications
Part VIII – Drawings
Part IX – Appendix

1. WORK TO BE PERFORMED: Except as specified elsewhere in this Contract, Contractor shall furnish all plant, labor, materials, chemicals, tools, supplies, equipment, transportation, technical and professional services and supervision, and to perform all operations necessary and required to satisfactorily perform the work specified herein; all in accordance with the specifications contained herein.

2. COMPENSATION: As full consideration for satisfactory performance by Contractor of this Contract, the District will pay Contractor compensation in an amount not to exceed **$**_____ in accordance with the prices set forth in Section 2, Schedule of Bid, of Part III, Bid Forms, and with the payment provisions of this Contract.

3. TIME OF PERFORMANCE: Time is of the essence for this Contract. Contractor agrees to complete all "Milestone 1 - Onsite Heavy Equipment Work," as defined in Part VI, Special Conditions, Section SC-6, Substantial Completion and Project Milestones, no later than **April 15, 2024**, and to complete all work by **June 1, 2024.**

4. AUTHORIZATION: Both the District and Contractor do covenant that each individual executing this document by and on behalf of each part is a person duly authorized to execute contracts for that party.

5. REPORTING REQUIREMENTS: If Contractor is an individual or sole proprietor, Contractor must furnish its Social Security Number (SSN). If Contractor is a corporation or partnership, Contractor must furnish its Federal Employer Identification Number (FEIN). Complete the Taxpayer I.D. Number section below. If the work under this contract is subject to the payment of prevailing wages, Contractor must furnish its Department of Industrial Relations registration number.

6. LIQUIDATED DAMAGES: Contractor agrees to pay liquidated damages to the District at the rate of $300 per calendar day under conditions defined in Part VI, Special Conditions, Section SC-5, Liquidated Damages.

In witness whereof, the District and Contractor have executed this Contract on the date first above written.

CONTRACTOR NAME
Contractor Address 1
Contractor Address 2
Contractor Phone

By:_____
Signature

Printed Name/Title:_____

Date:_____

Corporate Number: _____

Contractor License: _____

DIR registration: _____

Taxpayer I.D:

SSN _____ _____ _____ - _____ _____ - _____ _____ _____ _____

FEIN _____ _____ - _____ _____ _____ _____ _____ _____ _____

TWAIN HARTE COMMUNITY SERVICES DISTRICT:

By:_____
Eileen Mannix, Board President

Date:_____

ATTEST:

By:_____
Kimberly Silva, Board Secretary

SECTION 2 – PERFORMANCE BOND

We, _____, as Principal, and _____, as Surety, are jointly and severally held and bound unto the Twain Harte Community Services District, organized and existing under the laws of the State of California, sometimes referred to as the District, in the sum of _____ Dollars ($_____) for the payment of which we jointly and severally bind ourselves, our heirs, executors, administrators and assigns, and successors and assigns, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, on the _____ day of _____, the said _____, Principal herein, executed a certain Contract with the District, by the terms, conditions, and provisions of which Contract the said _____, Principal herein, agrees to construct Twain Harte Meadows Park, at 22945 Meadow Drive, Twain Harte, CA, all as set forth in said Contract, which Contract as so executed is attached hereto and by reference is incorporated herein and made a part hereof as fully for all purposes as if here set forth at length.

NOW, THEREFORE, if the Principal herein shall faithfully and truly observe and comply with the terms, conditions, and provisions of said Contract in all respects, and shall well and truly and fully do and perform all matters and things undertaken to be performed under said Contract, upon the terms set forth therein, and within the time prescribed therein, and shall indemnify the District against any direct or indirect damages that shall be claimed for injuries to persons or property during the course of any work performed by or on behalf of Principal under said Contract, and until all work under said Contract is accepted and for an additional period of one (1) year after completion and acceptance of said work by the District, and shall apply all laborers, mechanics, subcontractors, materialmen, and all persons who shall supply such Contractor or subcontractor with services or supplies for carrying on such work, and shall perform said Contract according to laws, and shall complete in a satisfactory manner all repairs or replacements resulting from or caused by defective materials and/or faulty workmanship in the prosecution of the work during the one-year warranty period, then this obligation shall be void, otherwise it shall remain in full force and effect. No prepayment or delay in payment and no change, extension, addition, or alteration of any provision of said Contract agreed to between the Principal and the District, and no forbearance on the part of the District, shall operate to relieve any Surety from liability on this Bond, and consent to make such changes, extension, additions, and alterations without further notice to or consent by any Surety is hereby given.

In the event suit is brought upon this Bond by the District and judgment is entered in its favor, the Surety or Sureties shall pay all costs incurred by the District in such suit, including attorneys' fees to be fixed by the court.

_____ _____

Date Company Name

_____

Principal (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF PRINCIPAL'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s) **who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.** **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	**CAPACITY CLAIMED BY SIGNER** ☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s) ☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

_____ _____

Date Company Name

_____

Surety (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF SURETY'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss	**CAPACITY CLAIMED BY SIGNER**
On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s)	☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s)
who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument. **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

SECTION 3 – PAYMENT BOND

We, _____, as Principal, and _____, as Surety, are jointly and severally held and bound unto the Twain Harte Community Services District, organized and existing under the laws of the State of California, sometimes referred to as the District, in the sum of _____ Dollars ($_____) for the payment of which we jointly and severally bind ourselves, our heirs, executors, administrators and assigns, and successors and assigns, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, on the _____ day of _____, the said _____, Principal herein, executed a certain Contract with the District, by the terms, conditions, and provisions of which Contract the said _____, Principal herein, agrees to construct Twain Harte Meadows Park, at 22945 Meadow Drive, Twain Harte, CA, all as set forth in said Contract, which Contract as so executed is attached hereto, and by reference is incorporated herein and made a part hereof as fully for all purposes as if here set forth at length.

AND WHEREAS, said Contractor is required by the provisions of Sections 9550 through 9556, California Civil Code, to furnish a bond in connection with said Contract, as hereinafter set forth.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Contractor, its heirs, executors, administrators, successors, or assigns, or subcontractors, shall fail to pay any of the persons named in Section 9100of the California Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amount required to be deducted, withheld, and paid over to the California Franchise Tax Board from the wages and employees of the Contractor and its subcontractors pursuant to such Contract and warranty work and labor that the Surety or Sureties will pay for the same, in an amount not exceeding the sum specified in this Bond, and also, in case suit is brought upon the Bond, a reasonable attorney's fee, to be fixed by the court.

This Bond shall inure to the benefit of any and all of the persons named in Section 9100 of the California Civil Code as to give a right of action to such persons or their assigns in any suit brought upon this Bond in accordance with said Sections 9550 through 9556 of the California Civil Code.

In the event suit is brought upon this Bond and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including reasonable attorney's fees to be fixed by the court.

No prepayment or delay in payment and no change, extension, addition, or alteration of any provision of said Contract agreed to between the Contractor and the District, and no forbearance on the part of the District, shall operate to relieve any Surety from liability of this Bond, and consent to make such changes, extensions, additions, and alterations without further notice to or consent by such Surety is hereby given.

_____ _____

Date Company Name

_____

Principal (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF PRINCIPAL'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s) **who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.** **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	**CAPACITY CLAIMED BY SIGNER** ☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s) ☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

_____ _____

Date Company Name

_____

Surety (Authorized Signature)

_____

Business Address

_____

City State

ACKNOWLEDGEMENT OF SURETY'S SIGNATURE:

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.	
State of California } County of _____} ss On _____ before me _____, a Notary Public, personally appeared _____ Name(s) of Signer(s) **who proved to me on basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.** **I certify under PENALTY AND PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.** WITNESS my hand and official seal _____ Signature of Notary	**CAPACITY CLAIMED BY SIGNER** ☐ INDIVIDUAL(S) ☐ CORPORATE OFFICER(S) _____ Title(s) ☐ PARTNER(S) ☐ ATTORNEY-IN-FACT ☐ TRUSTEE(S) ☐ OTHER _____ Describe ☐ SUBSCRIBING WITNESS (for) _____ _____ _____ **SIGNER IS REPRESENTING:** Name(s) of Person(s) or Entity(ies) _____ _____ _____

SECTION 5 – WORKERS' COMPENSATION CERTIFICATION

AS REQUIRED BY SECTIONS 1861 OF THE CALIFORNIA LABOR CODE

I am aware of the provisions of Section 3700 of the California Labor Code, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of the California Labor Code, and I will comply with such provisions before commencing the performance of the work of this Contract for District Project 150-57-0001, Twain Harte Meadows Park.

Contractor: _____

By: _____

Title: _____

Date: _____

PART V
GENERAL CONDITIONS

INDEX

PART V
GENERAL CONDITIONS

GC-1 ENTIRE AGREEMENT

This Contract embodies the entire agreement between the District and Contractor. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth herein. No changes, amendments, or modifications of any of the terms or conditions of the Contract shall be valid unless reduced to writing and signed by both parties.

GC-2 INDEPENDENT CONTRACTOR

Contractor represents that it is fully experienced and properly qualified to perform the class of work provided for herein, and that it is properly licensed, equipped, organized, and financed to perform such work. Contractor shall act as an independent contractor and not as the agent of the District in performing the Contract, maintaining complete control over its employees and all of its subcontractors. Nothing contained in this Contract or any subcontract awarded by Contractor shall create any contractual relationship between any such subcontractor and the District. Contractor shall perform all work in accordance with its own methods subject to compliance with the Contract.

Contractor shall employ only competent and skilled personnel to perform the work. Contractor shall, if requested to do so by the District in writing, remove from the jobsite any personnel of Contractor. Contractor is responsible for maintaining satisfactory conduct of its employees and those of its subcontractors and maintaining labor relations in such manner as shall provide for harmony among the workers.

Contractor shall comply with and shall cooperate with the District in enforcing jobsite conditions which affect the performance of the work including but not limited to starting and quitting time, smoking regulations, check-in and check-out procedures, jobsite safety regulations, and daily clean-up.

GC-3 AUTHORIZED REPRESENTATIVES

Before starting work, Contractor shall designate a competent, authorized representative acceptable to the District to represent and act for Contractor and shall inform the District in writing of the name and address of such representative together with a clear definition of the scope of his/her authority to represent and act for Contractor and shall specify any and all limitations of such authority. Contractor shall keep District informed of any subsequent changes in the foregoing. All notices, determinations, instructions, and other communications given to the authorized representative by the District shall be binding upon Contractor.

The District's representative (sometimes referred to as "District") is the District's General Manager or the General Manager's authorized designee. All questions and requests of the Contractor as to compensation (including additional compensation), interpretation of the Contract, instructions, or extensions of time, otherwise shall be submitted in writing to the District's representative for determination. The District's representative is authorized to:

1. Determine the amount, quality, acceptability, and fitness of all work, materials, and equipment required by the Contract.
2. Make the final decision on all questions that may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work.
3. Make the final decision on all questions that may arise as to the coordination, interpretation and acceptable fulfillment of the Contract and its plans and Specifications.
4. Make the final decision on all questions as to measurement and payment and amounts owed to the Contractor.
5. Reject defective work and materials whenever such rejection may be necessary to assure execution of the Contract in accordance with the intent of the Contract.
6. Prepare and/or issue Contract Change Orders for all authorized changes or approved extra work in the Contract.
7. Monitor Project schedules and to enforce Project schedule requirements, and to take such measures as may be necessary to maintain overall Project schedules.
8. Enforce and to make effective such decisions and orders that the Contractor fails to carry out promptly.

GC-4 MEETINGS

A preconstruction meeting will be held after the award of the Contract to review the Contractor's preconstruction submittals as required by the Contract and to discuss various safety and administrative items. The Contractor shall also be prepared to discuss the construction schedule and methods of implementing the various work items.

The District may notice other meetings at which attendance by the Contractor and subcontractors may be required.

GC-5 NOTICES

Any written notice to be given to Contractor by the District, may be delivered in person to Contractor's authorized representative or mailed to the address last given in writing by Contractor.

Notices to District:

Twain Harte Community Services District
22912 Vantage Pointe Drive
Twain Harte, CA 95383

Administrative Representative: Tom Trott, General Manager
Contract No.: 150-57-0001
Telephone: (209) 586-3172

Owner's Representative: Watershed Progressive - Eli Loughmiller
Telephone: (209) 588-6595

GC-6 DISCOVERY OF ERRORS, OMISSIONS OR DISCREPANCIES

If the Contractor discovers any errors, omissions, discrepancies, or conflicts in the Contract, it shall immediately so inform the District in writing. The District will promptly clarify such matters by issuing Addenda or Change Orders. Failure or delay to act on the part of the District shall not constitute a waiver of any right afforded the District by the Contract or constitute an implied approval. Any work affected by such discoveries that is performed by the Contractor prior to authorization by the District shall be at the Contractor's risk.

Unless otherwise noted below, conflicts or inconsistencies between parts of the Contract will be resolved by the District with a Change Order or with an Addendum, if required. Addenda and Change Orders bearing the most recent date shall prevail over Addenda or Change Orders bearing earlier dates. Any reference to Addenda-changed Specifications or drawings shall be considered to have been changed accordingly.

In resolving conflicts, errors, or discrepancies, the order of precedence shall be as follows:

1. Change Orders/Addenda (most recent in time takes precedence)
2. Contract and Bond Forms
3. Technical Specifications
4. Special Conditions
5. Project Drawings
6. General Conditions
7. Instructions to Bidders
8. Bid Forms
9. Notice to Contractors

Reference specifications shall have the same order of precedence as the document in which it is referenced. For example, a reference to the District's Standard Specifications contained in the Technical Specifications will have the same order of precedence as that Technical Specification. A reference to an Appendix contained in the Technical Specifications will have the same order of precedence as that Technical Specification. If a reference specification is mentioned in more than one part of the Contract, the part with the highest order of precedence shall govern.

With reference to the Project Drawings:

1. Figures govern over scaled dimensions.
2. Project-specific drawings govern over general and typical drawings.
3. Addenda/Change Order drawings govern over Project Drawings.
4. Project Drawings govern over standard drawings.

It shall be the Contractor's responsibility to resolve any conflicts between the requirements contained on permits from other agencies and the Contract to the satisfaction of the District. When there is a conflict between the requirement(s) as specified in the Contract and as required by other agencies, the more restrictive requirement(s) shall prevail.

By execution of the Contract, the Contractor agrees that no request for additional compensation, and/or claim under Government Code Section 900 et seq. will be made against the District for any damages in excess of the aggregate sum of $50,000 or five percent (5%) of the

construction costs (whichever is greater) for alleged damage that it or its subcontractors may suffer due to the inadequacy of the Contractor's bid on account of any alleged errors, omissions, or other deficiencies in the Contract. This limitation shall not apply to compensation for extra work authorized by the District as provided for in this Section GC-30, Extra Work Payment, and Section GC-27, Differing Site Conditions.

GC-7 LAWS, REGULATIONS, AND PREVAILING WAGES

This Contract shall be in accordance with the laws of the state of CALIFORNIA. Parties further stipulate that this Contract was entered into in the state of CALIFORNIA and the state of CALIFORNIA is the only appropriate forum for any litigation as a result of breach hereof or any questions risen herefrom.

Contractor shall keep itself fully informed of, and shall observe and comply with, all laws, ordinances, and regulations which in any manner affect those engaged or employed on any work, or the materials and equipment used in any work, or in any way affect the performance of any work, and of all orders and decrees of agencies having any jurisdiction or authority over work performed under the Contract.

Contractor shall comply with all applicable federal, state, and local laws, ordinances, rules, and regulations; and lawful orders of all authorities having jurisdiction for the safety of persons and protection of property.

If any discrepancy or inconsistency should be discovered between the Contract and any such law, ordinance, regulation, order, or decree, Contractor shall immediately report the same in writing to the District. Contractor shall be responsible for the compliance by subcontractors of all tiers with the above provisions of this Section. Contractor shall post all job site notices as required by law or regulation.

A. Prevailing Wages: Special attention is directed to Part 7, Chapter 1, Article 2, Sections 1770 et seq. of the California Labor Code. Reference is hereby made to the provisions for minimum per diem wages contained in Part I, Notice to Contractors. . This Contract will be subject to compliance monitoring and enforcement by the California Department of Industrial Relations, pursuant to Labor Code Section 1771.4.

   The Contractor and each subcontractor engaged in the work shall pay each respective employee thereof an amount not less than the general prevailing rate of per diem wages established in compliance with Section 1770 et seq. of the California Labor Code and as determined by the State of California Director of Industrial Relations to be effective and applicable for the various crafts, trades, or type of worker needed or required to execute the Contract. In accordance with Section 1770 of said Labor Code, nothing otherwise provided under Article 2 of said Labor Code shall prohibit the payment of wage rates to any worker in excess of such prevailing rates of wages as determined by the Director of the Department of Industrial Relations. However, should the Contractor or a subcontractor have a contractual relationship with workers whereby per diem rates of wages are paid in excess of such determined prevailing rates of wages, the Contractor or subcontractor shall identify and submit a certified listing of such workers and the amounts payable prior to beginning construction operations applicable thereto in accordance with this General Condition.

Failure of the Contractor or any subcontractor to certify and list workers and actual wages in excess of those effective as determined by the State of California Director of Industrial Relations shall be deemed an express statement by the Contractor or such subcontractor that actual wages shall be as determined by the Director of Industrial Relations and such will be paid all workers and be applicable to all work required and ordered under the Contract.

The possibility of labor cost increases within the periods of time established and specified for completion of the Project is one of the elements to be considered by bidding Contractors and its subcontractors. The District will not consider any increase in labor costs as a basis of a request for additional compensation for work bid as specified and shown regardless of the cause of the increase.

It is stipulated that the provisions of Article 2, Chapter 1, Part 7, Division 2 (commencing with Section 1770), of the California Labor Code, and in particular, Sections 1775 and 1776, shall be complied with. In accordance with said Section 1775, the Contractor and any subcontractor under the Contractor, shall forfeit to the District or to the Division of Labor Standards, as a penalty, up to fifty dollars ($50) per each day or portion thereof, for each worker paid less than the prevailing rates for such work or craft in which such worker is employed for any work done under the Contract by him/her or by any subcontractor under the Contractor in violation of the provisions of the Labor Code and in particular, California Labor Code Sections 1770 to 1780, inclusive. The amount of the daily penalty shall be as determined by the Labor Commissioner in accordance with Section 1775. In addition to said penalty and pursuant to said Section 1775, the difference between the prevailing wage rates and the amount paid to each worker by the Contractor or subcontractor for each day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor or subcontractor.

If a worker employed by a subcontractor is not paid the general prevailing per diem wages by the subcontractor, the prime contractor or the project is not liable for any penalties unless the prime contractor had knowledge of that failure to pay specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with the California Labor Code, Section 1775(b) (1)-(4).

Where prevailing wage determinations have been predetermined to change during the Contract (beyond expiration dates as indicated on the forms), the Contractor shall obtain such changes from the Prevailing Wage Unit, Division of Labor Statistics and Research, Department of Industrial Relations, 525 Golden Gate Avenue, San Francisco, California 94102, telephone (415) 557-0561, and deliver copy of such to the District.

If a Contractor or subcontractor intends to use a craft or classification not shown on the general prevailing wage determinations, the Contractor or subcontractor may be required to pay the wage rate of the craft or classification most closely related to it as shown in the general determinations effective at the time of bid opening.

B. Payroll Records: The Contractor and subcontractor's attention is directed to the provisions of Section 1776 of the California Labor Code and to the requirements therein pertaining to the keeping, availability, and filing of accurate payroll records of all journeymen, apprentices, and other workers performing work under this Contract. The Contractor agrees to comply with the requirements of said section.

Prior to each monthly progress payment, the Contractor shall deliver to the District copies of certified payrolls of its and all subcontractors' forces performing work at the job site (or sites established primarily for the work) for labor compliance purposes and extra/force account considerations. Such records shall be kept current on an effective day or period basis. The certified payroll records shall be kept on forms provided by the Division of Labor Standards Enforcement, or shall contain the same information as the forms provided by the Division in addition to the above-listed information.

The Contractor shall also furnish the records specified in California Labor Code Section 1776, including but not limited to the certified payrolls, directly to the Labor Commissioner.

Each payroll record shall contain or be verified by a written declaration that is made under penalty of perjury stating:

1. The information contained in the payroll is true and correct;
2. The employer has complied with the requirements of California Labor Code Sections 1771, 1811, and 1815 for any work performed by its employees on the Project.

The Contractor shall inform the District of the location of the above payroll records, including the street address, city and county, and shall, within five (5) working days, provide a notice of change of location and address.

The Contractor or subcontractor has 10 days in which to comply subsequent to receipt of a written notice requesting certified payroll records. In the event that the Contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the District, forfeit one hundred dollars ($100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. The Contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District shall be marked or obliterated in accordance with California Labor Code Section 1776.

Compliance with the above provisions of this Section and California Labor Code, Section 1776, shall be the responsibility of the Contractor or subcontractor. Pursuant to Labor Code Section 1771.4, Contractor is required to post all job-site notices prescribed by law or regulation that include, but are not limited to, payment of prevailing wages.

C. Labor Discrimination: Attention is directed to Section 1735 of the Labor Code, which reads as follows:

No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the Government Code, and every contractor for public works violating this Section is subject to all the penalties imposed for violation of this Chapter.

D. Apprentices: The Contractor shall comply with the provisions of Sections 1777.5 and 1777.6, of the California Labor Code in regard to employment of apprentices.

E. Work Hours: Contractor stipulates and agrees that pursuant to the provisions of Labor Code, Sections 1810 through 1815, eight (8) hours labor shall constitute a legal day's work, and no worker shall be required or permitted to work more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one (1) calendar week, except as provided for under Section 1815. Nothing in this provision shall be construed to relate to wage determination or in any way affect contractual provisions related to compensation. The contractor or subcontractor shall, as a penalty to the District, forfeit twenty-five dollars ($25) for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article.

Notwithstanding the Labor Code provisions set forth above, pursuant to Labor Code, Section 1815, work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one (1) week shall be permitted provided that compensation shall be made for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1-1/2) times the basic rate of pay.

F. Travel: As required by Section 1773.8 of the California Labor Code, the Contractor shall pay travel and subsistence payments to each worker needed to execute the work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with this Section.

G. Chemical Exposure: Contractor shall comply with Sections 12101 through 12901 of Title 22, California Administrative Code. Contractor shall warn all persons at the work site of their exposure to chemicals known to the state to cause cancer or birth defects or other reproductive harm. Contractor shall be responsible for compliance by its subcontractors with this article.

H. Air Pollution: The Contractor shall so perform its work as not to discharge into the atmosphere from any source whatsoever smoke, dust, or other air contaminants in violation of the laws, rules, and regulations of the governmental entities having jurisdiction.

I. Asbestos: The Contractor shall comply with all state laws and regulations regarding asbestos and asbestos-related work including, but not limited to, the provisions of California Labor Code, Sections 6501.5 through 6511.

J. Human Remains: The Contractor’s attention is directed to the provisions of Health and Safety Code, Section 7050.5, relating to the discovery of human remains. Upon any such discovery, there shall be no further excavation or disturbance of the site. The Contractor shall immediately notify the District and the Tuolumne County Sheriff-Coroner’s Office of any such find and shall comply with all other applicable laws and regulations.

K. Cultural Resources: The Contractor’s attention is directed to the provisions of Health and Safety Code, Section 7050.5, and Public Resources Code, Sections 5098.5, 5097.94, 5097.98, and 5097.99, and the California Environmental Quality Act (CEQA), Appendix K, relating to the excavation, removal, destruction, injury, and defacement of historic or prehistoric ruins, burial grounds, archeological or vertebrate paleontological sites, or any

other archeological, paleontological or historical feature. The Contractor shall immediately stop work in the area of the archeological discovery and notify the District and comply with all other laws and regulations upon discovery of any such remains in the construction site. Compensation to the Contractor, if any, for lost time or changes in construction to avoid the find shall be determined in accordance with changed conditions or Change Order provisions of the Contract. The Contractor shall have no property right in such sites or features.

In the event that any Indian relics or items possessing archaeological or historical value are discovered by the Contractor or any of its subcontractors or any of their representatives or employees, the Contractor shall immediately notify the District and await the District's decision before proceeding with any work. The Contractor shall have no property right in such relics and items.

L. License: Contractor shall be licensed under the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California to do the type of work contemplated in the Project and shall be skilled and regularly engaged in the general class or type of work called for under the Contract.

M. Agreement to Assign (Contractors and Subcontractors: Agreement to Assign (Contractors and Subcontractors): The Contractor's and subcontractors' attention is directed to the provisions of Government Code, Section 4551, which requires that, in entering into a public works contract or subcontract, contractors and subcontractors agree to assign to the purchasing body all rights arising from violations of antitrust regulations. In pertinent part, Government Code, Section 4551, reads as follows:

> In entering into a public works contract or a subcontract to supply goods, services or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professional Code) arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor without further acknowledgement by the party

N. Claims and Actions Against Public Entities and Employees: The Contractor's and subcontractors' attention is directed to Government Code Section 900 et seq. dealing with claims and actions against public entities and employees. Nothing contained in the Contract, including but not limited to Section GC-28, Changes, is intended to modify or remove the requirements set forth in these Government Code sections.

1. If the Contractor files any claim with the District for compensation in excess of the Contract amount or return of liquidated damages, the claim shall be in writing and include the documents necessary to substantiate the claim. Said documents may include invoices, cost breakdowns, and other documentation explaining the details of the Contractor's calculations of the amount claimed. Such claim must be filed on or before the date of final payment. Nothing in this subsection is intended to extend the time limit or supersede notice requirements otherwise provided by the Contract relating to requests for extra compensation or extensions of time. The presentation

of any claim by the Contractor shall be accompanied by a signed personal certification as set forth below.

PERSONAL DECLARATION AND CERTIFICATION OF CLAIM

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

Signed: _____
Date: _____

2. For claims of less than fifty thousand dollars ($50,000), the District will respond in writing within 45 days of its receipt of the claim, or may request, in writing, within 30 days of its receipt of the claim, submission of additional documentation supporting the claim or relating to defenses or claims the District may have against the Contractor.

    a. If such additional documentation is requested by the District, it shall be provided by the Contractor within 20 days of its receipt of the request from the District or as otherwise mutually agreed upon by the District and the Contractor.

    b. Following the Contractor's submission of all requested additional documentation, the District will respond to the claim within 15 days or within the period of time taken by the Contractor in producing the additional documentation, whichever is longer.

3. For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the District will respond in writing within 60 days of its receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, submission of additional documentation supporting the claim or relating to defenses or claims the District may have against the Contractor.

    a. If such additional documentation is requested by the District, it shall be provided by the Contractor within 30 days of its receipt of the request or as otherwise mutually agreed upon by the District and the Contractor.

    b. Following the Contractor's submission of all requested additional documentation, the District will respond to the claim within 30 days, or within

the period of time taken by the Contractor in producing the additional documentation, whichever is longer.

4. If the Contractor disputes the District's written response, or if the District fails to respond within the time prescribed, the Contractor may so notify the District, in writing, either within fifteen (15) days of receipt of the District's response or within fifteen (15) days of the District's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon receiving such a demand, the District shall schedule a meet and confer conference within thirty (30) days.

5. If, following the meet and confer conference, the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits its written claim pursuant to paragraph 2 above until the time said claim is denied pursuant to the procedures set forth herein, including any period of time utilized by the meet and confer conference.

GC-8 PERMITS, LICENSES, EASEMENTS AND TAXES

A. Permits and Licenses: Contractor shall, unless otherwise provided elsewhere in the Contract, at its expense, obtain all permits and licenses and pay all charges and fees necessary for the performance of the Contract, and shall give all public notices necessary for the lawful performance of the Contract.

Attention is directed to the Project Documents and to any permits that may have been acquired by or imposed upon the District that contain requirements related to performance of the work, including but not limited to encroachment permits and storm water pollution prevention. All work within public properties and rights of way shall be accomplished in conformance with any specific conditions, instructions, and/or requirements contained in permits issued by the agencies having jurisdiction over such property and rights of way.

Where permits and/or licenses require subsequent contingent permits, inspections, or other actions, the Contractor shall comply with these requirements at no additional cost to the District, except that the inspection fees charged by regulatory and/or permitting agencies shall be paid for by the District. However, if the inspection fee is due to noncompliance of the permit requirements, such inspection fee shall be paid for by the Contractor.

B. Easements: The District may provide easements for work under the Contract. District-provided easements are shown in the Project Documents. All work within private and public properties shall be accomplished in conformance with any specific conditions, instructions, and/or requirements of the respective easements.

The District may provide additional easements for use of public or private property for working space, haul roads, and for storage of materials and equipment. District-provided easements are shown in the Project Documents. The Contractor may use such property so provided for working space, haul roads, and for storage of materials and equipment.

Should the Contractor find it necessary or advantageous to use any land, over and above that land that is provided, for any purpose whatever, the Contractor shall, at its expense, obtain a written agreement with the property owner and obtain approval from the District for the use of such land. A copy of any such agreement shall be submitted to the District prior to implementation.

Nothing in the Contract shall be construed as allowing the Contractor to make any arrangements with any person to permit occupancy or use of any land, structure, or building for any Contract purpose whatsoever, either with or without compensation, in conflict with any agreement between the District and any owner, former owner, or tenant of such land, structure, or building.

C. Taxes: Contractor shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work under the Contract, shall make any and all payroll deductions required by law, and shall indemnify and hold harmless the District from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

GC-9 PUBLICATIONS

No publications or advertisements concerning the subject matter of the Contract shall at any time be made by or on behalf of Contractor, its subcontractors, or suppliers, unless prior written authorization is obtained from the District.

No advertising signs shall be erected at the site of the work.

GC-10 WAIVER

Neither the inspection by the District, nor any order, measurement, approval, determination, decision, or certificate by the District, nor any order by the District for the payment of money, nor any payment for or use, occupancy, possession, or acceptance of the whole or any part of the work by the District, nor any extension of time, nor any other act or omission of the District shall constitute, or be deemed to be acceptance of any defective or improper work, materials, or equipment nor operate as a waiver of any requirement or provision of the Contract, nor of any remedy, power, or right of or herein reserved to the District nor of any right to damages for breach of Contract. Any and all rights and/or remedies provided for in the Contract are intended and shall be construed to be cumulative; and, in addition to each and every other right and remedy provided for herein or by law, the District shall be entitled, as a right, to a writ or injunction against any breach or threatened breach of the Contract by Contractor, by its subcontractors, or by any other person or persons.

None of the provisions of the Contract shall be considered waived by the District unless such waiver is expressly given in writing by the District. No such waiver shall be a waiver of any past or future default, breach, or modification of any of the terms, provisions, conditions, or covenants of the Contract unless expressly set forth in such waiver.

GC-11 INDEMNITY

Contractor shall indemnify, defend, and hold harmless the District and its officers, agents, servants, employees and any other District representatives, and each of them, from and against any and all suits, actions, legal or administrative proceedings, claims, demands, consequential damages, liabilities, interest, attorneys' fees, costs and expenses of whatsoever kind or nature

whether arising before or after final acceptance of the work hereunder and in any manner directly or indirectly caused, occasioned, or contributed to or claimed to be caused, occasioned, or contributed to in whole or in part by reason of any act, omission, fault, or negligence whether active or passive of Contractor, or of anyone acting under its direction, control, or on its behalf including subcontractors in connection with or incident to the performance of this Contract without limiting the generality of the foregoing, the same shall include injury to or death of any person or persons and damage to any property, regardless of where located, including without limitation the property of the District, Contractor's employees, and all other persons. Contractor's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability caused by the active negligence or willful misconduct of the District or its officers, agents or employees.

Contractor shall include in each agreement with each of its subcontractors at all tiers, a provision requiring that the subcontractor indemnify the District as stated in this Section.

GC-12 PATENT INDEMNITY

The Contractor shall pay all licenses, copyrights, fees, and royalties and assume all costs incident to the use and performance of the work, or the incorporation in the work, of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. The Contractor shall indemnify, defend, and save harmless the District, its officers, directors, employees, representatives, and agents, and each of them from and against all claims, losses, costs, damages, consequential damages, and expenses, including attorneys' fees, incurred by the District, its officers, directors, employees, representatives, and agents as a result of or in connection with any claims or actions based upon infringement or alleged infringement of any patent and/or copyright and arising out of the use of the materials, equipment, and/or products furnished under the Contract by the Contractor, or out of the processes or actions employed by, or on behalf of, the Contractor in connection with the performance of the Contract. The Contractor shall, at its expense, promptly defend against any such claim or action, whether or not well founded in fact or in law, provided that the District shall have notified the Contractor upon becoming aware of such claims or actions, and provided further that the Contractor's aforementioned obligations shall not apply to equipment, materials, and/or products furnished or specified by the District. The Contractor shall have the right, in order to avoid such claims or actions, to substitute at its expense noninfringing equipment, materials, and/or products, or to modify at its expense such infringing equipment, materials, and/or products so they become noninfringing, provided that such substituted and modified equipment, materials, and/or products shall meet all the requirements and be subject to all the provisions of the Contract.

GC-13 SUBCONTRACTS AND SUBCONTRACTORS

No subcontract shall be entered into and Contractor shall not substitute any person as subcontractor in place of a subcontractor so listed in the Contract provided that the District, at its discretion, may consent to a subcontractor substitution if (1) the subcontractor listed fails or refuses to execute a written contract, or (2) the substitution is otherwise necessary to the efficient construction of the work. In either case, Contractor shall obtain the District's prior written consent. No subcontracts at any tier shall relieve Contractor of any of its liabilities or obligations under the Contract, and Contractor agrees that it is fully responsible to the District for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by them in the performance of the Contract. Contractor shall assure that each subcontractor at all tiers fully complies with the provisions of any applicable Worker's

Compensation Act or similar law having application to subcontractor's employees. Failure of Contractor or any of its subcontractors to comply with this provision will be considered as grounds for termination of the Contract at Contractor's expense in accordance with Section GC-15 Termination of Right to Proceed.

Nothing contained in the Contract shall create any contractual relationship between any subcontractor and the District.

The Contractor shall, at all times, be responsible for the safety of its subcontractors' employees at any tier and for its subcontractors' plants and equipment at any tier; and the method of prosecuting the work and shall ensure the compliance, by all subcontractors' employees at any tier, with all local, state, and federal safety regulations and the District Safety Requirements as may be applicable to the performance of the work.

The Contractor shall, at all times, be responsible for the adequacy, efficiency, and sufficiency of its subcontractor at any tier or persons employed by the subcontractors. All workers shall have sufficient knowledge, skill, and experience to properly perform the work assigned to them.

When a portion of the work that has been subcontracted by the Contractor is not being prosecuted in a manner satisfactory to the District, the Contractor shall cause such subcontractor forces to be removed immediately upon the request of the District, and such subcontractor forces shall not again be employed on the work.

Any assignment of the performance of this Contract without prior written consent of the District shall be voidable. Consent will not be given to any proposed assignment which would relieve the original Contractor or its Surety of their responsibilities under the Contract. Contractor may assign monies due or to become due it under the Contract, to the extent permitted by law, and such assignment will be recognized by the District, if written notice thereof is given to the District at least ten (10) working days before a payment is due, but any assignment of monies shall be subject to all proper set-offs in favor of the District and to all deductions or retentions provided for in the Contract and particularly all money withheld, whether assigned or not, shall be subject to being used by the District for the completion of the work in the event that Contractor should be in default therein or for the payment of claims or liens.

GC-14 ASSIGNMENTS

No assignment of any performance of work under this Contract shall be made by the Contractor, its heirs, executors, administrators, or successors without prior written consent of the District. Consent for any proposed assignment will not be considered that would, by any instrument, relieve the original Contractor or its Surety of the responsibilities under the Contract.

The Contractor may assign monies due or to become due under the Contract, to the extent permitted by law, and such assignment will be recognized by the District, if written notice thereof is given to the District at least ten (10) days before a payment is due. Any assignment of monies shall, however, be subject to all proper set-offs in favor of the District and to all deductions provided for in the Contract. All monies withheld, whether assigned or not, shall be subject to being used by the District for the completion of the work in the event that the Contractor should be in default therein or for the payment of claims or liens against the work from any source.

GC-15 TERMINATION OF RIGHT TO PROCEED

If Contractor should refuse or fail, except in cases for which extension of time is provided, to supply enough properly skilled workers, proper equipment and proper appliances or proper materials, or if it should fail to make prompt payments to subcontractors or for material or labor, or disregard laws, ordinances, or the instructions of the District, or otherwise be guilty of a substantial violation of any provision of this Contract, then the District may without prejudice to any other right or remedy, serve written notice upon Contractor and Surety, if any, of the District's intention to terminate the performance of Contractor, such notices to contain the reasons for such termination, and unless within seven (7) calendar days after the serving of such notice upon Contractor and Surety, if any, such cause shall cease and satisfactory arrangement for correction shall be made, the performance of Contractor shall cease and terminate. In the event of any such termination, or should Contractor be adjudged as bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, the District shall serve notice thereof upon Contractor and Surety, if any, and the Surety shall have the right to perform the Contract; provided, however, that if the Surety does not commence performance thereof within seven (7) calendar days from the date of service of notice of termination upon the Surety, the District may take possession of the premises and of all materials, tools, equipment, and appliances thereon and finish the work by whatever method the District may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor and Surety, if any, shall pay the difference to the District. The expense incurred by the District as herein provided, and the damage incurred through Contractor's default, shall be certified by the District. Service of any notices hereunder shall be deemed complete upon the deposit in the United States mail, postage prepaid, addressed to the address of Contractor and Surety, if any, as shown on records on file with the District.

Said termination shall be without prejudice to any other remedies available to the District.

Upon receipt of any such written notice of termination of right to proceed, Contractor shall, at its expense, for that work affected by any such termination:

A. Assist the District in making an inventory of all materials and equipment in storage at the site, enroute to the site, and on order from suppliers.

B. Assign to the District subcontracts, supply contracts, and equipment rental agreements all as designated by the District.

C. Remove from the site all construction materials, equipment, and plant listed in said inventory other than such construction materials, equipment, and plant which are designated in writing by the District to be used by the District in completing such work.

GC-16 OPTIONAL TERMINATION

Including, but not limited to, provisions for termination in the event of national emergency under Section 4410 et. seq. of the Government Code of the State of California, the District may, at its

option, cancel and terminate the Contract in whole or in part at any time by written notice thereof to Contractor, whether or not Contractor is in default.

Upon any such cancellation and termination, Contractor shall waive any claims for damages, including loss of anticipated profits, on account thereof, but as the sole right and remedy of Contractor and the District, the District shall pay Contractor in accordance with subparagraph B., below, provided, however, that the provisions of the Contract, which by their very nature survive final acceptance under the Contract, shall remain in full force and effect after such cancellation and termination to the extent provided in such provisions.

A. Upon receipt of any such notice, Contractor shall, unless the notice requires otherwise:

   1. Immediately discontinue work on the date and to the extent specified in the notice.

   2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the Contract that is not terminated.

   3. Promptly make every reasonable effort to obtain cancellation upon terms satisfactory to the District of all orders and subcontracts to the extent they relate to the performance of work terminated.

   4. Assist the District as specifically requested, in writing, in the maintenance, protection, and disposition of property acquired by the District under the Contract.

B. Upon any such termination, the District will pay to Contractor an amount determined in accordance with the following (without duplication of any item):

   1. All amounts due and not previously paid to Contractor for work completed in accordance with the Contract prior to such notice, and for work thereafter completed as specified in such notice.

   2. The cost of settling and paying claims arising out of the termination of work under subcontracts or orders as provided in subparagraph A.3., above.

   3. The reasonable costs incurred pursuant to subparagraph A.4., above.

   4. Any other reasonable costs incidental to such termination of work.

   5. The foregoing amounts shall include a reasonable sum, under all of the circumstances, as profit for any work performed by Contractor.

GC-17 SUSPENSION OF WORK

The District may, at any time and in its sole discretion, for the District's convenience, by notice in writing to the Contractor, suspend the performance of all or any portion of the work being or to be performed under the Contract. Work that is suspended shall not be resumed until the District issues a written notice to resume suspended work. Upon issuing the notice to suspend work, the District will designate the amount and type of plant, labor, and equipment to be committed to the Project. During the period of suspension, the Contractor shall use its best efforts to utilize its plant, labor, and equipment in such a manner as to minimize the costs associated with suspension.

A. Upon receipt of any notice to suspend work, the Contractor shall, unless the notice requires otherwise:

1. Immediately discontinue work on the date and to the extent specified in the notice; and

2. Place no further orders or subcontracts for material, services, or facilities with respect to suspended work other than as required in the notice; and

3. Promptly make every reasonable effort to obtain suspension of all orders, subcontracts, and rental agreements to the extent they relate to performance of work suspended upon terms satisfactory to the District; and

4. Unless otherwise specifically stated in the notice, the Contractor shall continue to protect and maintain the Project, including those portions of work that have been suspended.

B. As full compensation, the Contractor will be reimbursed for the following costs, reasonably incurred, without duplication of any item, to the extent that such costs directly result from such suspension of work:

1. A standby charge to be paid to the Contractor during the period of suspension of work, which standby charge shall be sufficient to compensate the Contractor for keeping, to the extent required in the notice, its organization and equipment committed to the Project in a standby status.

2. All reasonable costs associated with mobilization and demobilization of the Contractor's plant, forces, and equipment.

3. An equitable amount to reimburse the Contractor for the cost of maintaining and protecting that portion of the Project upon which work has been suspended.

4. If the costs associated with subsequently performing work is increased or decreased as a result of any such suspension of work, an equitable adjustment reflecting either an increase or decrease in such cost will be established by Change Order in accordance with Section GC-28, Changes.

Upon receipt of notice to resume suspended work, the Contractor shall immediately resume the suspended work to the extent required in the notice. The Contractor shall also submit a revised construction schedule for the District's review and approval.

In cases where other governmental agencies or authorities suspend the performance of the work, and such suspension is not due to the failure of the Contractor to comply with the requirements of the Contract, the suspension will be considered a suspension for convenience by the District and the provisions of this Section shall apply.

Notwithstanding the provisions for convenience stated above, the District may partially or entirely suspend the work for an indefinite period of time for the failure of the Contractor to comply with the Contract. Under such suspension, the Contract completion date will not be extended and the Contractor shall not be entitled to recover resulting costs or damages including, but not limited to, acceleration costs.

GC-18 CONTRACTOR-FURNISHED DRAWINGS AND DATA

Contractor shall promptly submit within the time specified at its own expense all submittals, shop drawings and details required by the plans and specifications. The District's favorable review shall be obtained before any such items are manufactured or used in the work. The

favorable review of drawings by the District shall apply in general design only and shall in no way relieve Contractor from responsibility for errors or omissions contained therein. Favorable review by the District shall not relieve Contractor of its obligation to meet safety requirements and all other requirements of laws.

Submittals and coordination are the responsibility of Contractor; this responsibility shall not be delegated in whole or in part to subcontractors or suppliers. Any designation of work "by other," shown on submittals, shall mean that the work will be the responsibility of Contractor rather than the subcontractor or supplier who has prepared the shop drawings.

Submittals shall be prepared in such form that data can be identified with the applicable specification paragraph. The data shall demonstrate clearly compliance with the project drawings and specifications and shall relate to the specific equipment to be furnished. Where manufacturer's standard drawings are employed, they shall be marked clearly to show what portions of the data are applicable to this project.

Review of shop drawing submittals by the District has as its primary objective the completion for the District of a project in full conformance with the project drawings and specifications, unmarred by field corrections, and within the time provided. In addition to this primary objective shop drawing review as a secondary objective will assist Contractor in its procurement of equipment that will meet all requirements of the project drawings and specifications, will fit the structures detailed on the drawings, will be complete with respect to piping, electrical, and control connections, will have the proper functional characteristics, and will become an integral part of a complete operating facility. Acceptance of shop drawings and submittals does not constitute a change order to the Contract requirements.

Within ten (10) business days after receipt by the District of two (2) hard copies and one (1) PDF copy each of Contractor's submissions and all appurtenant data required for their review, the appropriate number of copies will be returned to Contractor with one of the following notations:

1. Resubmittal not required; correction, if any noted.
2. Correct and resubmit; corrections noted.

Returned copies of drawings marked with notation "1" authorize Contractor to proceed with the operations covered by such returned copies, provided that such operations shall be subject to the comments, if any, shown on such returned copies

Returned copies of drawings marked with notation "2" shall be corrected, as necessary and required, and shall be submitted in the same manner as before.

Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

When submittals are favorably reviewed, the District will retain one (1) copy and will return all other copies to Contractor. When submittals are not favorably reviewed, the District will retain only one (1) copy and will return all others to Contractor.

It is considered reasonable that Contractor shall make a complete and acceptable submission to the District at least by the second submission of data. The District reserves the right to deduct

monies from payments due Contractor to cover additional costs of the District's review beyond the second submission.

Favorable review by the District will not constitute acceptance by the District of any responsibility for the accuracy, coordination, and completeness of the shop drawings or the items of equipment represented on the drawings. Accuracy, coordination, and completeness of shop drawings shall be the sole responsibility of Contractor, including responsibility to backcheck comments, corrections, and modifications from the District's review before fabrication.

Supplemental, specific requirements for shop drawings and details are contained in the applicable technical sections of these specifications.

Copies of schedules and shop drawings submitted to the District for review shall be such as to provide one (1) for the District's files, and such additional copies as Contractor may desire for its own office files and/or for distribution by it to subcontractors or vendors. Exceptions will be noted in specific sections of this Contract.

All submittals and supporting data, catalogs, and schedules, shall be submitted as the instruments of Contractor, who shall be responsible for their accuracy and completeness. These submittals may be prepared by Contractor, subcontractors, or suppliers, but Contractor shall ascertain that submittals meet all of the requirements of the Contract while conforming to structural, space, and access conditions at the point of installation. Contractor shall check all submittals before submitting them to the District.

The District shall check and review schedules, drawings, etc., submitted by Contractor only for general design conformance with the concept of the project and compliance with the information given in the Contract.

Shop drawings shall not be used to order products' fabrication or delivery for construction or installation unless submitted to and favorably reviewed by the District.

Acceptance by the District of any drawings, method of work, or any information regarding materials and equipment Contractor proposes to furnish shall not relieve Contractor of its responsibility for any errors therein and shall not be regarded as an assumption of risks or liability by the District, or its representatives, or any officer or employee thereof, and Contractor shall have no claim under the Contract on account of the failure or partial failure or inefficiency or insufficiency of any plan or method of work or material and equipment so accepted. Such acceptance shall be considered to mean merely that the District has no objection to Contractor using, upon its own full responsibility, the plan or method of work proposed, or furnishing the materials and equipment proposed.

GC-19 SUBSTITUTIONS AND EQUAL ALTERNATIVES

The work, unless otherwise permitted or approved by the District, shall be completed with the incorporated use of trade-named materials and equipment where such are specified. Substitutions and equal alternatives will be permitted as provided in this Section; however, neither the request for substitution nor the offer of alternatives shall in any way by their submittal obligate the District to assent to any request or offer. Failure of Contractor to submit proposed substitutions for review in accordance with this Section will be considered as evidence that the work shall be accomplished with trade-named materials and equipment as identified in the

Technical Specifications and shall be cause for rejection by the District of any other proposed substitutions.

Except when the specifications prohibit the substitution of a similar or equivalent material or article, Contractor may make written request to the District for approval of the use of alternative equipment or materials. Such request shall contain complete data intended to show that such alternative item is of a quality equal to or better than that specified and has the required characteristics for the intended use. Upon request, Contractor shall furnish to the District such additional information relating to such alternative items as the District may require.

Contractor shall submit written requests for substitutions to the District, within thirty-five (35) days of Contract award and prior to placing any purchase orders, but at least thirty (30) days before it requires approval of any such alternative item.

The burden of proof as to the quality and suitability of alternatives shall be upon Contractor, and it shall furnish all necessary information requested and required by the District. The District will be the sole judge as to the quality and suitability of alternative articles or materials, and its decision shall be final.

GC-20 QUALITY OF EQUIPMENT, MATERIALS, PRODUCTS, AND/OR WORKMANSHIP

The Contractor shall furnish all equipment, materials, and/or products required to complete the work, except equipment, materials, and/or products that are designated to be furnished by the District. Materials that are identified as District-furnished materials on the Project Drawings or in Part VI, Special Conditions, Section SC-15, District-Furnished Materials or Equipment, will be available to the Contractor free of charge, upon request, at the locations designated.

Only equipment, materials, and/or products meeting the requirements of the Contract shall be incorporated in the work. The equipment, materials, and/or products furnished and used shall be new and shall be manufactured, handled, and installed in a workmanlike manner to ensure a completed Project in accordance with the Contract. Manufacturers' warranties, guarantees, instruction sheets, and parts lists that are furnished with certain equipment, materials, and/or products incorporated in the work shall be delivered to the District before the Contract will be accepted.

If no detailed specifications are set forth, the Contractor shall furnish equipment, materials, and/or products in conformance with the latest standards, specifications, manuals or codes of an acceptable technical society, organization or association, or to the laws or regulations of any applicable governmental authority, whether such reference be specific or by implication, in effect at the time of opening of bids.

GC-21 INSPECTIONS AND SAMPLES

Unless otherwise provided in the Contract, all equipment, materials, and work shall be subject to inspection and testing by the District. The District shall have the right to reject equipment, materials, and work not in accordance with the Contract. Rejected work shall be satisfactorily corrected; rejected equipment shall be satisfactorily repaired or replaced with satisfactory equipment; and rejected material shall be satisfactorily replaced with satisfactory material, all in accordance with the Contract. The Contractor shall promptly segregate and remove rejected materials and equipment from the premises. All such correcting, repairing, replacing, and removing shall be by and at the expense of the Contractor.

The District will perform inspections in such manner as not to delay the work unreasonably, and the Contractor shall perform its work in such manner as not to delay inspection unreasonably. The Contractor shall give the District reasonable advance notice of operations requiring special inspections or tests, and it may request inspection of a portion of any work at any time by reasonable advance notice to the District. The Contractor shall, at its expense, furnish promptly all facilities, labor, and materials necessary and required for such inspection and tests.

Contractor shall provide work area access at all reasonable times to the District and its officers, agents, employees, and any other duly authorized representatives and employees, and all duly authorized representatives of governmental agencies having jurisdiction over work areas or any part thereof for the purpose of determining compliance with Contract requirements. The Contractor shall also arrange for the District, and its officers, agents, employees, and any other duly authorized representatives and employees, to have access at all reasonable times to all places where equipment or materials are being manufactured, produced, or fabricated for use under the Contract.

The Contractor shall furnish the District all reasonable facilities for the District's safety and convenience in inspecting work, at all times and at all places where inspection may take place. If the District finds that conditions are unsafe for inspection at a particular location, he may, upon notice to the Contractor, refuse to inspect in that location until such conditions are corrected. The Contractor shall bear any additional costs resulting from such action, including any costs incurred to permit subsequent inspection of any portion of work covered or completed at the location before correction of the conditions, whether or not such portion of work is found to meet Contract requirements.

The Contractor shall bear any additional inspection costs resulting from its failure to have a portion of work ready for inspection at the time requested by it for inspection, or from reinspection of any previously rejected portion of work where the defects requiring such rejection were due to the Contractor's fault or negligence. Such costs may be deducted, in whole or in part, from any monies due or that may become due to the Contractor under the Contract.

Inspection of materials and finished articles to be incorporated into any work may be made by the District at the place of production, manufacture, or shipment. When such inspection is to be performed, no such materials or finished articles shall be shipped from such place of inspection or incorporated in any work prior to inspection or without the written approval of the District. Equipment, materials, and work not in conformity with the Contract shall be corrected or replaced with satisfactory equipment and materials by and at the expense of the Contractor so as to conform to the Contract as determined by the District.

No acceptance of equipment, materials, or work shall be construed to result from such inspections by the District. Any inspections or tests or waivers thereof shall not relieve the Contractor of its responsibility for meeting the requirements of the Contract.

Where so required in the Contract, or whenever requested by the District, the Contractor shall, at its expense, promptly furnish to the District sample specimens of materials to be incorporated into any work. Samples shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the work. Samples of material from natural sources shall be taken in the presence of the District; otherwise, the sample will not be considered for testing. Samples shall be tagged or labeled securely and fully

identified as to manufacturer, type, size or capacity, lot, and date, all as applicable and by reference to the applicable section and paragraph of the Contract. Materials for which samples are required shall not be used in any work until approved in writing by the District. Materials incorporated in any work shall conform to such samples as the District, in his discretion, determines meet the requirements of the Contract. Samples will be returned to the Contractor only at the discretion of the District.

GC-22 PROJECT DOCUMENTS AND RECORD DRAWINGS

The Contractor shall keep on the work site a copy of the Project Documents and shall at all times give the District access thereto. Any drawings included in the detailed Specifications shall be regarded as part thereto and of the Contract. Anything mentioned in these Specifications and not shown on the Project Drawings, or shown on the Project Drawings and not mentioned in these Specifications, shall be of like effect as though shown or mentioned in both. The District will furnish from time to time such detail drawings, plans, profiles, and information as he may consider necessary for the Contractor's guidance. It shall be the duty of the Contractor to see that the provisions of the Contract are complied with in detail irrespective of the inspection given the work during its progress by the District. Any failure on the part of the Contractor to observe the requirements contained in the Contract will be sufficient cause for the rejection of the work at any time before its acceptance.

The Contractor shall maintain, at the job site, one record set of Project Drawings in good order and clearly marked to show any deviations that have been made from the Project Drawings, including concealed construction and utility features that are revealed during the course of construction. Marked prints shall be updated at least once each week and shall be available to the District for review as to currency prior to developing partial payment estimates. Upon completion of the work, the marked set of prints shall be delivered to the District.

In the case of those drawings that depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the Record Drawings shall be updated by indicating those portions that are superseded by Change Order drawings or final shop drawings and by including appropriate reference information describing the Change Orders by number and the shop drawings by manufacturer, drawing, and revision numbers.

Requests for partial payments will not be approved if the updated set of drawings is not in good order or is not kept current. Request for final payment will not be approved until the complete and correct Record Drawings are delivered to the District.

GC-23 SAFETY REQUIREMENTS

In accordance with generally accepted construction practices and state law, Contractor shall be solely and completely responsible direction and control of the work and for conditions on the jobsite, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours.

Contractor shall take all necessary precautions and provide all necessary safeguards to prevent personal injury and property damage. Contractor shall provide protection for all persons including, but not limited to, its employees and employees of other contractors or subcontractors; and employees, agents, and representatives of the District and regulatory agencies that may be on or about the work. Contractor shall also take such measures as may

be necessary or required to assure that the safety and health of the employees and of the public may be safeguarded.

Contractor shall provide and maintain all necessary safety equipment such as fences, barriers, signs, lights, walkways, guards, and fire prevention and fire-fighting equipment and shall take such other action as is required to fulfill its obligations under this Section. It is the intent of the District to provide a safe working environment under normal conditions.

All work and materials shall be in strict accordance with all applicable state, city, county, and federal rules, regulations, and codes, and attention is drawn to the requirements of OSHA. Contractor shall be solely responsible for compliance with all city, county, and state explosive transport, storage, and blasting requirements and for any damages caused by its operations.

Contractor shall promptly and fully comply with and carry out safety, sanitary, and medical requirements as prescribed by federal, state, or local laws or regulations and industry standards. Contractor shall keep adequate first aid facilities and supplies available and instruction in first aid shall be given.

The services of the District in conducting review and inspection of Contractor's performance is not intended to include review of the adequacy of Contractor's work methods, equipment, bracing or scaffolding, or safety measures, in, on, or near the construction site. However, The District reserves the right to stop work if the District believes that there is an imminent danger to persons or property. Even though the District reserves such rights, the exercise of such rights is at the District's sole discretion, and such reservations will not be construed as an obligation of the District to monitor or enforce the Contractor's safety program. The District's exercise of these rights shall not provide a basis for delay damages, extra compensation, and/or additional compensation to complete the work.

All costs in connection with meeting the requirements of this Section shall be borne by Contractor.

GC-24 CLEANING UP

Contractor shall, at all times, keep the premises occupied by it and access to such premises in a neat, clean, and safe condition. During the progress of work, the Contractor shall, at a minimum:

1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of material.
2. Provide adequate storage of all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.
3. Remove any accumulation of scrap, debris, waste material, and other items not required for construction of this work.
4. Dispose of existing materials and equipment to be demolished and removed and all trash, such as broken concrete, wood blocking, shipping containers, etc., resulting from the contract work off the premises occupied by the Contractor, including District property, at the Contractor’s expense. District-leased dumpsters and other disposal containers on District’s property, unless specifically provided by the Contractor, shall not be used by the Contractor.

5. Maintain all work areas within Contract work limits free from dust, as determined by the District. Industry-accepted methods of dust control, suitable for the area involved, will be permitted. No separate payment will be made to Contractor for dust control.

Upon completion of any portion of any work, Contractor shall promptly remove all of its equipment, temporary structures, and surplus construction and other materials not to be used at or near the same location during later stages of work. Upon completion of any work and before final payment is made, Contractor shall, at its expense, satisfactorily dispose of all plant, buildings, rubbish, unused materials, concrete forms, and other equipment and materials belonging to it or used in the performance of work; and Contractor shall leave the premises in a neat, clean, and safe condition.

The Contractor shall, as a minimum, conduct daily inspections to verify that requirements of this Section are being met. If the Contractor fails to comply with any of the foregoing, the District will transmit written notification of noncompliance. If, within five (5) days of the written notification, the Contractor fails to comply, cleanup may be undertaken by the District at the expense of the Contractor.

GC-25 CONTAMINATED SOILS/MATERIALS

Contaminated soils and materials shall include, but not be limited to, pollutants and/or materials defined as hazardous substances or hazardous wastes under the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Hazardous Substances Control Act (Health and Safety Code Section 25300 and following), the Hazardous Waste Control Act (Health and Safety Code Section 25100 and following), or as defined as pollutants or contaminants under any other applicable state and federal laws and regulations. Said materials shall include, but not be limited to, friable asbestos, PCBs, petroleum products and its byproducts, and waste oil, among other substances.

Contractor shall notify the District by person or by telephone within two hours of discovery as to any contaminated soil or materials on or beneath the job site, including in buildings and related structures that could be impacted by the construction Project so discovered by the Contractor, its personnel, agents, representatives, consultants, or any other persons working under the direction and control of the Contractor. In addition, written notice shall be delivered to the District by the Contractor within 24 hours of discovery. Contractor shall require that like provisions be inserted in all contracts with its subcontractors and tiers of subcontractors. This shall not relieve the Contractor from the obligation and responsibility to ensure that the provisions of this General Condition are complied with.

The Contractor and its subcontractors shall immediately cease any and all work at the location of the discovery of the contaminated soils or materials until further notice from the District.

However, if the Contractor is specifically directed to conduct appropriate cleanup operations with respect to the contaminants discovered, the Contractor shall proceed with these operations. In addition, the Contractor shall notify the District of the discovery of said contaminants in the manner set forth above. Further, if the contaminants substantially vary from the description in the Contract as to type of material, quality of materials, level of concentration or toxicity, location, as to the materials' affect on groundwater, or vary in any other substantial manner from the description as set forth in the Contract, the Contractor shall immediately cease operations and notify the District in the manner set forth above.

All work done by the Contractor with respect to cleanup, removal, and remedial actions concerning the contaminated soils or materials shall be done according to law. All required notices shall be given by the Contractor to the County Environmental Health Hazard Materials Section and other appropriate governmental agencies, including the State Department of Toxic Substances Control and Regional Water Quality Control Board, among others. The Contractor or any subcontractor doing such work on behalf of the Contractor shall have the appropriate certification, licenses, and permits prior to commencing any such cleanup, removal, and/or remedial work. The District shall not be responsible for the negligence of or violation of any laws, rules, regulations, or ordinances by the Contractor or any of the Contractor's subcontractors, agents, consultants, employees, or representatives in doing such cleanup, removal, and remedial work.

If any of the cleanup, removal, containment, and remediation work substantially impacts upon the community, including, but not limited to, traffic, odor, and health issues, the District reserves the right to direct that the manner of operations by the Contractor be revised accordingly to reduce or eliminate the adverse effects.

GC-26 EXISTING UTILITIES AND INTERFERENCES

The locations of known existing utilities and pipelines are shown on the Project Drawings in their approximate locations. Some of the locations include multiple conduits. The Contractor shall exercise care in avoiding damage to those facilities that are to remain in service subsequent to the construction of the particular new facility involved, and it will be held responsible for their repair if damaged. The Contractor shall also exercise care in maintaining those pipes and facilities required for continuing operation of the existing facilities until such time as they can be abandoned. There is no guarantee that all utilities or obstructions are shown or that the locations indicated are accurate.

The Contractor shall be responsible for discovery of all existing underground installations in advance of excavating or trenching by contacting all local utilities 48 hours in advance and by prospecting. Contractor shall notify Underground Service Alert 48 hours prior to any excavation work.

The Contractor shall uncover and completely expose all piping where crossings, interferences, or connections are shown on the Project Drawings, prior to trenching or excavating for any pipe or structures, to determine actual elevations. New pipelines shall be laid to such grade as to clear all existing facilities that are to remain in service for any period subsequent to the construction of the run of pipe involved. If the Contractor does not expose all required utilities, it shall not be entitled to additional compensation for work necessary to avoid interferences or for repair to damaged utilities. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workers or damage to the electrical ducts or conduits.

Notwithstanding any other provision of this Contract between the District and the Contractor:

A. In accordance with the provisions of Section 4215 of the California Government Code, in any contract to which the District is a party, the District shall assume the responsibility between the parties to the contract for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the site of any construction project and that are a subject of the Contract if such utilities are not identified by the District in

the Project Drawings and Specifications; provided, however, that nothing herein shall be deemed to require the District to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes on or adjacent to the site of construction. The District will compensate the Contractor for the costs of locating and repairing damage and removing or relocating such utility facilities that are not indicated in the Project Drawings and Specifications, provided that the Contractor exercises due reasonable care.

B. The owner of the utility shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price.

C. The Contractor shall not be assessed liquidated damages for delay in completion of the Project when such delay was caused by the failure of the District to show existing utilities or other existing facilities, excluding service laterals.

If interferences between existing utilities and proposed work occur at locations other than those shown on the Project Drawings, the Contractor shall notify the District, and a method for correcting said interference will be supplied by the District. Payment for correction of interferences not shown on the Project Drawings will be in accordance with the provisions of Section GC-27, Differing Site Conditions.

GC-27 DIFFERING SITE CONDITIONS

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

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

2. Subsurface or latent physical conditions at the site differing materially from those indicated in the Project Documents and/or geotechnical report.

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

Actions by the Contractor to disturb or cover the above conditions before the District is notified or has had the opportunity to investigate the conditions shall be deemed a waiver by the Contractor of any and all rights that the Contractor may have for additional compensation for increases in the Contractor's cost of, or the time required for, performance of any part of the work.

The District will promptly investigate the conditions; and if the District finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, the District will issue a Change Order in accordance with the provisions of Section GC-28, Changes.

In the event that a dispute arises between the District and Contractor whether the conditions

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

GC-28 CHANGES

District may, at any time, by written change order make changes in the work, or extend the time to complete the work, as deemed necessary by District. The Contractor shall perform the work when so ordered. Any such change or request will be authorized in writing by the District, provided that in the event of an emergency, which the District determines endangers life or property, any work required by reason of such an emergency shall be performed in accordance with oral orders from the District, which will be confirmed in writing as soon as practicable. Any such authorization, whether written or oral, may be accompanied by drawings and data as are necessary to show the extent of such change or extra work.

If the District does not issue a written change order and the Contractor believes he is entitled to compensation or time in excess of the Contract amount arising out of the conduct of the work, Contractor may submit a written request for change to the District. Such requests for change will not be considered by the District unless the Contractor complies with the notification requirements of this paragraph. Contractor shall notify the District immediately upon learning of a condition, occurrence or circumstance that potentially will give rise to a request for change. If the initial notification is oral, Contractor shall confirm the notification in writing within five (5) days of the oral notification. The Contractor shall not proceed with the work involving the potential request for additional compensation without notifying the District of the subject conditions, occurrence, or circumstance unless an emergency exists or unless it is impossible to notify the District without creating an unreasonable delay in the work.

When changes in the work are required by the District or requested by Contractor, Contractor shall promptly estimate their effect on the cost or time of performance of this Contract and so notify the District. If requested by the District, Contractor shall supply any information to support Contractor's estimate of cost and/or time. No change shall be implemented by Contractor unless it is approved by the District in writing, and, unless otherwise agreed to in writing, the provisions of this Contract shall apply to all changes in the work.

If the District determines that any change materially affects the cost or time of performance of this Contract as a whole, Contractor and the District will mutually agree, in writing, to an equitable adjustment as specified in Section GC-29, Delays and Time Extensions and/or Section GC-30, Extra Work Payment. In the event of disagreement, the District will fix such adjustment that, in its opinion, be reasonable and proper, regard being had to all material and relevant factors including Contractor's direct costs and overhead. The Contractor may protest terms of such a change order in accordance with Section GC-31, Protest Procedure.

Contract change orders which affect the cost or term of performance shall be processed through the District's designated administrative representative, as shown in Section GC-5, Notices.

The District reserves the right to engage another contractor to perform the work if such engagement is in the District's best interest.

GC-29 DELAYS AND TIME EXTENSIONS

The time limits stated in the Contract are of the essence to the Contract. By executing the Contract, the Contractor confirms that the time limits set forth in the Contract, including interim or milestone dates, are reasonable periods for the performance of the work. The Contractor shall not be entitled to extensions of time limits at any time in the progress of the work unless the delay is occasioned by an act or neglect of the District or unless the delay in the completion of the work arises from unforeseeable causes beyond the control and without fault or negligence of both the Contractor and subcontractors or suppliers. Such unforeseeable causes may include: acts of God; acts of a public enemy; acts of a governmental entity not occasioned by the Contractor's, subcontractor's, or supplier's conduct; acts of another contractor in performance of a contract with the District; fires; floods; epidemics; quarantine restrictions; freight embargoes; unusually severe weather; or other delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers.

If the Contractor seeks an extension of time for the completion of any phase of the work, the Contractor shall submit a written request to the District for an extension of time for the portion of the work so delayed within five (5) days of the onset of such delay, and such request shall fully state the reasons for such delay. When such a request is received, the District will ascertain the reasons for and the extent of such delay. If the District determines that the facts justify an extension of time, the Contract will be modified accordingly, through a written change order. If the District determines that the facts do not justify an extension of time, such request will be denied. The District's finding of fact of either determination will be given to the Contractor, and such findings shall be final unless the Contractor files a protest under Section GC-31, Protest Procedure. No extension will be granted for any portion of any delay unless the required written request is made by the Contractor as specified herein and the District finds justification for the request.

In any event, the Contractor expressly waived any right to delay damages from the District where a reasonable extension is granted, except when the District is responsible for the delay of the Contractor's performance of the work and which delay is unreasonable under the circumstances involved and not within the contemplation of the parties.

No time extensions will be granted nor extended overhead paid until a delay occurs which:

1. Impacts the Project's critical path,
2. Consumes all available float, slack time, or schedule contingency within the construction schedule (the time between the Contractor's scheduled early completion date and the Contract completion date), and
3. Extends work beyond the Contract completion date.

Float, slack time, or schedule contingency within the construction schedule is not for the exclusive use or benefit of the District or the Contractor but is a resource available to both parties as needed.

Except as limited by Section 7102 of the Public Contract Code, should the Contractor sustain any loss, damage, or delay through any act or omission of any other contractor or entities, the

Contractor expressly waives any rights and any claims against the District, other than for an extension of time.

GC-30 EXTRA WORK PAYMENT

If the District determines that any change in the work materially affects the cost of this Contract as a whole, there shall be an equitable adjustment in the payment price. The price adjustment shall be determined by one of the following methods in the order of preference listed:

A. Unit Price Change: Based on the unit prices contained in Section 2, Schedule of Bid, Part III, Bid Forms.

   If there is a variation in the estimated Bid quantity listed in Section 2, Schedule of Bid, Part III, Bid Forms by more than one hundred fifty percent (150%) or less than fifty percent (50%) of the Bid quantity, either the District or the Contractor may notify the other party of their desire to renegotiate the Contract unit price with respect to those quantities outside of the permitted range of fifty percent (50%) below to one hundred fifty percent (150%) above the Bid quantity.

B. Agreed Price Change: Mutually agreed-upon lump sum or unit price adjustment.

C. Cost Plus Change: Contractor's actual cost of labor (wages and benefits), materials (actual purchase price, sales tax, freight and delivery) and equipment/tools (at actual or fair/prevailing rental rates) directly engaged in the performance of the extra work plus a fifteen percent (15%) mark-up for overhead and profit. A five percent (5%) mark-up will be added to the cost of extra work performed by subcontractors.

   For cost plus changes, Contractor shall provide to District an itemized breakdown of the quantities and prices used in the extra work, and it shall make available all source documents for itself and any subcontractors, including but not limited to payroll records, invoices, purchase orders, contracts and lease agreements. Contractor shall keep accurate records that clearly delineate the extra work from other Contract work.

The total payment made as provided above shall be deemed to be the actual cost of such work, including overhead costs, and shall constitute full compensation therefore.

When extra work is performed by subcontractor forces, Contractor shall reach agreement with such other forces as to the distribution of the payment made by the District for such work. No additional payment will be made by the District by reason of the performance of the work by a subcontractor.

GC-31 PROTEST PROCEDURE

If the Contractor objects to any direction, instruction, determination or decision provided by the District, the Contractor may submit a written protest. All such written protests must be submitted within ten (10) days after such direction, instruction, determination or decision is delivered to the Contractor in writing. If the direction, instruction, determination or decision is oral, Contractor must request that the District provide said oral direction, instruction, determination or decision within five (5) days of receiving the oral direction, instruction, determination or decision. The Contractor shall proceed without delay to perform work as

directed, instructed, determined, or decided by the District and shall comply promptly with such directions, instructions, determinations, or decisions.

Written protests shall clearly state in detail the Contractor's objections, the reasons therefor, and the nature and amount of additional compensation or extension of time, if any, to which the Contractor contends it will be entitled thereby. It shall also include, if possible, Contract specification references, quantities, costs and any related detailed records.

The District will issue a decision upon each protest. If the District determines that the facts support the protest, the Contract will be modified accordingly, in writing. If the District determines that the facts do not support the protest, such request will be denied. The District's finding of fact of either determination will be given to the Contractor and such findings shall be final and conclusive.

If the Contractor disagrees with any terms or conditions set forth in an approved contract change order which it has not executed, and does not submit a written protest within the time specified above, payment will be made as set forth in the approved contract change order, and such payment shall constitute full compensation for all work included therein or required thereby.

The Contractor shall be deemed to have waived all grounds for protest of direction, instruction, determination, or decision and all claims for additional compensation, extensions of time, or damages occasioned thereby for which protest could have been made under this Section, and shall further be deemed to have accepted such direction, instruction, determination, or decision as being fair, reasonable, and determinative of the Contractor's obligations and rights under the Contract.

GC-32 RECORDS AND ACCOUNTS

The Contractor shall, at its expense, keep and maintain such records and accounts and shall require its subcontractors and suppliers to keep records and accounts in connection with the performance of the Contract. The Contractor shall maintain, in a businesslike manner, records, accounts, and other evidence directly pertinent to the performance of work under this Contract in accordance with Generally Accepted Accounting Principles and practices consistently applied and applicable under California and federal law. The Contractor shall also maintain the financial information and data used by the Contractor in the preparation or support of cost submissions required for this Contract or any Change Order. The District, or its authorized representatives, shall have access, at all times during normal business hours, to such records, accounts, and other evidence for the purpose of inspection, audit, and copying. The Contractor shall provide proper business facilities for such access, inspection, and copying at no cost to the District.

The Contractor shall furnish to the District, upon request, an accurate written allocation of the total amount of the price paid for performance of work under the Contract to the various elements of the work, as may be required by the District for accounting purposes and for public record. If the District determines that any price (including profit) negotiated in connection with this Contract, Change Order, or any cost reimbursable under this Contract, was increased by any significant sum because the Contractor, subcontractor, or supplier furnished incomplete or inaccurate cost or pricing data or data not current, then such price or cost or profit shall be reduced accordingly and the Contract shall be modified in writing to reflect such reduction.

Failure to agree on a reduction under this Section shall be subject to Section GC-31, Protest Procedure.

Such records and accounts shall remain accessible to the District for a period of not less than three (3) years beyond the date of formal acceptance as provided under Section GC-35, Acceptance of the Contract and Final Payment. The Contractor shall agree to include this Section in all its contracts, subcontracts, and purchase orders with suppliers in excess of $10,000.

GC-33 PROGRESS PAYMENTS

A. Monthly Progress Payments: Monthly progress payments will be made as the work proceeds. Such payments will be made according to estimates of the amount and value of work satisfactorily performed by the Contractor up to the time of each estimate.

Progress payment estimates shall be made by the Contractor and submitted to the District for review and concurrence. Once the District has agreed to the items of cost, the Contractor shall prepare a progress payment request and submit the request for payment. The burden of requesting payment is on the Contractor. The District has no obligation to pay for a separate item of cost unless that item of cost is included in a progress payment request by the Contractor.

Contractor's progress payment requests shall be made in writing on or about the twenty-fifth (25^{th}) day of each calendar month, and payment will be made within twenty-one (21) days after the District verifies that the request has been properly filed and submitted. Progress estimates will not be required to be made by strict measurement, but may be by measurement or by estimation or partly by one method and partly by another.

Pursuant to Section 20104.50 of the Public Contract Code, the District will pay interest on progress payments held over thirty (30) days from the date of submission, as long as the request for payment by the Contractor is deemed properly filed and submitted. A request for payment by the Contractor will not be deemed properly filed or submitted until such time as the Record Drawings are reviewed and found to be current. The date of submission is the date the District's representative signs the progress payment request form in the space provided for the District. This signature will verify that the request has been properly filed and submitted.

B. Detailed Cost Breakdown: Prior to preparation of the first progress payment request by the Contractor, the Contractor shall submit to the District a detailed cost breakdown of the work under each bid item awarded. If the initial detailed cost breakdown is not accepted by the District, additional cost breakdowns shall be submitted by the Contractor until the District determines that the cost breakdown is acceptable. Upon acceptance by the District, the breakdown will then become the basis for partial payment determination. Bond and insurance costs shall not be considered a separate item of cost for this purpose but shall be included in mobilization/demobilization.

C. Retainage: In making progress payments, the District shall retain five percent (5%) of the cumulative estimated amount until final acceptance of all work under the Contract as set forth under Section GC-35, Acceptance of Contract and Final Payment. The Contractor shall be allowed to substitute securities for any monies withheld to ensure

performance under this Contract, or the Contractor may request that the District have such funds, which the District would otherwise withhold from progress payments to ensure performance, deposited in an escrow account pursuant to Section 22300 of the California Public Contract Code. The Contractor may exercise the option of substituting securities or depositing funds in an escrow account by executing the Escrow Agreement for Security Deposits in Lieu of Retention in the form supplied by the District upon request.

D. Withholding Payment: Any payments otherwise payable under the Contract may be withheld, in whole or in part, by the District, if in the discretion of the District, it is necessary to protect the District from loss due to the following:

1. Defective work that is not remedied; or
2. Third-party claims filed or reasonable evidence indicating probable filing of such claims; or
3. Contractor's failure to make payments to subcontractors for labor, equipment, materials, or products to which a subcontractor is entitled; or
4. Evidence that the work cannot be completed for the unpaid balance of the Contract sum; or
5. Contractor's failure to submit an acceptable construction schedule or failure to update the schedule; or
6. Any and all damage to the District, or another contractor, resulting from the Contractor's action or inaction; or
7. Contractor's failure or inability to maintain insurance coverage and bonds as required by the Project Documents throughout the course of the job; or
8. Contractor's repeated failure to carry out the work in accordance with the Project Documents; or
9. Contractor's failure to provide copies of certified payrolls, as specified in this Section GC-7, Laws, Regulations and Prevailing Wages; or
10. Contractor's failure to comply with the laws or regulations of any federal, state, or local government; or
11. Untimely repair of any damage resulting from the Contractor's operations or untimely restoration of property, affected by the construction, to a preconstruction condition.

In addition, the District may deduct from any progress payment due the Contractor any amount the District may be currently, or in the future, authorized to retain pursuant to federal, state, or local laws or regulations, any amount due the District from the Contractor, and any other amount that the District is otherwise authorized to retain as specified in Part VI, Special Conditions.

The District will withhold an amount from any progress payment due the Contractor, which will not exceed twice the value of any necessary repairs, corrections, or replacements, to assure that the Contractor completes all repairs, corrections, or replacements for which the Contractor is responsible. The Contractor shall receive

payments of said retained amount after the repairs, corrections, or replacements are completed.

Any amount withheld for the reasons stated above shall be based on estimates made by the District and shall be in addition to any amount previously withheld. The Contractor may avoid withholding of amounts from a progress payment by eliminating the cause of the withholding to the satisfaction of the District.

If the Contractor fails to meet the obligations set forth above, upon written notice by the District, the District may discharge such obligations and deduct all costs in connection with the District's discharge of Contractor's obligations from any payments that may become due to the Contractor. If the amount withheld from payment(s) is insufficient to meet such costs, or if any claim or charge against the Contractor shall be discharged by the District after the final Contract payment is made, Contractor and its Sureties shall promptly pay the District all costs incurred thereby, regardless of when such claim arose or whether such claim constitutes a lien upon the Project or the real property upon which the Project is situated.

In the event that District finds Contractor in default, such that the District calls upon the Contractor's surety to perform the remainder of the project, including but not limited to entering into a takeover agreement with Contractor's surety, Contractor shall execute all documents as necessary to transfer or assign the Escrow Agreement called for herein. Contractor shall notify the District of such assignment and transfer such that District shall be fully informed.

E. Ownership and Waiver: All equipment, materials, products, and work covered by progress payments will, upon payment, become the property of the District. However, this provision shall neither be construed as constituting acceptance of any work or as relieving the Contractor from the sole responsibility for all equipment, materials, products, and work upon which payments have been made, including the restoration of any damaged work until final acceptance thereof, unless specifically provided for elsewhere. The payment for any equipment, material, products, and work covered by a progress payment does not constitute a waiver of the District's right to require fulfillment of all of the terms of the Contract.

The Contractor's acceptance of any payment made under the terms of this Contract shall operate as, and shall be, a release to the District and a waiver of all claims by the Contractor against the District that may arise from the completed work for which payment has been made, except those claims previously submitted to the District in writing pursuant to Government Code Section 901 et seq., which are disputed at the time of the payment.

F. Subcontractor Payments: The District informs Contractor, and Contractor by execution of the Contract takes cognizance of the following: Contractor must pay progress payments to subcontractors no later than seven (7) days after receipt from the District. If Contractor fails to make progress payments to subcontractors within seven (7) days, then Contractor is subject to penalties of 2% per month, disciplinary action, and attorneys' fees of subcontractors.

G. Payment for Equipment, Materials, and Products: Generally, the Contractor will not be compensated for equipment, materials, and/or products delivered to the site until after

they are incorporated in the work. However, if the District determines that the progress of the work will benefit by the delivery to the site of certain equipment, materials, and/or products in advance of their actual requirement, and if such equipment, materials, and/or products are delivered, a portion of the cost of the equipment, materials, and/or products may be included in progress payments.

GC-34 LIENS AND STOP NOTICE

If at any time any notices of lien are filed for labor performed or materials or equipment manufactured, furnished, or delivered to or for the work, the Contractor shall, at its own cost and expense, promptly discharge, remove, or otherwise dispose of the same; and until such discharge, removal, or disposition, the District shall have the right to retain from any monies payable to the Contractor an amount that, in the District's sole judgment, the District deems necessary to satisfy such liens and pay the costs and expenses, including attorneys' fees, of defending any actions brought to enforce the same, or incurred in connection therewith or by reason thereof.

If, at any time prior to the expiration of the period for service of a Stop Notice, there is served upon the District a Stop Notice as provided in Sections 9350 through 9510 of the Civil Code of the State of California, the District shall, until the discharge thereof, withhold from the monies under its control so much of said monies due or to become due the Contractor under this Contract as shall be sufficient to answer the claim stated in such Stop Notice and to provide for the reasonable cost of any litigation thereunder, provided that, if the District shall, in the District's discretion, permit the Contractor to file with the District the bond referred to in Section 9364 of the Civil Code of the State of California, said monies shall not thereafter be withheld on account of such Stop Notice. The monies that the District withholds shall be a minimum of one hundred twenty-five percent (125%) of the face value of the Stop Notice.

GC-35 ACCEPTANCE OF CONTRACT AND FINAL PAYMENT

A. Final Acceptance: Whenever the Contractor deems that its obligations under the Contract have been fulfilled, the Contractor shall, in writing, so notify the District. This notification shall include a request for the District to make a final inspection. Upon receipt of such notice, the District will, in company with the Contractor, inspect the work that has been performed. If the District determines that the request is appropriate, the District will make a final inspection.

If any deficiencies are discovered by the District during the final inspection of the work, a "punch list" stating the deficiencies will be prepared and transmitted to the Contractor for correction. Upon correction of the deficiencies, the Contractor shall notify the District. The District will reinspect the corrected work. If the District determines that all work is completed except for minor punch-list items, and that all other requirements of the Contract have been met, the District will recommend acceptance of the Contract work to the District's General Manager.

Immediately upon acceptance by the General Manager and without further acknowledgement by the parties, the Contractor is relieved of the duty of maintaining and protecting the Contract work as a whole except as required by the warranty, guaranty, insurance, indemnity, and all other conditions of the Contract that are intended to continue after acceptance of the Contract. Guaranty and warranty periods required by

the Contract and the statutory period for the filing of liens and Stop Notices shall commence on the date of acceptance by the General Manager.

Additionally, upon the General Manager's acceptance of the Contract work, the District will cause a Notice of Completion of all work under the Contract to be filed in the office of the District and the office of the County Recorder of Tuolumne County, in accordance with Section 4005 of the Government Code of the State of California. Upon expiration of the statutory period for filing of liens and Stop Notices and provided no liens or Stop Notices have been filed, the District will authorize release or release the retention, less all such amounts the District may be authorized or required to reserve or retain.

B. Release of Claims and Subcontractor Payments: The Contractor shall provide a release of all claims arising out of work related to undisputed Contract amounts. Final payment shall be subject to the Contractor's execution of a release in favor of the District, its directors, officers, representatives, agents, and employees, as to all claims arising out of the Contract work and District liability to the Contractor, or any third party, for anything done in relation to or furnished for any work related to undisputed Contract amounts. Such release shall include claims for any act or omission of the District, its directors, officers, representatives, agents, and employees, respectively, or of any person relating to or affecting any work related to such final payment. All prior progress payments, being estimates, will be subject to adjustment in the final payment.

Claims by the Contractor for additional compensation or damages remaining in dispute, as set forth in the final payment release, shall be excluded from the terms of the release. The District may withhold from the final payment up to one hundred fifty percent (150%) of the estimated value of claims by the District, or third parties against the Contractor, including but not limited to, claims regarding amounts previously paid to the Contractor by the District.

The release signed by the Contractor as part of the final payment shall be in substantially the following form:

Final Payment and Release

District Project Name_____
District Project Number_____

The acceptance by Contractor of the final Contract payment in the sum of $_____ covering undisputed Contract amounts shall operate as, and shall be a release to the Twain Harte Community Services District (District), the District's directors, officers, representatives, agents, and employees, respectively, from all claims of and liability to the Contractor (except as set forth below), including claims of the Contractor as the successor in interest by assignment or otherwise, to claims of laborers, mechanics, subcontractors, consultants, and materialmen, and including claims by laborers, mechanics, subcontractors, consultants, and materialmen as successors in interest by assignment or otherwise, arising out of the work performed under the Contract which are related to said undisputed Contract amounts. This Release shall be effective as to all claims of the Contractor arising out of or in connection with the performance of the work under this Contract with respect to said undisputed Contract amounts, including tort claims, which are known to the Contractor or reasonably should have been known to the Contractor at the date of the signing of this Release. The

acceptance by Contractor of the final Contract payment described above shall operate as a waiver of all claims described herein and of any entitlement to additional payment arising out of the Contract, except as to those claims by the Contractor and their respective estimated dollar amounts listed herein below. It is understood that the amounts set forth below are good faith estimates and may be subject to some reasonable modification. It is intended that this Release be construed in accordance with the limitations set forth in California Public Contract Code, Section §7100.

DESCRIPTION OF DISPUTED CLAIM	ESTIMATED AMOUNT OF DISPUTED CLAIM
_____	$_____
_____	
_____	

Signed: _____

By: _____
(typed or printed)

Title: _____

Company Name: _____

Date: _____

The District, at its discretion, may elect to issue final payments directly to certain of the subcontractors, or to issue joint check payments, payable to the Contractor and subcontractor involved. Contractor agrees to verify the correctness of any final payments to be made to subcontractors by the District and acknowledge the same in writing to the District within five (5) days of written request from the District. If the Contractor disputes the correctness of any final payment to be made to a subcontractor, the Contractor shall so notify the District in writing of the matters in dispute and the amounts thereof. The notice shall be in writing delivered to the District within five (5) days of the above-written request from the District. Said payments shall be made in accordance with estimates made by the Contractor and/or subcontractor and approved by the District of the amount and value of work satisfactorily performed by the subcontractor. Amounts so paid to the subcontractor shall be deducted from any amounts due to the Contractor under the terms of the Contract and any Change or Extra Work Orders. However, to the extent that the Contractor disputes any portion or all of the estimated payment due a subcontractor, an amount not to exceed one hundred fifty percent (150%) of the disputed amount will be withheld from the payment to the subcontractor. If the entire amount due to the subcontractor is disputed by the Contractor, then up to one hundred fifty percent (150%) of this entire amount may be deducted from payments to the Contractor until the dispute is resolved.

If, as stated above, the District elects to issue final payments to a subcontractor or subcontractors or to issue joint check payments, the District may request, as part of its payment to the subcontractor or subcontractors involved, that said subcontractor or

subcontractors sign a Conditional Waiver and Release Upon Final Payment to the subcontractor, which shall be in substantially the following form:

Conditional Waiver and Release Upon Final Payment to Subcontractor

Upon receipt by the undersigned of a check from Twain Harte Community Services District (District) in the sum of $_____ payable to _____ _____ and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, Stop Notice, or bond right the undersigned has on the Contract. This release covers the final payment of the undersigned for all labor, services, equipment, or material furnished on the job, except for disputed claims for additional work described in the attached sheet, if any, in the amount of $_____.

Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned.

Date:_____ _____
Company Name

By:_____

Title:_____

GC-36 SURVIVAL

Notwithstanding the District's acceptance of the work and payment, Contractor shall remain obligated under all clauses of this Contract, which expressly or by their nature extend beyond and survive such acceptance and payment or termination.

GC-37 WARRANTY

Contractor warrants that the work performed pursuant to the Contract shall be of the quality specified or of the highest quality if no quality is specified, and shall conform to the specifications, drawings, samples, and other descriptions set forth in the Contract. Contractor warrants all equipment and materials furnished by it and all work performed by it under the Contract against defective design (unless furnished by the District), materials, and workmanship for a period of one (1) year from and after final acceptance regardless of whether the same were furnished or performed by Contractor or by any of its subcontractors or suppliers of any tier. Performance and Payment Bonds, if any, shall remain in full force and effect during such warranty periods.

If, after installation and acceptance, the operation or use of the material or equipment furnished under this Contract proves to be unsatisfactory to the District, the District shall have the right to operate and use such materials and equipment until it can, without damage to the District, be taken out of service for correction or replacement by Contractor at its expense. The warranty period for the materials or equipment which are replaced shall be one (1) year from and after the replacement materials or equipment are satisfactorily installed.

Upon receipt of written notice from the District of any breach of warranty during the applicable warranty period, the affected item shall be redesigned, repaired, or replaced by Contractor and

it shall perform such tests as the District may require to verify that such redesign, repairs, and replacement comply with the requirements of the Contract. As to the redesigned, repaired, or replaced work, Contractor warrants such redesigned, repaired, or replaced work against defective design, materials, and workmanship for a period of one (1) year from and after the date of acceptance of such work. The District reserves the right to require that Contractor perform such repair or replacement work.

The District also reserves the right to make such repairs or replacements, if, within seven (7) calendar days after mailing of a notice in writing to Contractor and Surety, if any, Contractor shall neglect to make or undertake with due diligence the aforesaid repairs or replacements and that Surety, if any, within seven (7) calendar days after mailing of a notice in writing of such negligence of Contractor shall neglect to make or undertake with due diligence the aforesaid repairs or replacements itself, provided, however, that in the case of an emergency where in the opinion of the District delay would cause hazard to health or serious loss or damage, repair may be made without notice being sent to Contractor or Surety, and Contractor shall pay the cost thereof.

All costs, including manpower and materials incidental to such redesign, repair, replacement, and testing, including the removal, replacement, and reinstallation of equipment necessary to gain access and all other costs incurred as the result of a breach of warranty shall be borne by Contractor whether performed by the District or Contractor.

Nothing in this section shall be construed to limit, relieve or release Contractor's, subcontractor's, and equipment supplier's liability to the District for damages sustained as the result of latent defects in the equipment furnished caused by the negligence of the supplier's agents, employees or subcontractors.

The Performance Bond shall extend for a period of one (1) year after acceptance of the Contract by the District and shall cover the Contractor's obligations resulting from the warranty requirements herein specified.

GC-38 COST-REDUCTION INCENTIVE

The Contractor may submit to the District, in writing, proposals for modifying the Project Drawings, Technical Specifications, or other requirements of the Contract for the sole purpose of reducing the total cost of construction. The cost-reduction proposal shall not impair in any manner the essential functions or characteristics of the Project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.
Cost-reduction proposals shall contain the following information:

1. A description of both the existing Contract requirements for performing the work and the proposed changes.

2. An itemization of the Contract requirements that must be changed if the proposal is adopted.

3. A detailed estimate of the cost of performing the work under the existing Contract and under the proposed change. The estimates of cost shall be priced in the same manner as if the work were to be paid for as an extra work payment, as provided in Section GC-30, Extra Work Payment.

4. A statement of the time within which the District must make a decision thereon.

5. The Contract items of work affected by the proposed changes, including any quantity variation attributable thereto.

The provisions of this Section shall not be construed to require the District to consider any cost-reduction proposal that may be submitted hereunder. The District will not be liable to the Contractor for failure to accept or act upon any cost-reduction proposal submitted pursuant to this Section nor for any delays to the work attributable to any such proposal. If a cost-reduction proposal is similar to a change in the Project Drawings or Technical Specifications under consideration by the District for the Project at the time said proposal is submitted, or if such a proposal is based upon or similar to standard specifications, standard special provisions, or standard plans adopted by the District after the advertisement for the Contract, the District will not accept such proposal, and the District reserves the right to make such changes without compensation to the Contractor under the provisions of this Section.

The Contractor shall continue to perform the work in accordance with the requirements of the Contract until an executed Change Order incorporating the cost-reduction proposal has been issued. If an executed Change Order has not been issued by the date upon which the Contractor's cost-reduction proposal specifies that a decision thereon should be made, or such other date as the Contractor may subsequently have specified in writing, such cost-reduction proposal shall be deemed rejected.

The District shall be the sole judge of the acceptability of a cost-reduction proposal and of the estimated net savings in construction costs from the adoption of all or any part of such proposal. In determining the estimated net savings, the right is reserved to disregard the Contract bid prices if, in the judgment of the District, such prices do not represent a fair measure of the value of work to be performed or to be deleted.

If the Contractor's cost-reduction proposal is accepted in whole or in part, such acceptance will be a Contract Change Order, which shall specifically state that it is executed pursuant to Section GC-28, Changes. Such Change Order shall incorporate the changes in the Project Drawings and Technical Specifications that are necessary to be put into effect and shall include any conditions upon which the District's approval thereof is based if the approval of the District is conditional. The Change Order shall also set forth the estimated net savings in construction costs attributable to the cost-reduction proposal effectuated by the Change Order and shall further provide that fifty percent (50%) of said estimated net savings amount be included as compensation for the Contractor. The Contractor's cost of preparing the cost-reduction proposal shall be excluded from consideration in determining the estimated net savings in construction costs.

The District reserves the right, where it deems such action appropriate, to require the Contractor to share in the District's costs of investigating a cost-reduction proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall indicate its acceptance thereof in writing, and such acceptance shall constitute full authority for the District to deduct amounts payable to the District from any monies due or that may become due to the Contractor under the Change Order. The Change Order incorporating the cost-reduction proposal and the Contractor's fifty percent (50%) share of the net savings will also include any deductions for the Contractor's share of the District's cost of investigating the proposals per the agreement between the District and the Contractor.

Acceptance of the cost-reduction proposal and performance of the work thereunder shall not extend the time of completion of the Contract, unless specifically provided for in the Contract Change Order authorizing the use of the cost-reduction proposal.

The amount specified to be paid to the Contractor in the Change Order that effectuates a cost-reduction proposal shall constitute full compensation to the Contractor for the cost-reduction proposal and the performance of the work thereof pursuant to the said Change Order.

PART VI
SPECIAL CONDITIONS

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PART VI
SPECIAL CONDITIONS

SC-1 INSURANCE

A. Contractor shall, at its expense, procure and maintain insurance provided by insurance companies with an A.M. Best's Insurance Rating of "A:VII" or better on all of its operations under this Contract for the duration of the Project and the warranty period, except for the liability insurance for the Products-Completed Operations Hazard as specified in Subsection A.2, as follows:

1. Workers' Compensation and Employer's Liability Insurance: Workers' Compensation Insurance shall be provided as required by any applicable law or regulation. Employer's Liability Insurance shall be provided in amounts not less than $1,000,000 per accident, $1,000,000 per each employee for disease, and $1,000,000 policy limit.

   The insurer shall waive all rights of subrogation against the District, its officers, directors, and employees.

2. General Liability Insurance: Contractor shall carry general liability insurance covering all operations by or on behalf of Contractor for the following limits of liability:

   a. Minimum combined single limit of liability of $2,000,000 or the limits required by law, whichever is greater for each occurrence for bodily injury and property damage;

   b. Minimum limit of liability of $2,000,000 each person for personal and advertising injury liability;

   c. Minimum limit of liability of $2,000,000 each occurrence for products/completed operations liability;

   d. General aggregate limit of not less than $2,000,000, which shall be provided on a per project basis.

   Contractor's General Liability Insurance shall be written on an "occurrence" form and provide coverage at least as broad as the most recent version of Insurance Services Office Commercial General Liability form CG 0001.

   Coverage shall include, or be endorsed to include:

   a. Coverage for personal injury liability assumed under contract;

   b. Liability arising out of the use and operation of any District-furnished equipment by the Contractor, its personnel and others;

   c. XCU coverage for claims arising from explosion, collapse and underground damage;

   d. Accidental spillage, cleanup and other related costs;

e. Contractual liability coverage for all oral and written contracts including indemnity provisions contained herein;

f. Cross Liability and Severability of Inter

The District, its officers, directors, and employees shall be named as additional insureds on the Contractor's policies by a provision or endorsement providing coverage at least as broad as Insurance Services Office's Additional Insured - Owners, Lessees, or Contractors (Form B) endorsement Number CG 2010 11/85.

The required additional insured coverage for the District shall be primary and specify that any other insurance or self-insurance maintained by the District shall not be called upon to contribute with Contractor's insurance.

Contractor shall maintain liability insurance for the "Products-Completed Operations Hazard" for three (3) years following completion of Contractor's work under this Contract and acceptance by the District. Contractor shall provide updated Certificates of Insurance to the District during these subsequent three (3) years as evidence of continued coverage.

3. Automobile Liability Insurance: The Contractor shall carry Automobile Liability Insurance at least as broad as the most recent version of Insurance Services Office Business Automobile Liability (form Number CA 0001) on all owned, non-owned, and hired autos, with a single limit for bodily injury and property damage of $2,000,000 per occurrence. The coverage shall remain in force during the warranty period. The policy shall also include liability arising out of the use and operation of District-furnished vehicles by the Contractor, its personnel, and others.

B. The following provisions shall also apply:

1. Each required insurance policy shall be endorsed to state that coverage shall not be canceled or reduced without thirty (30) days' prior written notice to the DISTRICT. Ten (10) days' notice shall be provided for cancellation for nonpayment of premiums.

2. Deductibles shall not exceed $5,000 per occurrence with a deductible aggregate of $5,000. The Contractor shall be solely responsible for payment of deductibles.

3. CONTRACTOR shall furnish the DISTRICT with original, signed certificates and original, signed amendatory endorsements. All such certificates and endorsements shall be received and reviewed by the DISTRICT before any work begins under this agreement. The certificates and amendatory endorsements shall be signed by an individual who is authorized to sign on behalf of the insurer covering the CONTRACTOR.

4. The DISTRICT reserves the right to require complete, certified copies of all required insurance policies at any time.

5. CONTRACTOR shall include all SUBCONTRACTORs as insureds under its policies or shall cause each SUBCONTRACTOR employed by CONTRACTOR to purchase

and maintain insurance of the types and limits specified in this section. Upon the DISTRICT's request, CONTRACTOR shall furnish copies of certificates and endorsements evidencing coverage for each SUBCONTRACTOR.

6. All insurance correspondence, notices, certificates, and endorsements shall each separately reference "All DISTRICT Operations" or "All DISTRICT Projects."

7. In the event CONTRACTOR fails to comply with this Section, the DISTRICT may take such action as the DISTRICT deems necessary to protect the DISTRICT's interest. Such action may include but is not limited to termination of the Contract, withholding of payments, or other actions as the DISTRICT deems appropriate.

SC-2 BEGINNING AND PROSECUTION OF THE WORK

Contractor shall be authorized to begin work upon receipt of the Notice to Proceed and shall begin work within ten (10) calendar days from said receipt. Submittal preparation shall count as commencing work. Contractor shall diligently prosecute the work to completion with the time of performance provided in Part VI, Special Conditions, Section SC-6, Substantial Completion and Project Milestones.

Contractor shall notify the District in writing of its intent to begin work at the site at least one working day before work is actually begun. Contractor shall also promptly notify the District of any Contractor-initiated suspensions and resumptions of work during the contract period, allowing as much advance warning as possible. The notice to resume work shall be given to the District not less than one working day in advance of resuming work.

Contractor shall prosecute the work with sufficient forces, construction plant, and equipment and shall work such hours, including extra shifts and overtime operations as may be necessary to ensure the completion of the work in accordance with the construction schedule and specified time of performance.

If at any time during the progress of work, the Contractor's actual progress, as determined by the District, is inadequate to meet the requirements of the Contract, the District may notify the Contractor of such imminent or actual noncompliance with the Contract. The Contractor shall thereupon take such steps as may be necessary to improve its progress including, but not limited to, an increase in the labor force, the number of shifts, and/or overtime operations, days of work and/or the amount of construction equipment, all without additional cost to the District. Neither such notice by the District nor the District's failure to issue such notice shall relieve the Contractor from its obligations to achieve the quality of work and rate or progress required by the Contract.

Failure of the Contractor to comply with the instructions of the District under these provisions may be grounds for determination by the District that the Contractor is not prosecuting work with such diligence as will assure completion within the times specified. Upon such determination, the District may terminate the Contractor's right to proceed with the performance of the Contract, or any separable part thereof, in accordance with Part V, General Conditions, Section GC-15, Termination of Right to Proceed, herein. Said termination shall be without prejudice to any other remedies available to the District.

SC-3 HOURS OF WORK

A. Hours of Work: Hours of work shall be from 7:00 a.m. to 6:00 p.m., Monday through Friday, excluding holidays.

B. Weekend Work: No work shall be done on weekends unless specifically authorized by the District.

C. Night Work: Night work shall not be allowed except under special circumstances. The Contractor may be permitted to work at night with approval of the District, in order to maintain the required progress or protect the work from the elements. The Contractor may also be required to prosecute the work at night if, at any time, the District shall deem it necessary for the progress of the work or if emergencies arise. The Contractor shall promptly comply with any such requirements made in writing by the District. When required by the District, the Contractor will be compensated in accordance with Part V, General Conditions, Section GC-30, Extra Work Payment. However, if the Contractor is required to work at night or on weekends to meet the time limits contained in the construction schedule and is not pursuing the work diligently, no additional compensation will be allowed.

Should any of the work be performed at night or where daylight is obscured or too dark, the Contractor shall, at its expense, provide artificial light sufficient to permit work to be carried on efficiently, satisfactorily, and safely, and to permit thorough inspection. The access to the place of work shall also be clearly illuminated. All wiring for electric light and power shall be installed and maintained in accordance with all applicable standards, securely fastened in place at all points, and shall be kept as far as possible from other electrical wires, telephone wires, signal wires, and wires used for firing blasts. For night work, if any be performed, the Contractor shall employ a crew organized and prepared for regular and continuous night work.

SC-4 BASIS OF PAYMENT

Contractor's attention is directed to Section 01 20 50, Measurement and Payment, of Part VII, Technical Specifications, for basis for payment and other payment information.

SC-5 LIQUIDATED DAMAGES

The time limits stated in the Contract are of the essence. It is agreed by the parties to the Contract that in case all the work called for under the Contract is not substantially completed before or upon the expiration of the time limits set forth in the Contract, damage will be sustained by the District, and that it is and will be impracticable to determine the actual damage which the District will sustain in the event of and by reason of such delay.

It is therefore agreed that Contractor shall pay to the District the following amount per day for each calendar day in excess of each milestone completion date required by the Contract, and the date the District deems the milestone work to be completed by the Contractor:

MILESTONE	LIQUIDATED DAMAGE
1 – Onsite Heavy Equipment Work	$300/day
2 – Substantial Completion	$300/day

It is further agreed that the amounts stipulated are reasonable estimates of the damages that would be sustained by the District and Contractor agrees to pay such liquidated damages as herein provided as liquidated damages and not as penalty. In case the liquidated damages are not paid, Contractor agrees that the District may deduct the amount thereof from any money due to or that may become due Contractor by progress payments or otherwise under the Contract, or if said amount is not sufficient, recover the total amount from Contractor or its surety.

The assessment of liquidated damages under this provision shall not preclude recovery by the District of other damages subject to reasonable quantification, including consequential damages. Consequential and other damages not provided for by this liquidated damages provision may include, but are not limited to, first- and third-party claims for personal injuries and/or property damages, inverse condemnation, environmental claims, or regulatory fees or fines imposed in whole or in part due to Contractor's acts or failures to act.

SC-6 SUBSTANTIAL COMPLETION AND PROJECT MILESTONES

MILESTONE	COMPLETION DATE
1 – Onsite Heavy Equipment Work	April 15, 2024
2 – Substantial Completion	June 1, 2024

Milestone 1 – Onsite Heavy Equipment Work

The Onsite Heavy Equipment Work milestone will be deemed complete when all work associated with the following Bid Items is complete and no work requiring heavy equipment remains on the Project site beyond the limits of the parking lot area and adjacent sidewalk/path:

- Bid Item 2: Demolition
- Bid Item 3: Earthwork and Rough Grading
- Bid Item 4: Rock Mulch and Cobble Placement
- Bid Items 5-7: Boulder Placement
- Bid Item 8: Permeable Pathway
- Bid Item 9: Pedestrian Boardwalks
- Bid Item 12: Prefabricated Restroom Preparation/Coordination
- Bid Item 14: Electrical (all underground portions and other portions requiring machinery)
- Bid Items 15-16: Underground Utilities
- Bid Item 17: Christmas Tree
- Bid Items 18-19: Rain Tanks

The primary intent of this milestone is to turn the site over to the California Conservation Corps and other party to begin Project planting work within the planting season to ensure plant health and establishment.

The following work may take place after Milestone 1 has been completed:

- Bid Item 1: Mobilization, Demobilization and Construction Coordination (minor demobilization and construction coordination only)

- Bid Item 10: Permeable Parking Lot
- Bid Item 11: Curb and Curb Ramp Installations
- Bid Item 14: Electrical (any above ground finish work and connections not requiring machinery)
- Bid Item 20: Solar Streetlights
- Any finish work, minor above-ground work, connections work, punchlist work, and other work that does not utilize heavy machinery, have the potential of disturbing the site or planting operations in any way.

Any of the above work not completed by the required completion date shall be coordinated and shall not interfere with planting and other work performed by others.

Milestone 2 – Substantial Completion

When construction is sufficiently complete in accordance with the Contract so that the District can occupy or utilize all portions and all systems of the work for all of the uses for which said work was intended or turn the completed site over for final remaining Project work, and when Contractor has furnished the "as-built" drawings, operations and maintenance manuals, test and compliance certificates, equipment and system warranties, and all other documents required by the Contract, the work will be considered substantially complete.

When the Contractor considers that the work is substantially complete, the Contractor shall request an inspection for substantial completion. When the District determines, on the basis of the inspection, that all portions and all systems of the work are substantially complete, the District will prepare a Certificate of Substantial Completion that will establish the date of substantial completion of the work; shall state the responsibilities of the District and the Contractor for security, maintenance, operation, and insurance; and shall list the items remaining to be completed or corrected. Failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract.

The District will have the right to restrict Contractor's use of the occupied portions of the work after the date of substantial completion, but the District will allow the Contractor reasonable access to complete or correct items required by the Contract.

The issuance of the Certificate of Substantial Completion for the work shall not relieve the Contractor of its obligation to promptly remedy any omissions and latent or unnoticed defects in the work covered by the Certificate of Substantial Completion.

A Certificate of Substantial Completion will not constitute acceptance of the work. A Certificate of Substantial Completion will fix the date for lowering the amount of liquidated damages to the value specified in the Contract for the period after substantial completion and before completion.

SC-7 SHUTDOWNS AND CONNECTIONS

The Contractor shall, at all times, conduct its operation so as to interfere as little as possible with existing District facilities and/or processes.

The Contractor shall connect to existing facilities and/or processes as necessary to complete the Project. The Contractor shall give five (5) working days' advance notice and receive prior written approval from the District for all connections to existing facilities and/or processes,

whether such connections are “live” or “inactive.”

All work on connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permit such interference. In some cases, it may be necessary to work outside of normal working hours to meet these requirements. Before starting work that will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and located at the job site. No connections shall be made without the District’s prior approval.

SC-8 USE OF COMPLETED PORTIONS OF WORK

Whenever, as determined by the District, any portion of work performed by Contractor is in a condition suitable for use, the District may take possession of or use such portion. The primary purpose of such use will be for turning the area over for planting and other work to be performed by others.

Such use by the District will in no case be construed as constituting final acceptance and shall neither relieve Contractor of any of its responsibilities under the Contract, nor act as a waiver by the District of any of the conditions thereof, provided that Contractor shall not be liable for the cost of repairs, rework, or renewals which may be required due to ordinary wear and tear resulting from such use. However, if such use increases the cost or delays the completion of remaining portions of work, Contractor shall be entitled to an equitable adjustment.

If, as a result of Contractor's failure to comply with the provisions of the Contract, such use proves to be unsatisfactory to the District, the District will have the right to continue such use until such portion of work can, without injury to the District, be taken out of service for correction of defects, errors, omissions, or replacement of unsatisfactory materials or equipment, as necessary for such work to comply with the Contract, provided that the period of such operation or use pending completion of appropriate remedial action shall not exceed four months unless otherwise mutually agreed upon in writing between the parties. The completion of corrections or replacements shall occur before acceptance of the Contract, unless otherwise mutually agreed upon in writing between the parties.

SC-9 SPECIAL SAFETY PRECAUTIONS

Contractor is hereby informed that work on this Project could be hazardous. Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property.

CONTRACTOR IS ADVISED THAT THE WORK WILL BE PERFORMED IN A PUBLIC AREA ADJACENT TO OPERATIONAL PUBLIC PARK FACILITIES AND A PUBLIC ROADWAY. CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS TO PROTECT THE PUBLIC.

SC-10 CONTRACTOR FACILITIES

Contractor shall, at all times, maintain all portions of the jobsite in a neat, clean, and sanitary condition at all times. The Contractor shall, as a minimum, conduct daily inspections to verify that requirements of this Section are being met.

The job site is located adjacent to a public park, golf course and businesses. Contractor shall take reasonable precautions so as to not disturb the nearby businesses and park.

District dumpsters and other disposal containers located near the site shall not be used by the Contractor.

Contractor's attention is directed to Section 01 52 00, Construction Facilities, of Part VII, Technical Specifications, regarding temporary facilities at the job site.

SC-11 SECURITY

The work site is located in a populated downtown area frequently visited by members of the public. It is also adjacent to a public park and golf course. Contractor shall maintain the sole responsibility for securing the site to protect Project work, secure materials and equipment, and protect the safety of the public. The Contractor shall be solely responsible for remedying any losses, damages or issues due to Contractor's failure to appropriately secure the site.

Contractor's attention is directed to Section 01 52 00, Construction Facilities, of Part VII, Technical Specifications, regarding other site security requirements.

SC-12 STORAGE OF MATERIALS AND EQUIPMENT

The Contractor shall, at its expense, store and maintain all materials and equipment as specified in the Contract or, where not specified, in such a manner as to assure the preservation of their quality and fitness, including warehousing if required by the District, and so as to facilitate job-site safety and convenient inspection by the District. The Contractor shall not dispose, remove, or otherwise encumber any of the materials or equipment so stored except as authorized in writing by the District.

The Contractor shall be responsible for, and shall bear any and all risk of loss of, or damage to, any work and all materials and equipment until final acceptance under the Contract, unless such loss or damage results from the active negligence of the District or any act of God as defined herein.

SC-13 NOT USED

SC-14 NOT USED

SC-15 DISTRICT-FURNISHED MATERIALS OR EQUIPMENT

The following listed materials or equipment will be furnished to the Contractor by the District without charge. All other materials or equipment necessary and required for the work under this Contract, including bolts, nuts, gaskets, and miscellaneous items, shall be furnished by the Contractor.

Item	Scheduled Delivery Date
Prefabricated Restroom	**March 2024**

As detailed in the Drawings, the Contractor and the manufacturer of the Prefabricated Restroom

each have individual responsibilities regarding delivery, installation, testing, and acceptance of the materials or equipment, which must be carefully coordinated to assure successful completion.

The Contractor shall, as the principal on-site party, be responsible for coordinating and preparing the Project site for manufacturer's delivery/setting of the Prefabricated Restroom. The Contractor shall also be responsible for informing the manufacturer of the progress of the work and factors affecting the scheduling of required visits to the site by the manufacturer's field representative.

Once the manufacturer has set the Prefabricated Restroom and performed all related appurtenant work, the District will take control of the Prefabricated Restroom. The Contractor will be responsible for making the final connections and for protecting the Prefabricated Restroom from damages until all Contractor's work is complete. Any damages caused by the Contractor's work shall be repaired at the sole cost of the Contractor.

Contractor will not be responsible for manufacturer delivery delays beyond the Scheduled Delivery Date; however, Contractor will be held responsible for any delays, and related costs, of the manufacturer's scheduled delivery date that are a result of the Contractor not having the site timely prepared for Prefabricated Restroom delivery.

SC-16 ACCESS AND COOPERATION

The Contractor's attention is drawn to the fact that during the course of the work of this Contract, the adjacent well house facilities will be used and maintained by District's personnel. The Contractor shall coordinate its work in such a way as to interfere as little as possible with the routine work of existing facility operation consistent with the necessity for making the connections as specified and as shown on the Project Drawings. The Contractor shall provide safe access at all times to all existing facilities for operating personnel and equipment.

The Project site is adjacent to a roadway and parking lot for public park facilities and a golf course. Contractor's work shall not block or interfere with continued access or use of said facilities. The Contractor shall conduct its operations as not to close or obstruct any portion of any road unless permits therefor have been obtained from Tuolumne County and permission has been granted by the District and the Golf Course. If any of the above are required to be kept open and are damaged or rendered unsafe by the Contractor's operations, the Contractor shall, at its expense, make such repairs and provide such temporary guards, bridges, lights, and other signals as necessary or required for public safety and as will be acceptable to the authorities having jurisdiction thereof.

The Drawings indicate Project work to be performed by others. The Contractor shall provide access to areas of the site that are ready for other work to be performed and shall cooperate with other parties performing said work.

SC-17 PROTECTION AND RESTORATION OF PROPERTY

Contractor shall take all measures necessary to protect all existing facilities, including but not limited to existing transformers, neighboring parking lot and landscaping, District well facilities, existing utilities, existing fencing, fire hydrants and other improved property. Damage to any property or facilities resulting from Contract work shall be repaired by the Contractor, at its sole

cost. In as much as it is reasonably possible, Contractor, at its sole cost, shall restore the area affected by Project work to its condition prior to construction.

Care shall be exercised by the Contractor to prevent damage to adjacent walks, streets, culverts, and gutters; where equipment will pass over these obstructions, suitable planking shall be placed.

Fences that interfere with any work may, upon prior written approval of the District, be removed by the Contractor but must then be restored to their original condition prior to final acceptance. Such removing and restoring shall be by and at the expense of the Contractor.

The Contractor shall preserve and protect all cultivated and planted areas, and vegetation such as trees, plants, shrubs, and grass on or adjacent to the premises, which, as determined by the District, do not reasonably interfere with the performance of work. The Contractor will be held responsible for damage to any such areas and vegetation and for unauthorized cutting of trees and vegetation, including without limitation, damage arising from the performance of its work through operation of equipment or stockpiling of materials. All costs in connection with any repairs or restoration necessary or required by reason of any such damage or unauthorized cutting shall be borne by the Contractor.

SC-18 STORM WATER POLLUTION PREVENTION

Contractor shall implement any best management practices necessary to ensure no contamination of the adjacent creek.

In addition to the above, Contractor shall take the following measures:

A. General

1. Prevention: The Contractor shall prevent the pollution of storm drain systems and creeks on or near the construction Project site(s) resulting from the construction. The Contractor shall keep pollutants out of storm drains by reducing the possibility of accidental discharge of materials and wastes, by reducing erosion and sedimentation, and by any action as required. The Contractor shall train all employees and subcontractors on the storm water pollution prevention requirements contained in these Specifications and ensure that all employees and subcontractors are aware of the consequences as described in paragraph A.3. below. The Contractor shall include appropriate subcontract provisions to ensure that these requirements are met by all subcontractors.

2. Notification: If the Contractor causes or permits the spillage or overflow of any oil, or petroleum product, hazardous substance, contaminant, waste or wastewater, including overflows or releases of untreated or treated (partially or fully) wastewater, and backups into buildings and on private property, the Contractor shall notify the District as soon as possible to the extent notification can be provided without substantially impeding cleanup or other emergency measures. In no event shall such notification be later than one (1) hour after knowledge of the occurrence.

3. Cleanup: Immediately upon gaining knowledge of such spillage, overflow, or discharge, the Contractor shall eliminate the cause of the spillage, overflow, or discharge and take action to minimize any damages. The Contractor shall also immediately implement a cleanup program. The cleanup, including sampling and testing required by regulatory agencies to determine the nature and level of contamination, shall be performed and completed to the satisfaction of the various regulatory agencies involved and the District, at the expense of the Contractor. If the Contractor's response is not satisfactory to the District, the District may, at its own discretion, mobilize to eliminate the cause of the overflow and implement a cleanup program, including any necessary sampling and testing. District costs of cleanup efforts shall be at the Contractor's expense and collected at the discretion of the District. Any fines, penalties, and/or subsequent actions imposed upon the District and/or the Contractor by regulatory agencies related to the spillage, overflow, or discharge and any subsequent monitoring, testing, and reporting, as required by regulatory agencies, shall also be at the expense of the Contractor. The Contractor shall keep a stockpile of spill cleanup materials, such as rags or absorbents, readily accessible on site. The quantity of cleanup materials shall be appropriate in consideration of the risk of an occurrence of a spill, overflow, or discharge.

B. Management of Nonhazardous Material and/or Waste

1. Designated Area: The Contractor shall propose designated areas of the Project site, for approval by the District, suitable for material delivery, storage, and waste collection that to the maximum extent practicable are near construction entrances and away from catch basins, gutters, drainage courses, and creeks.

2. Backfill or Excavated Material: The Contractor shall not allow backfill or excavated material to enter the storm drains or creeks. When rain is forecast within 24 hours or during wet weather, the Contractor may be required to cover such material with a tarpaulin and to surround the material with sand bags.

3. Disposal: At the end of each working day, the Contractor shall collect all scrap, debris, and waste material, and dispose of such materials properly. The materials may be stored in the Contractor's yard in stockpiles or placed in dumpsters. The Contractor shall inspect dumpsters for leaks and replace or repair dumpsters that leak. The Contractor shall not discharge water from cleaning dumpsters on site. The Contractor shall arrange for regular waste collection before dumpsters overflow.

C. Management of Hazardous Material and/or Waste

1. Storage: The Contractor shall label and store all hazardous materials, such as pesticides, paints, thinners, solvents, and fuels, and all hazardous wastes, such as waste oil and antifreeze, in accordance with all applicable state and federal regulations. The Contractor shall store all hazardous materials and all hazardous wastes in accordance with secondary containment regulations. All such materials and wastes shall be covered, as needed, to avoid rainwater becoming polluted with hazardous constituents, which could result in potential management of collected rainwater as hazardous waste. The Contractor shall keep an

accurate, up-to-date inventory, including Material Safety Data Sheets (MSDS), of hazardous materials and hazardous wastes stored on site.

2. Usage: When rain is forecast within 24 hours or during wet weather, the Contractor shall refrain from applying chemicals in outside areas. The Contractor shall follow material manufacturer's instruction regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals. The Contractor shall post warning signs in areas treated with chemicals.

3. Disposal: The Contractor shall arrange for regular hazardous waste collection to comply with time limits on storage of hazardous wastes. The Contractor shall dispose of hazardous waste in accordance with Part V, General Conditions, Section GC-25, Contaminated Soil/Materials. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials. The Contractor shall report any hazardous material spills to the District in accordance with paragraph A.2 above.

D. Vehicle/Equipment Cleaning, Maintenance, and Fueling

1. General: The Contractor shall inspect vehicles and equipment arriving on site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs are made.

2. Cleaning: The Contractor shall perform vehicle or equipment cleaning with water only in a designated, bermed area that will not allow rinse water to run off site into streets, gutters, storm drains, or creeks. Soaps, solvents, degreasers, steam-cleaning equipment, or equivalent methods shall not be allowed.

3. Maintenance and Fueling: The Contractor shall perform maintenance and fueling of vehicles or equipment in areas that will not allow run-on of storm water or runoff of spills to storm drains and that provide for confined cleanup. Examples are working in bermed areas or utilizing drip pans. The Contractor shall not contaminate the soils or groundwater with such maintenance and fueling activities.

   The Contractor shall use secondary containment, such as a drip pan, to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed, or poured, and shall clean up leaks and spills of vehicle or equipment fluids immediately and dispose of the waste and cleanup materials as hazardous waste, as described in paragraph C.3 above.

G. Concrete, Grout, and Mortar Waste Management

1. Concrete Truck/Equipment Washout: The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains, or creeks. The Contractor shall perform washout of concrete trucks or equipment off site or in a designated area on site where the water will flow onto dirt or into a temporary pit in a dirt area. The Contractor shall let the water percolate into the soil and dispose of the hardened concrete in a trash container. If a suitable dirt area is not available, the Contractor shall collect the wash water and remove it off site.

2. Exposed Aggregate Concrete Wash Water: The Contractor shall avoid creating runoff by draining water from washing of exposed aggregate concrete to a dirt area. If a suitable dirt area is not available, the Contractor shall filter the wash water through straw bales or equivalent material before discharging to a storm drain. The Contractor shall collect sweepings from exposed aggregate concrete for disposal.

PART VII
TECHNICAL SPECIFICATIONS

Twain Harte
Community Services District

TECHNICAL SPECIFICATIONS FOR

TWAIN HARTE MEADOWS PARK

Prepared By:

Watershed Progressive

June 2023

TWAIN HARTE
COMMUNITY SERVICES DISTRICT

TWAIN HARTE MEADOWS PARK
TECHNICAL SPECIFICATIONS
DIVISIONS AND SECTIONS

SECTION 01 10 00
SUMMARY

PART 1 – GENERAL

1.01 SPECIFICATION FORMAT

A. The following specifications are organized into Divisions and Sections using the 48-division format and the Construction Specification Institute's (CSI's) "MasterFormat 2018" numbering system.

1.02 SECTION INCLUDES

A. Project Description.

B. Definition of Parties.

C. Site Conditions.

D. General Construction Responsibilities and Procedures.

E. Other Requirements.

F. Final site cleanup.

1.03 PROJECT DESCRIPTION

A. The work described in the following specifications is part of the improvements to the Twain Harte Meadows Park. The purpose of the Twain Harte Meadows Park project is to transform a vacant lot into a functional recreation area as well as a stormwater education/demonstration site.

B. The biddable Work for the Twain Harte Meadows Park project includes the following general components:

1. General site work (e.g., tree protection, temporary fencing if deemed necessary for security, cleanup, and storm drain protection).
2. Demolition, removal, and legal disposal of asphalt, a portion of the pool, abandoned pipes, and other unusable debris located on site.
3. Earthwork, including excavation for Tank-3 and removal of all rocks greater than six inches in size from backfill.
4. Boulder, cobble, and rock mulch placement as field directed by Owner's Representative.
5. Permeable pathway, including pedestrian boardwalks.
6. Permeable parking lot.
7. Curb and ramp installation.
8. Street light installation.
9. Prefabricated restroom preparation and coordination.
10. Pavilion.
11. Electrical work.

12. Underground utilities (sanitary sewer, water, irrigation, rainwater conveyance, and storm drains).
13. Town Christmas Tree.
14. Pads and setting of six poly tanks (Tank-1).
15. Pads and setting of one corrugated metal tank (Tank-2).
16. Installation of gutters on the pavilion.

C. The following is a general list of non-biddable/excluded Work to be completed by others:

1. Landscaping, planting, and mulching.
2. Preformed scour hole installation.
3. Irrigation emitter placement.
4. Restroom greywater plumbing.
5. Greywater plantings.
6. Installation aboveground plumbing, valves, and accessories for rain tanks.
7. Rainwater pump installation.
8. Low-voltage lighting (e.g., pedestrian walkways and Christmas tree uplights).
9. Picnic table assembly.
10. Barbeque assembly and installation.
11. Sink and large barbeque in pavilion.
12. Educational/Discovery lab signage.
13. Tank-3 installation and associated accessories.
14. Park entrance sign and installation.
15. Prefabricated restroom purchase, which includes placement with a crane.
16. Flume and Water Play Discovery Lab.

1.04 DEFINITION OF PARTIES

A. OWNER'S REPRESENTATIVE: The Twain Harte Community Services District (CSD) or officials acting on behalf of the Twain Harte Community Service (CSD).

B. WATERSHED PROGRESSIVE: Individual, firm, or corporation to provide engineering and design services during the design and construction phase of the project.

C. BIDDER: Any individual, firm, or corporation submitting a proposal for the work contemplated.

D. CONTRACTOR: Individual, firm, or corporation who has entered into contract with the OWNER to complete the Work in accordance with the drawings and specifications.

E. SUBCONTRACTOR: Individual, firm, or corporation to supply work or material at the project site pursuant to a separate agreement with the Contractor.

F. SPECIFICATIONS: The directions, provisions, and requirements described herein, together with all written or printed agreements and instructions made, or to be made, pertaining to the method and manner of performing the Work.

1.05 SITE CONDITIONS

A. CONTRACTOR's Staging Area:

1. Any staging for personnel, equipment, and materials by the Contractor must be performed within the construction limits, in an area indicated on the Drawings, or in an area designated by the Owner.

2. The Contractor may request to use other areas for staging not indicated on the drawings. All such areas are subject to approval by the Owner's Representative.

B. Disposal of Waste Material:

1. Materials identified as waste by the Contractor shall be removed immediately from the project site and disposed of in accordance with applicable requirements and regulations.

2. Remove all excess or damaged construction materials from the project site.

3. Remove all unsuitable material from the project site, including vegetative debris.

4. Burning is not permitted on site.

C. Site Investigation and Representation

1. Information about existing conditions is shown on the construction drawings. It is the Bidder and Contractor's responsibility to verify the accuracy of the construction drawings.

2. The Contractor shall carefully review, inspect, and compare the contract documents with the field conditions (including subsurface conditions, underground facilities, and existing structures).

D. Information of Site Conditions:

1. The Contractor shall promptly report any conflict, error, or discrepancy that the Contract may discover at any time to the Owner's Representative.

E. Fire Prevention and Protection:

1. The Contractor shall perform all work in a fire-safe manner and comply with applicable fire prevention regulations.

1.06 GENERAL CONSTRUCTION RESPONSIBILITIES AND PROCEDURES

A. The Contractor shall not operate outside the designated limits of disturbance without prior approval from the Owner.

B. All work areas, unless otherwise noted on the construction drawings, shall be restored to pre-construction conditions.

1.07 OTHER REQUIREMENTS

A. Dimensions and Measurements:

1. The Contractor is responsible for construction staking, which is to be approved by the Owner's Representative.
2. The Contractor shall verify dimensions shown on the construction drawings and notify the Owner's Representative of discrepancies prior to proceeding with the Work.

B. Whenever a piece of equipment, an article, or a device is referred to in a singular number, such references apply to as many such items as are shown on the construction drawings or required to complete the Work.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

SECTION 01 20 50
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

This Section describes the methods of measurement and payment for the specific bid items associated with the Work on the proposed Twain Harte Meadows Park. All other provisions of the Contract documents which relate to measurement and payment are applicable, except that where conflicts occur between this section and other provisions of the technical specifications or reference specifications, this measurement and payment section shall prevail.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01. METHOD OF PAYMENT

A. Payment will be made on the basis of the unit prices or lump sum bids for the various items as called for on the Bid Sheet(s) and included in the Contract as awarded. The quantities given in the Bid and contract forms are approximate only and are given as a basis for comparison of bids, and the Owner does not expressly or by implication agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of or any class or portion of the Work or to omit portions of the Work as may deemed necessary or advisable by the Engineer or Owner's Representative.

3.02. MEASUREMENT OF QUANTITIES

A. Full compensation for all expenses involved in conforming to the above requirements for weighing materials shall be included in the prices for the materials being weighed, and therefore, no additional allowance will be made.

B. The quantity of materials paid for by the lineal foot, square foot or square yard shall be determined by horizontal measurement.

C. The Contract shall submit a schedule of values of all lump sum items described below.

3.03. SCOPE OF PAYMENT

A. The Contractor shall accept the compensation as herein provided as full payment for furnishing all materials, labor, tools, and equipment necessary to complete the Work, and for performing all work contemplated and embraced under the Contract; also, for loss or damage arising from the nature of the Work, or from the action of the elements, except as heretofore provided, or from any unforeseen difficulties which may be encountered during the prosecution of the Work, until the final acceptance by the District, and for all risks of every description connected with the prosecution of the Work; also, for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; and for completing the Work according to the Plans and Specifications. Neither the payment of any estimate nor any retained percentage shall relieve the Contractor of any obligation to make good any defective work of materials.

3.04. BID ITEMS

Bid Item #1 – Mobilization, Demobilization, and Construction Coordination

1. Description

   This work includes the furnishing of all tools, equipment, labor, and materials required to accomplish all the following Work within the limits of disturbance designated on the plans or as directed by the Owner's Representative in accordance with the plans and specifications for Twain Harte Meadows. The Work includes but is not limited to the following:

   a) The Contractor shall develop a construction plan for the Work with means and methods that will allow completion of the work pursuant to these specifications using the space within the proposed Twain Harte Meadows area or shall, independently from the District, acquire any temporary easements from landowners that are necessary to stockpile materials or facilitate completion of the Work.

   b) **Mobilization** – The Contractor shall move in and set up all equipment, provision for power, materials, etc. as necessary to complete all aspects of this project. This item also includes the cost of all bonds, insurance, and permits for the project.

   c) **Easements** – The Contractor may determine the location, type, extent, and value to the Contractor of any temporary easement(s), which may facilitate completion of the Work, which is beyond the District's access easement and fenced tank site shown on the Plans and Specifications.

   d) **Construction Schedule** – The Contractor is responsible for preparing, amending, implementing, and complying with construction schedule for all Work on this project. The initial schedule shall be submitted to the Owner's Representative at the time of the award of the contract. The schedule shall be amended and submitted to the Owner's Representative, as necessary if progress varies significantly from the schedule and at a minimum, every month.

   e) **Construction Water** – The District will provide access to construction water.

   f) **Submittals** – The Contractor shall provide the submittals and associated planning and engineering including, field verification, structural calculations, shop drawings, materials data sheets, Material Safety Data Sheets (MSDS), certificates of compliance, and other submittals required by the plans and specifications.

   g) **Utility Coordination** – The Contractor is responsible for all coordination efforts with regards to utilities on the project site including temporary service disruptions, tie-ins, and scheduling inspections for all Contractor Work. The Contractor shall be responsible for any financial claims associated with missed inspections, repeat inspections, or any costs associated with re-working portions of the project due to failed inspections or lack of inspections based on the Contractor's failure to schedule and follow through the same.

   h) **General Site Work** - The work involved as part of the General Site Work bid item includes but is not limited to tree protection, storm drain protection and site cleanup, fencing for security, safety, stormwater pollution prevention, potholing for exact location of existing utilities if necessary, and all other general site work required to complete the Work as specified in the Contract and set forth in the Drawings.

i) **Demobilization** – The Contractor shall remove all equipment and leftover materials.

2. Measurement

   Measurement of Work associated with mobilization, demobilization, and construction coordination will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum, and a schedule of values for "Mobilization, Demobilization, and Construction Coordination" will be required. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #2 - Demolition

1. Description

   This work includes removal and disposal of all existing asphalt concrete/pavement from the Twain Harte Meadows project site, removal of the 6-inch cedar tree near the abandoned pool. In addition, this work includes saw cutting and removing pavement from the existing parking area in accordance with the plans, specifications, and the direction of the Owner's Representative. This work also includes the removal of abandoned pipes, and removal of the pool one foot below the finished grade. Finally, this bid item includes other demolition work that is shown on the plans, described in the specifications, or may be required as well as the legal disposal of all spoils associated with the demolition work.

2. Measurement

   Measurement of Work associated with demolition will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum, and a schedule of values for demolition work will be required. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item.

Bid Item #3 – Earthwork and Rough Grading

1. Description

   This work includes excavation, grading of rain gardens and bioswales within the tolerances specified, removal of unsuitable materials including rocks greater than 6 inches in size, and legal disposal of all spoils associated with earthwork. This bid item also includes excavation for Tank-3, which is associated with the Water Play Discovery Lab and any other excavation/grading work shown on the plans or described in the specifications. In addition, excavation and rough grading work includes any necessary dewatering as well as construction staking. Finally, earthwork and rough grading work includes off-haul of excavation materials.

2. Measurement
   Measurement of Work associated with earthwork and rough grading will be based upon completion of such work as a lump sum.

3. Payment

Payment for this bid item will be made at the lump sum, and a schedule of values for earthwork and rough grading work will be required. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item.

Bid Item #4 – Rock Mulch and Cobble Placement

1. Description

   This bid item includes the procurement, trucking, and placement of the cobble and rock mulch/gravel mix (pea gravel, river rock, and cobbles up to 10" in size) for the bioswales and rain gardens as shown on the drawings, described in the plans, and as directed by the Owner's Representative. The rock mulch and cobble will be approved by Owner's Representative, and placement will be field directed by Owner's Representative.

2. Measurement

   Measurement of Work associated with the volume of cobble and gravel much placed (CY).

3. Payment

   Quantities for cobble and gravel mulch will be paid for at the contract unit price per cubic yard. This price will include the materials, labor, and equipment required to place cobble and gravel mulch in accordance with the plans and specifications and as directed by the Owner's Representative. A schedule of values is required.

Bid Item #5 – Boulder Placement (1' to 2')

1. Description

   This bid item includes procurement, trucking, and placement of 1' to 2' boulders as shown on the drawings and as directed by the Owner's Representative. Boulder selection will also be directed by the Owner's Representative.

2. Measurement

   Measurement of Work associated with the number of boulders placed.

3. Payment

   Quantities of boulders will be paid for at the contract price per boulder. Such price will include the materials, labor, and equipment required to place boulders in accordance with the plans and as directed by the Owner's Representative. A schedule of values is required.

Bid Item #6 – Boulder Placement (2' to 4')

1. Description

   This bid item includes procurement, trucking, and placement of 2' to 4' boulders as shown on the drawings and as directed by the Owner's Representative. Boulder selection will also be directed by the Owner's Representative.

2. Measurement

   Measurement of Work associated with the number of boulders placed.

3. Payment

   Quantities of boulders will be paid for at the contract price per boulder. Such price will include the materials, labor, and equipment required to place boulders in accordance with the plans and as directed by the Owner's Representative. A schedule of values is required.

Bid Item #7 – Boulder Placement (4’ to 5’)

1. Description

   This bid item includes procurement, trucking, and placement of 4’ to 5’ boulders as shown on the drawings and as directed by the Owner’s Representative. Boulder selection will also be directed by the Owner’s Representative.

2. Measurement

   Measurement of Work associated with the number of boulders placed.

3. Payment

   Quantities of boulders will be paid for at the contract price per boulder. Such price will include the materials, labor, and equipment required to place boulders in accordance with the plans and as directed by the Owner’s Representative. A schedule of values is required.

Bid Item #8 – Permeable Pathway

1. Description

   This bid item involves installation of the permeable pathway in accordance with the plans, specifications, and ADA requirements. The work involved in this bid item includes construction staking, subgrade preparation, base coarse placement in addition to any materials, labor, equipment, and any other work required to install the permeable pathway. The Contractor is responsible for sourcing all materials required to complete the Work and installing the permeable pathway, complete in place as shown on the plans and described in the specifications.

2. Measurement

   Measurement of the work associated with this bid item is by the square foot.

3. Payment

   Payment for permeable pathway shall be made at the contract unit price per square foot. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #9 – Pedestrian Boardwalks

1. Description

   This bid item involves the installation of the pedestrian boardwalks shown along the pedestrian walkway in accordance with the plans, specifications, and ADA requirements. The work involved in this bid item includes all the materials, labor, and equipment required to install the pedestrian boardwalks, complete in place as shown on the plans and described in the specifications.

2. Measurement

   Measurement of the work associated with this bid item will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #10 – Permeable Parking Lot

1. Description

   The Permeable Parking Lot bid item includes subgrade preparation, placing rock subbase, installing the TrueGrid (or accepted equivalent), delineating parking spots with striping or parking markers (for standard and handicap designated spaces), placing parking blocks, and any other work required to place the permeable parking lot in accordance with the plans, specifications, and manufacturer's recommendations. This includes all the materials, labor, tools, and equipment necessary to complete in place as shown on the plans and described in the specifications.

2. Measurement

   Measurement of the work associated with this bid item is the square footage of permeable parking lot installed.

3. Payment

   Payment for the permeable parking lot shall be made at the contract unit price per square foot. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #11 – Curb and Curb Ramp Installations

1. Description

   This work involves all labor, materials, tools, and equipment involved in constructing the concrete curb and ADA curb ramp in accordance with the dimensions indicated on the plans and standard detail drawings.

2. Measurement

   Measurement of Work associated with curb and ADA curb ramp installation will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #12 – Prefabricated Restroom Preparation/Coordination

1. Description

   The Contractor will be responsible for the gravel and concrete building pad preparation as shown on the drawing provided by the prefabricated restroom company. The District is purchasing the pre-fabricated restroom, which includes placement of the restroom by crane. It is anticipated that the restroom will be delivered in March 2024. In addition, this work includes stubbing up utilities within six feet of the prepared foundation area. This bid item also includes coordinating installation of the prefabricated restroom, including preparing the area for crane and utility connection work. The restroom provider will run piping/conduit from the restroom to the stubs, but the Contractor is to make the final connection and will run electrical through the conduit to the breaker box in the restroom.

2. Measurement

Measurement of Work associated with prefabricated restroom installation work will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #13 – Pavilion

1. Description

   The contractor will be responsible for installing the pavilion as shown on the plans. This includes but is not limited to the pad, foundation, lighting, outlets and electrical associated with the pavilion, rock facing on posts, point-of-use electric water heater, retaining wall, grease trap (aboveground), staining, and any other work that may be involved in furnishing the pavilion.

2. Measurement

   Measurement of Work associated with pavilion will be based upon completion of such work as a lump sum. The Contractor is to submit a schedule of values for this bid item.

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #14 – Electrical Work

1. Description

   This bid item includes any work involved in installing the electrical work on site. This includes but is not limited to obtaining permits, testing, installing the underground electrical conduit and service to all 120V or 240V points of connections, panel construction, breaker installation, connecting the pumps for the rainwater harvesting system to electrical, and coordination with existing trades and utilities.

2. Measurement

   Measurement of Work associated with electrical work not covered in Bid Item #10 will be based upon completion of such work as a lump sum

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #15 – Underground Utilities (Sanitary and Water)

1. Description

   This bid item includes the work associated with installing the sanitary and water lines as shown on the plans and described in the specifications. Such work includes but is not limited to trench excavation, pipe bedding, pipe laying, coordination with existing for sanitary sewer and water, connections, tie-ins, shutdown coordination, pipe, fittings, appurtenances, compaction and backfill, and any other work required to properly install the sanitary sewer and water lines.

2. Measurement

   Measurement of the work associated with installing the water and sanitary sewer lines work will be based upon completion of such work as a lump sum.

3. Payment

   Payment for work associated with underground utility installation be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #16 – Underground Utilities (Irrigation, Rainwater Conveyance, HDPE Piping)

1. Description

   This bid item includes the installation of underground utilities (irrigation, underground rainwater conveyance, and storm drain HDPE piping) as shown on the plans. This work will involve trench excavation, pipe bedding, pipe laying and coordination with existing for irrigation, underground rainwater conveyance piping, storm drains/HDPE piping connecting basins and associated box inlet of HDPE pipes. In addition, the Contractor is responsible for furnishing and installing all pertinent materials, fittings, and appurtenances associated with the irrigation, underground rainwater conveyance, and HDPE piping.

2. Measurement

   Measurement of the work associated with installing the utilities associated with this bid item (e.g., irrigation, rainwater conveyance, HDPE piping) will be based upon completion of such work as a lump sum.

3. Payment

   Payment for work associated with underground utility installation be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #17 – Christmas Tree

1. Description

   Christmas tree installation and associated irrigation. The Contractor is responsible for providing the Christmas tree and any equipment required to install the Christmas tree.

2. Measurement

   Measurement of the work associated with installing the Town Christmas tree and associated irrigation will be based upon completion of such work as a lump sum.

3. Payment

   Payment for work associated with installing the town Christmas tree be made at the lump sum. This includes full compensation for furnishing all labor, material (including the tree), tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #18 – Poly Rain Tanks (Tank-1)

1. Description

   This bid item includes the procurement and installation of the poly rain tanks as shown on the plans and described in the specifications. This work includes installing the gravel pad, excavation, compaction, setting the tanks, and stubbing up the rainwater conveyance piping. Final pipe connection to the irrigation system and tank to be performed by others.

2. Measurement

   Measurement of the work associated with this work will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #19 – Corrugated Rain Tanks (Tank-2)

1. Description

   This bid item includes the procurement and installation of the corrugated steel rain tank as shown on the plans and described in the specifications. This work includes installing the gravel pad, excavation, compaction, setting the tanks, and stubbing up the rainwater conveyance piping. Final pipe connection to the irrigation system, tank, and Water Play Discovery Lab to be performed by others.

2. Measurement

   Measurement of the work associated with this work will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made at the lump sum for the materials, labor, equipment, and tools required to complete this work. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #20 – Solar Streetlights

1. Description

   This bid item involves furnishing and installing streetlights for the permeable parking lot per the plans and specifications. Streetlights shall be approved by the Owner's Representative.

2. Measurement

   Measurement of the work associated with this bid item is each solar streetlight installed.

3. Payment

   Payment for this bid item will be made for each solar streetlight installed. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Bid Item #21 – Gutters Along the Pavilion

1. Description

   This bid item involves furnishing and installing gutters (GT-1) along the pavilion.

2. Measurement

   Measurement of the work associated with this work will be based upon completion of such work as a lump sum.

3. Payment

   Payment for this bid item will be made for each solar streetlight installed. This includes full compensation for furnishing all labor, material, tools, and equipment required to complete the work associated with this bid item. A schedule of values is required.

Exclusions/Non-Biddable Work to be Performed by Others

The following lists work to be performed by others.

- Prefabricated Restroom
  - Purchasing the prefabricated restroom, which includes placement of the restroom by crane.
- Discovery Labs:
  - Installation of Tank-3 and accessories for the Water Play Discovery Lab
  - Flume and Water Play Discovery Lab
  - Discovery Lab signage
- Piping:
  - Aboveground plumbing, valves, and accessories for the rainwater tanks
  - Restroom Greywater plumbing
  - Preformed scour holes at outlet of each pipe
  - Rainwater pump installation
- Landscaping & Irrigation:
  - Planting selection and installation
  - Final irrigation line and emitter placement
  - Greywater plantings
- Electrical:
  - Low-voltage lighting (e.g., pedestrian walkway lighting, Christmas tree upplight)
- Miscellaneous:
  - Picnic table assembly – includes concrete footings to prevent vandalism and theft.
  - Barbeque installation – includes concrete footings to prevent vandalism and theft.
  - Pavilion barbeque and sink
  - As-built (mark-up of plans)
  - Park Entrance Sign

SECTION 01 52 00
CONSTRUCTION FACILITIES

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Temporary sanitary facilities, parking areas, temporary fencing, and security.

1.02 RELATED SECTIONS

A. SECTION 01 52 05, CONSTRUCTION STAGING AREAS

B. SECTION 01 74 14, CLEANING

1.03 TEMPORARY SANITARY FACILITIES

A. The Contractor may use the public restrooms located in the adjacent park on Meadows Drive.

B. If the Contractor deems it necessary to provide temporary sanitary facilities for this project, the Contractor shall locate the sanitary facilities in an area approved by the authorities having jurisdiction and maintain these facilities in a clean and sanitary condition during the work. Ensure the sanitary facilities are supplied with toilet paper, hand drying towels, and other related supplies.

C. Upon completion of the work, any temporary sanitary facilities shall be disinfected and removed from the site.

1.04 PARKING AREAS

A. Parking is indicated on the construction drawings. Off-site parking shall not interfere with existing community parking or traffic conditions.

1.05 TEMPORARY FENCING

A. The Contractor shall furnish, construct, maintain, and later remove temporary fencing around the jobs site as needed to provide site security (e.g., security of equipment, materials, and improvements) and to protect and keep safe the public from construction and unfinished improvements.

B. Any temporary fencing that is damaged from any cause during the progress of the Work shall be repaired or replaced by the Contractor at no additional cost to the Twain Harte Community Services District (CSD).

C. When no longer required for the work, temporary fencing shall be removed from the site. Removed fencing shall become the property of the Contractor.

D. Holes caused by the removal of temporary fences shall be properly filled to match adjacent surfaces.

1.06 SECURITY

A. Damaged, lost, or stolen materials or equipment shall be replaced by the Contractor at no additional cost to the CSD.

B. The Twain Harte CSD assumes no responsibility for loss of materials and equipment during the Work.

C. The Contractor shall repair any improvements damaged during the course of the work due to failure to appropriately secure the site.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 DEMOLITION

A. Remove base, asphalt, and concrete within the project site to the subgrade. Note that some of the concrete on site is partially buried.

B. When removing concrete associated with the abandoned inground swimming pool, remove concrete to a depth of at least 1 foot below finished grade. Concrete removal includes the removal of any steel reinforcement embedded within the concrete. Legally dispose of removed concrete offsite. All area depressions resulting from the removal of the concrete swimming pool shall be backfilled with native material and compacted to a relative density of not less than 90 percent.

C. Remove and dispose of abandoned drainage corrugated plastic piping (CPP) and corrugated metal pipe (CMP).

D. When applicable, backfill and compact depressions caused by excavations, demolition, and removal in accordance with the requirements outlined in SECTION 31 00 00, EARTHWORK.

3.02 SALVAGE

A. The existing boulder pile is to remain on site. Other items or materials to be salvaged shall be identified on the construction drawings and maybe used subject to Owner's Representative approval.

B. Repair or replace with new material, salvaged material damaged or destroyed due to Contractor's negligence, as determined by the CSD.

3.03 DISPOSAL OF REMOVED MATERIALS AND DEBRIS

A. Dispose of removed materials, waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by the Twain Harte CSD.

B. Burying trash and debris on site will not be permitted. Similarly, burning of trash and debris at the site will not be permitted.

C. Removed materials, trash, and debris shall become the property of the Contractor and shall be removed from the site and be disposed of in a legal manner. Location of the disposal site and length of haul shall be the Contractor's responsibility.

SECTION 01 52 05
CONSTRUCTION STAGING AREAS

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Contractor staging area requirements.

1.02 RELATED SECTIONS

A. SECTION 01 52 00, CONSTRUCTION FACILITIES

B. SECTION 01 74 14, CLEANING

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 CONTRACTOR STAGING AREAS

A. The Contractor shall only use site areas designated specifically on the construction drawings or by the Twain Harte Community Services District (CSD) for the Work.

B. The Contractor shall not block access to/from the adjacent park facilities, golf course, fire station or any emergency vehicle access lane unless specifically granted by the Twain Harte Community Services District (CSD).

D. The Contractor shall keep the staging area clear of trash and debris and in neat order.

SECTION 01 74 14
CLEANING

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Cleaning and cleanup during construction.

B. Debris disposal.

C. Final site cleanup.

1.02 RELATED SECTIONS

A. SECTION 01 52 00, CONSTRUCTION FACILITIES

B. SECTION 01 52 05, CONSTRUCTION STAGING AREA

C. SECTION 02 41 00, DEMOLITION

1.03 CODES AND STANDARDS

A. Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Regulation for Reducing VOC Emissions from Consumer Products.

1.04 CLEANING AND CLEANUP DURING CONSTRUCTION

A. The project site, including the Contractor's work and storage areas, shall be kept in a neat, clean, and orderly condition during the course of the Work. The Contractor shall conduct generally daily clean-up and disposal tasks. Such tasks include the removal of waste, trash, rubbish, and debris away from the site.

1.05 DISPOSAL OF DEBRIS

A. The Contractor shall dispose of all waste, trash, rubbish, and debris in accordance with applicable laws and ordinances and as prescribed by the Twain Harte Community Services District (CSD). The Contractor shall bury no waste material or debris on the project site or burn any trash or waste on the site.

B. The Contractor is responsible for identifying an acceptable disposal site for waste, trash, rubbish, and debris.

1.06 FINAL SITE CLEANUP

A. Upon completion of the Work, ensure the site is in a clean, neat, and acceptable condition. Remove all construction waste, unused materials, loose rock and stones, excess soil, and debris.

B. Ensure all existing and new drainage systems are free of debris and damage.

C. Clean and protect all conduit openings.

D. Upon completion of the Work, the Contractor shall remove all markings made during the course of the Work from streets, sidewalks, walls, or any other infrastructure owned by the Twain Harte CSD.

1.07 DISPOSAL OF MATERIALS

A. The Contractor shall dispose of materials unsuitable for reuse in the Work offsite. Suitable materials may be reused in the Work for embankment, fill, or backfill subject to Owner's Representative approval.

PART 2 – PRODUCTS

2.01. CLEANING PRODUCTS

A. Use cleaning products that meet the requirements of the Green Seal GS-37 standard or comply with the requirements and maximum volatile organic compounds (VOC) limits of Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Regulation for Reducing VOC Emissions from Consumer Products.

PART 3 – EXECUTION

3.01 GENERAL

A. **Prevention:** The Contractor shall prevent the pollution of storm drain systems and the creek near the construction Project site resulting from the construction. The Contractor shall keep pollutants out of storm drains by reducing the possibility of accidental discharge of materials and wastes, by reducing erosion and sedimentation, and by any action as required. The Contractor shall ensure that all employees and subcontractors are aware of the consequences as described in paragraph 3.01C. below. The Contractor shall include appropriate subcontract provisions to ensure that these requirements are met by all subcontractors.

B. Notification: If the Contractor causes or permits the spillage or overflow of any oil, or petroleum product, hazardous substance, contaminant, waste or wastewater, including overflows or releases of untreated or treated (partially or fully) wastewater, and backups into buildings and on private property, the Contractor shall notify the District as soon as possible to the extent notification can be provided without substantially impeding cleanup or other emergency measures. In no event shall such notification be later than one (1) hour after knowledge of the occurrence.

C. **Cleanup:** Immediately upon gaining knowledge of such spillage, overflow, or discharge, the Contractor shall eliminate the cause of the spillage, overflow, or discharge and take action to minimize any damages. The Contractor shall also immediately implement a cleanup program. The cleanup, including sampling and testing required by regulatory agencies to determine the nature and level of contamination, shall be performed and completed to the satisfaction of the various regulatory agencies involved and the District, at the expense of the Contractor. If the Contractor's response is not satisfactory to the District, the District may, at its own discretion, mobilize to eliminate the cause of the overflow and implement a cleanup program, including any necessary sampling and testing. District costs of cleanup efforts shall be at the Contractor's expense and collected at the discretion of the District. Any fines, penalties, and/or subsequent actions imposed upon the District and/or the Contractor by regulatory agencies related to the spillage, overflow, or discharge and any subsequent monitoring, testing, and reporting, as required by regulatory agencies, shall also be at the expense of the Contractor. The Contractor shall keep a stockpile of spill

cleanup materials, such as rags or absorbents, readily accessible on site. The quantity of cleanup materials shall be appropriate in consideration of the risk of an occurrence of a spill, overflow, or discharge.

3.02 MANAGEMENT OF NONHAZARDOUS MATERIAL AND/OR WASTE

A. **Designated Area**: The Contractor shall propose designated areas of the Project site, for approval by the District, suitable for material delivery, storage, and waste collection that to the maximum extent practicable are near construction entrances and away from catch basins, gutters, drainage courses, and creeks.

B. **Backfill or Excavated Material:** The Contractor shall not allow backfill or excavated material to enter the storm drains or creeks. When rain is forecast within 24 hours or during wet weather, the Contractor may be required to cover such material with a tarpaulin and to surround the material with sandbags.

C. **Disposal:** At the end of each working day, the Contractor shall collect all scrap, debris, and waste material, and dispose of such materials properly. The materials may be stored in the Contractor's yard in stockpiles or placed in dumpsters. The Contractor shall inspect dumpsters for leaks and replace or repair dumpsters that leak. The Contractor shall not discharge water from cleaning dumpsters on site. The Contractor shall arrange for regular waste collection before dumpsters overflow.

3.03 MANAGEMENT OF HAZARDOUS MATERIAL AND/OR WASTE

A. **Storage:** The Contractor shall label and store all hazardous materials, such as pesticides, paints, thinners, solvents, and fuels, and all hazardous wastes, such as waste oil and antifreeze, in accordance with all applicable state and federal regulations. The Contractor shall store all hazardous materials and all hazardous wastes in accordance with secondary containment regulations. All such materials and wastes shall be covered, as needed, to avoid rainwater becoming polluted with hazardous constituents, which could result in potential management of collected rainwater as hazardous waste. The Contractor shall keep an accurate, up-to-date inventory, including Material Safety Data Sheets (MSDS), of hazardous materials and hazardous wastes stored on site.

B. **Usage:** When rain is forecast within 24 hours or during wet weather, the Contractor shall refrain from applying chemicals in outside areas. The Contractor shall follow the material manufacturer's instruction regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals. The Contractor shall post warning signs in areas treated with chemicals.

C. **Disposal:** The Contractor shall arrange for regular hazardous waste collection to comply with time limits on storage of hazardous wastes. The Contractor shall dispose of hazardous waste in accordance with Part V, General Conditions, Section GC-25, Contaminated Soil/Materials. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials. The Contractor shall

report any hazardous material spills to the District in accordance with paragraph 3.01B above.

3.04 VEHICLE/EQUIPMENT CLEANING, MAINTENANCE, AND FUELING

A. **General**: The Contractor shall inspect vehicles and equipment arriving on site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs are made.

B. Cleaning: The Contractor shall perform vehicle or equipment cleaning with water only in a designated, bermed area that will not allow rinse water to run off site into streets, gutters, storm drains, or creeks. Soaps, solvents, degreasers, steam-cleaning equipment, or equivalent methods shall not be allowed.

C. **Maintenance and Fueling**: The Contractor shall perform maintenance and fueling of vehicles or equipment in areas that will not allow run-on of storm water or runoff of spills to storm drains and that provide for confined cleanup. Examples are working in bermed areas or utilizing drip pans. The Contractor shall not contaminate the soil or groundwater with such maintenance and fueling activities.

The Contractor shall use secondary containment, such as a drip pan, to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed, or poured, and shall clean up leaks and spills of vehicle or equipment fluids immediately and dispose of the waste and cleanup materials as hazardous waste, as described in paragraph 3.03C above.

3.05 CONCRETE, GROUT, AND MORTAR WASTE MANAGEMENT

A. **Concrete Truck/Equipment Washout**: The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains, or creeks. The Contractor shall perform washout of concrete trucks or equipment off site or in a designated area on site where the water will flow onto dirt or into a temporary pit in a dirt area. The Contractor shall let the water percolate into the soil and dispose of the hardened concrete in a trash container. If a suitable dirt area is not available, the Contractor shall collect the wash water and remove it off site.

B. **Exposed Aggregate Concrete Wash Water**: The Contractor shall avoid creating runoff by draining water from washing of exposed aggregate concrete to a dirt area. If a suitable dirt area is not available, the Contractor shall filter the wash water through straw bales or equivalent material before discharging to a storm drain. The Contractor shall collect sweepings from exposed aggregate concrete for disposal.

SECTION 12 93 00
SITE ELEMENTS

PART 1 – GENERAL

1.01 SCOPE

A. Furnish and install site elements (e.g., picnic tables and barbeques) as shown on the drawings and as specified herein:

a. Ten Picnic Tables (Section 2.01)

b. Two small barbeques (Section 2.02A)

c. Three distinct picnic areas.

1.02 GENERAL REQUIREMENTS

A. This work shall be coordinated with all associated work to ensure that all items are located properly per the plans and that work is completed in the proper sequence and accomplished efficiently.

B. Concrete footings are to be installed on barbeques and picnic tables to prevent theft.

C. The site furnishings schedule below is not inclusive of all site elements to be installed.

1.03 SHOP DRAWINGS SUBMITTALS

A. Submittals should include product data indicating the materials, construction, configuration, dimensions, and finishes of the site elements.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Products shall be transported, handled, stored, and protected with care.

PART 2 – PRODUCTS

2.01. PICNIC TABLES

A. BERG picnic table (Type h) or approved equivalent.

2.02. BARBEQUES

A. N.O.F, Inc. Standard Park Grill, 300 square inch, inground mount or approved equal.

PART 3 – EXECUTION

3.01. GENERAL

A. Assembly, construction, and installation of items shall be of high craftsmanship and in accordance with the manufacturer's recommendations. All construction shall be accurately fitted, set plumb and level, and free of any surface blemishes.

B. Verify that field measurements, substrates, and conditions are as required.

SECTION 22 14 53
RAINWATER HARVESTING SYSTEM

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. The work described in this specification is intended for the constructability and installation of a rainwater harvesting system per applicable codes and standards. This section includes specifications for the rainwater harvesting system and its components, quality assurance and inspection.

B. Rainwater Harvesting System:

a. Rainwater Pre-Filter(s)

b. Storage Tanks

c. Distribution Pump(s)

d. Controls

1.02 RELATED SECTIONS

A. SECTION 01 52 00, CONSTRUCTION FACILITIES

B. SECTION 01 74 14, CLEANING

1.03 APPLICABLE CODES AND STANDARDS

A. International Organization for Standardization (ISO):

a. ISO 9001 – Quality management systems requirements.

B. California Plumbing Code (CPC-2022)

a. Chapter 15: Alternate Water Sources for Non-Potable Applications

b. Chapter 16: Non-Potable Rainwater Catchment Systems

1.04 SITE CONDITIONS

A. Verify site conditions where the rainwater harvesting system is to be installed and ensure constructability and installation access is free and clear of obstructions.

B. Notify Owner's Rep of any open depressions and excavations made as part of the demolition/grading work for system installation and post warning signs if applicable.

C. Protect active sewer, water, gas, electric, drainage, and irrigation indicated or, when not indicated, found, or otherwise made known to the CONTRACTOR before or during installation work. If a utility is damaged, immediately notify the Twain Harte Community Services District (CSD) for corrective action.

1.05 QUALITY ASSURANCE

A. Product and Equipment Manufacturer Qualifications:

a. Minimum of 10-years of experience of this Section.
b. Successful completion of previous projects of similar scope and complexity.
c. Maintain ISO-9001 production facilities including quality management protocols for production.

B. Installer Qualifications:
a. Successful completion of (3) previous projects of similar scope of complexity.
b. Maintain trained technicians on staff providing field service and warranty related work.
c. Minimum of (3) years of experience in work in this Section.
d. This does not apply to the contractor who is installing underground piping, tank pads and setting tanks.

C. Installation and Excavation Safety: In accordance with OSHA requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Do not deliver (unless otherwise specified) system components until time needed for installation and after proper protection can be provided for materials.
B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
C. Protect from damage due to weather, excessive temperature, and construction operations.
D. Leave protective coverings in place until just prior to installation.
E. Store water storage components with forklifts (or approved equivalent) and manufacturers recommended equipment during transportation and site construction. System components shall be protected from damage during delivery.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within manufacturers limits for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.08 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty against defects in materials and workmanship.

PART 2 – PRODUCTS

2.01 MATERIALS, EQUIPMENT, AND FACILITIES

A. The CONTRACTOR shall furnish all materials, tools, equipment, devices, appurtenances, facilities, and services as required to perform the installation of the rainwater harvesting system as shown in the construction drawings and described in the specifications.

2.02 MANUFACTURERS

A. Acceptable Manufacturer(s) for Storage Tanks:

a. RainHarvest Systems LLC.

b. Bushman USA

c. Aquascape

c. American Tank Depot

d. Norwesco

B. Acceptable Manufacturer(s) for Pumps and Pump Skids:

a. RainHarvest Systems

b. Grundfos

c. Aquascape

d. Oase

e. RainFlo

C. Acceptable Manufacturer(s) for Controls and Float Switches:

a. RainHarvest Systems

b. RainFlo

c. Aquascape/Hudson

D. Acceptable Manufacturer(s) for Rainwater Filters, Storage Tank Accessories:

a. RainHarvest Systems

b. RainAid

c. RainFlo

d. GRAF

E. Substitutions: Must be equal to specified equipment as determined by Owner's Representative or Designer.

2.03 RAINWATER HARVESTING SYSTEMS

A. Rainwater Harvesting Systems:

a. The system shall collect rainwater from the roof and convey rainwater through roof drains, downspouts and conveyance piping, gravity fed pre-filters. Filtered rainwater will travel through the pre-filter and into a rainwater storage tank. Water will be drawn out of the storage tank and pumped through a submersible pumping system to provide water at the desired design point of connection on an on-demand basis.

B. Design Requirements: Filter, store, treat and distribute harvested rainwater as specified on plans.

C. Water Filtration Method: Include sediment and UV filtration.

D. Hydrostatically test pump to manufacturer's requirements prior to final installation.

E. Components:

a. Rainwater Pre-Filter: Model: RainHarvest Leaf Eater Advanced Downspout Filter

b. Rainwater Storage Tanks:

- Bushman Poly 5050 – Model: CWTX5-132 – Capacity: 5,000-Gallons

- BH Classic Corrugated – Model: BH0X9-07 – Capacity: 5,000-Gallons

- Modular Underground System – AquaBlox Large – Capacity: 1,152-Gallons

- Rainwater Inlet: 3-inches

- Rainwater Overflow: 3-Inches

- Rainwater Outlet (pumped): 1-Inches

c. Pump Systems:

- Model: Grundfos SBA 3-45-AW Submersible Pump – 1.43 HP.

- Model: Aquascape 9PL 7,000 gph – 1000W

- Model: Oase Aquamax Eco Classic 1900 Pump – 70W

- Plumbed to allow for removal without entering tank.

- Connected to power supply by power cable and waterproof connections.

d. Rainwater System Control:

- Water level measurement with automatic switchover to municipal backup water supply. Controller to activate valve based on programmed water level in the rainwater system controller.

f. Non-Potable Water Signage:

- All rainwater harvesting equipment and conveyance pipes shall denote "Non-Potable Water – Do Not Drink".

g. Storage Tank Accessories:

- Floating Filter and Hose (reference Grundfos SBA 3-45 Pump Assembly)

h. Make Up Water Valve:

- MV-1: ¾” Rain Aid or approved equal

- MV-2: 1” Hudson on-demand fill valve or approved equal

h. Accessories:

- Bulkhead Fitting: Sized to match system inlet, outlet, pump flow rate, vents and other penetrations.

- Vent Assembly: PVC rodent-proof screen/cap for tank air and vacuum relief; Extent from top of tank to above grade.

- Waterproof Electrical Connection Box: Located in manway, field installed and inspected.

- Ultraviolet treatment: Oase bio-smart 5000 pond filter w/ vitronic 18 UV Clarifier or approved equal

PART 3 – EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Prepare substrates using the methods recommended by the manufacturer for achieving best result for the substrates under given project conditions.

B. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer’s recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

C. If preparation is the responsibility of another installer, notify Owner’s Representative in writing of deviations from manufacturer’s recommended installation tolerances and conditions.

D. When applicable, backfill and compact depressions caused by excavations, demolition, and removal in accordance with the requirements outlined in SECTION 31 00 00, EARTHWORK.

3.02 INSTALLATION

A. Install in accordance with manufacturer’s instructions, per plan and in proper relationship with adjacent construction.

B. Arrange equipment so that components requiring removal or maintenance are readily available accessible without disturbing other components. Arrange for clear passage between components.

D. Do not bury components deeper than manufacturer’s recommended depth or in a manner that would exceed engineering loads.

E. Ground components in accordance with component manufacturer's instructions.

F. Install pre-filters at the time storage tanks are installed.

3.03 FIELD QUALITY CONTROL

A. Field Inspection: Coordinate field inspection with Owner's Representative within one (1) year of construction.

B. System Testing shall be provided by contractor:

a. Installation oversight and technical support.

b. Terminate and test control system wiring and operation of electrical components.

c. Demonstrate proper pump and controls operation.

d. Make adjustments to meet user-defined system performance.

e. Review operation and maintenance procedures with Twain Harte CSD.

3.04 DISPOSAL OF REMOVED MATERIALS AND DEBRIS

A. Clean and protect products in accordance with manufacturer's recommendations.

B. Touch-Up, repair or replace products before substantial completion.

C. Dispose of scrap materials, waste, trash, and debris from the installation of the rainwater harvesting system in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by the Twain Harte CSD.

D. Burying of trash and debris on site will not be permitted. Similarly, burning of trash and debris at the site will not be permitted.

E. Scrap materials, trash, and debris shall become the property of the CONTRACTOR and shall be removed from the site and be disposed of in a legal manner. Location of the disposal site and length of haul shall be the CONTRACTOR's responsibility.

END OF SECTION 32 84 00

SECTION 26 00 00
ELECTRICAL SPECIFICATIONS

PART 1 – GENERAL

1.01. SUMMARY

A. Delegated Design – Work under this section consists of all engineering, installation labor, materials, equipment, permits, fees, and transportation necessary for and/or reasonably incidental to, the construction, completion, commissioning, and certification of an electrical system for the project in working order.

B. Delegated design, contractor is the Engineer of Record and is responsible for design, furnishing, and install complete and fully functioning electrical systems including all equipment and systems specified herein. Work specific to electrical design includes the following:

C. Complete systems design, engineering, and coordination of work with Architect and work of other trades.

D. Plan Check approval.

E. Coordination and installation of utility service equipment.

F. Service and distribution equipment.

G. Feeders to switchboards, distribution panels, connections to HVAC equipment, Owner provided equipment.

H. Branch circuit wiring from the distribution panels for lighting, receptacles, motors, signal systems and other detailed circuit wiring.

I. Luminaires, lighting controls, receptacles, relays, [seismic and] supports for installed components and other accessory items.

J. Wiring and power connections for motors installed for heating, cooling, and ventilation.

K. Furnish and install all required in-place equipment, cables, conduits, [j-hooks,] fasteners, boxes, and miscellaneous materials for the satisfactory interconnection and operation of all associated electrical systems.

1.02. CODES AND STANDARDS

A. Where locally adopted codes are silent on an issue, NFPA standards shall apply.

B. Materials and equipment shall be listed and labeled by Underwriters Laboratories or as required by authorities having jurisdiction.

C. Industry standards and manufacturers' recommendations, diagrams, or requirements shall be strictly adhered to for installation of materials and equipment.

D. This project shall strictly comply with the following locally approved codes including their adopted amendments that shall be used for this project.

E. Codes
1. California Building Code: CBC
2. California Electrical Code: CEC
3. California Energy Code: CENC
4. California Fire Code: CFC
5. California State Fire Marshal Requirements: CSFM
6. California Administrative Code: Title 24
7. National Electrical Code: IFC
8. Americans with Disabilities Act: ADA

F. Standards
1. American National Standards Institute: ANSI
2. American Society for Testing and Materials: ASTM
3. Certified Ballast Manufacturer: CBM
4. Electrical Testing Laboratories: ETL
5. Electronics Industries Association: EIA
6. Federal Aviation Administration: FAA
7. Illuminating Engineering Society of North America: IESNA
8. International Electrical Testing Association: IETA
9. Occupational Safety and Health Administration: OSHA
10. National Electrical Manufacturers Association: NEMA
11. National Fire Protection Association: NFPA
12. Underwriters Laboratories: UL

G. Branch Circuits
1. All lighting branch circuits shall be separate from power and receptacle branch circuits.
2. All branch circuits serving computer loads shall have a dedicated neutral conductor.

H. Basic Materials and Methods
1. All boxes, brackets, bolts, clamps, etc., shall be galvanized, electro- galvanized, metalized, or sherardized.
2. Cast aluminum, stainless steel, and non-metallic materials may be used in specific locations where appropriate for the location.

PART 2 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS

2.01. REQUIREMENTS

I. Minimum size wire for lighting and power feeders and branch circuits (20 Ampere) shall be No. 12 AWG copper.

1. Minimum size wire for control circuits shall be No. 14 AWG copper. All wire shall be stranded.

J. Conductor Types
   1. All conductors for feeders rated at 100A and larger (No. 2 AWG CU and No. 1AWG AL) shall be Type XHHW copper or aluminum alloy (Southwire Stabiloy or equivalent), 600V, insulated with virgin cross-linked polyethylene insulation.
   2. All conductors for feeders rated less than 100A (No. 2 AWG CU) shall be type THHN/THWN, copper, 600V, insulated with virgin PVC compound and shall have an overall extruded nylon jacket.
   3. Conductors shall be insulated with virgin PVC compound and shall have an overall extruded nylon jacket.
   4. Nylon "skim" or "dip" coating IS not acceptable.

K. A green ground wire, sized according to the NEC Table 250-122, shall be installed in each conduit, and kept isolated from the white or gray neutral wire.

L. All wire and/or cable shall be delivered to the job site in full factory lengths of 500'-0" minimum. Longer reels may be used where conditions dictate.

M. Factory “shorts”, scrap or warehouse and prior job “clean-outs” (leftovers) will not be acceptable.

N. Feeder phase identification from left to right or front to back facing front of equipment shall be one of the following:

X	Y	Z	N
Black	Red	Blue	White (120/208 Volt Feeders)
Yellow	Brown	Orange	Gray (277/480 Volt Feeders)

O. Wire Connections and Devices:
   1. Taps and splices in all feeder and branch circuit conductors larger than No. 8 shall be made with approved solderless, pressure type bolted connectors.
   2. Splices in conductors No. 8 and smaller may be made with preinsulated Scotchlock or Ideal wing-nut spring tension connectors.
   3. Junctions made in exterior circuits shall utilize a setscrew junction connector with three attachment points and a removable gel-filled cap and clamp Raychem Gelcap SL.

4. MC Cable shall be allowed for use as final connection to motors and luminaire power whips. Additionally, MC Cable may be used on branch circuits only with approval of the Office of Design and Construction. Conduit shall be provided from the branch panel to a local junction box. From the local junction box to the final device, MC Cable is allowed.

PART 3 – GROUNDING & BONDING

3.01. REQUIREMENTS

A. Flexible connections to motors shall be jumpered with a No. 14 green equipment grounding conductor, or per National Electrical Code Table 250- 122.

B. Install a green bonding jumper between the outlet box and the receptacle grounding terminal on all flush mounted receptacles.

C. An insulated ground wire shall be installed in all feeders, branch circuit and lighting circuit raceways. Ground wire shall be sized in accordance with N.E.C. Article 250.

D. Grounding bushings shall be utilized on each conduit which is not bonded to a grounded enclosure by means of properly installed conduit nuts, one on each side of the enclosure panel and properly tightened such as to cut through the panel paint and make bare metal to metal contact.

E. Ground all step-down transformers in accordance with N.E.C. Article 250-30 for Grounding Separately Derived Alternating Current Systems.
   1. The bonding jumper shall be directly connected to a grounding electrode.
   2. The transformer case shall be bonded to the grounding electrode conductor but shall not be used as the grounding electrode.
   3. Grounding electrode conductor shall be protected within rigid metallic conduit.

F. Install grounding bonding jumper across all building expansion joints, conduit, busway, and cable tray expansion fittings.

G. Install a building grounding electrode system in accordance with N.E.C. Article 250 and as required by the local inspecting authority.
   1. The building framework, metal siding, underground metal water piping, natural gas piping, concrete encased electrode and other made electrodes shall be sufficiently bonded together to form the grounding electrode system.
   2. Connections to the metal underground water piping system shall be made on the line side of the water meter.
   3. Natural gas piping shall not be utilized as a grounding conductor.
   4. It shall be the Contractor's responsibility to provide a grounding system acceptable to the local inspecting authority.

H. Buildings with steel framework shall have a ground loop (counterpoise) installed around the perimeter of the building and connected to the steel.

I. Columns at every corner and intermediate points 60 feet on center. Use #4/0 tinned copper buried at least 18” below finished grade. Provide ground rod connected to loop at each corner and 60 feet on center. Connect all lightning downleads to loop. Ground rods shall be ¾” X 10’ copper clad steel.

J. Provide at least one ground test for each service at the ground road closest to the service entrance. Use bolted and clamped type connections between conductor and ground rod.

K. The Contractor shall demonstrate by testing that the electrical service grounding system to earth resistance value is 10 Ohms or less, utilizing a “clamp-on” or 3-point fall of potential tester.

PART 4 – RACEWAY AND BOXES

4.01. REQUIREMENTS

A. Minimum conduit size shall be 3/4 inch for power and lighting circuits.

B. Provide three (3) spare 1-inch conduits up to 24” above finished ceiling and one down.

C. All rigid conduit and electrical metallic tubing shall be hot-dipped galvanized, sherardized, metalized, or electro-galvanized. Use of aluminum conduit is not permitted.

D. Conduit in stud partitions, concealed above ceiling, or above the bottom chord of bar joists may be electrical metallic tubing.

E. Conduit for circuits 100V to ground or greater in mechanical equipment rooms, electrical equipment rooms, chases, and areas subject to physical abuse shall be exposed rigid galvanized steel or intermediate grade conduit below six feet from floor.

F. Conduit for circuits below 100V to ground in mechanical equipment rooms, chases, and areas subject to physical abuse shall be electrical metallic tubing.

G. Conduit on exterior block walls, or exposed exterior shall be full weight rigid galvanized steel.

H. Buried Conduit:
   1. Exterior conduit below grade shall be minimum 1".
   2. Conduit buried in concrete pours shall be Schedule 40 PVC, Schedule 80 PVC, or electrical non-metallic tubing.
   3. Conduit buried beneath building slabs shall be Carlon Schedule 40 or Schedule 80 PVC.
   4. Exterior conduit below grade shall be Carlon Schedule 40 or Schedule 80 PVC.

I. Feeder conduits for 5 kV and 15 kV systems installed below grade shall be encased in red concrete for their entire length.

J. Flexible galvanized steel conduit shall be used for "make-up" connections to rotating machinery equipment or flush lighting fixtures. Flexible conduit in damp or wet locations shall be liquid tight. Flexible conduit at exhaust fans shall allow hinged access into the exhaust fan.

K. Conduits installed surface mounted shall utilize one-hole or two-hole type straps.

L. Pull and Junction Boxes:
   1. All pull boxes shall be galvanized sheet steel, minimum No. 14 gauge.
   2. Pull boxes shall not be installed in inaccessible locations.

PART 5 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

5.01 REQUIREMENTS

A. Nameplates should be provided on all major equipment, including the following:
   1. Primary Switches
   2. Circuit Breakers & Switches in Distribution Panels
   3. Disconnect Switches
   4. Panels
   5. Motor Starters
   6. Motor Controls
   7. Transformers
   8. Contactors

B. Nameplates shall be plastic laminate, white face with black engraved letters, numbers, etc. for normal power; red face with white letters, numbers, etc. for emergency power, attached with stainless steel screws.

C. Warning/Sense tape with metal backing shall be installed 12” above exterior below grade feeders.

D. Provide ‘arc flash warning’ and ‘PPE ratings’ (as defined by NFPA 70E) signage on all switchgear, switchboards, motor control centers, distribution panels, panelboards and similar equipment as defined in section 26 05 74 Arc Flash Program.

PART 6 – PANELBOARDS

6.01 REQUIREMENTS

A. The panelboards shall be not more than 92” high and shall be fully rated for the short circuit current available at the terminals. Series-rated equipment is not acceptable.

B. Distribution panelboards may be circuit breaker or fusible switch type.

C. Neutral bus shall be fully rated and isolated from the ground, except as service rated equipment.

D. Bus bars shall be extended to the maximum standard height in each section.

E. Sections of distribution panels shall be bussed with full capacity, three-phase, four- wire copper.

F. Equipment supplied with vertical bus sized to accommodate only the branch feeders supplied will be rejected.

G. All panelboard circuit breakers shall be bolt-on type.

H. Panelboards shall be designed with 20% spare capacity (physical and electrical capacity).

I. Panelboards shall be dead front type and equipped with thermal magnetic molded case circuit breaker units, as indicated.

J. Cabinets shall be galvanized, code gauge, sheet steel and shall be minimum of 17" wide and 5-3/4" deep.

K. Provide adequate wiring and gutter space and a means for circuit identification.

L. Provide a glazed, typewritten circuit directory.

M. Breakers shall be common trip, bolt on type, rated a minimum of 10,000 amperes for 208v and 22,000 amperes for 480v interrupting capacity. Breakers shall be rated for the load connected.

N. Provide flush doors with lock and keys. Provide two (2) keys for each panel.

PART 7 – MOTOR CONTROLS

7.01 REQUIREMENTS

A. Motors 1/3 HP and smaller shall be 120V or 208V, single-phase.

B. Motors that are an integral part of packaged equipment may vary from the above to meet manufacturing standards.

C. Motor Starters:
   1. All motor starters and associated controls shall be provided with engraved laminated plastic nameplates.
   2. All single speed starters for motors smaller than 1/2 horsepower shall be manual starters complete with overload and pilot light.
   3. Furnish a 16-gauge sheet metal enclosure with hinged cover of sufficient size to house the spare fuses and pullers.

D. Mount the enclosure near the load where practical.

E. Where motors are grouped reasonably close together, motor control centers should be used.

F. The minimum size combination starter shall be NEMA No. 1.

PART 8 – WIRING DEVICES

8.01 REQUIREMENTS

A. Switches:
   1. Wall switches shall be 20A, industrial heavy duty Specification grade, nylon toggle, brass binding screws and shall be:
      a. Cooper 2221 Series
      b. Hubbell HBL1221 Series
      c. Leviton 1221 Series
      d. Pass & Seymour PS20AC1 Series

B. Receptacles:
   1. Duplex receptacles shall be industrial heavy duty specification grade 20A, side and back wired, solid brass mounting strap, fiberglass reinforced housing.
      a. Cooper 5362 Series
      b. Hubbell HBL5362 Series
      c. Leviton 5362 Series
      d. Pass & Seymour 5362 Series
   2. Duplex receptacles connected to emergency power shall be red.
   3. GFCI type duplex receptacles shall be feed-thru type.

C. Cover plates:
   1. Switch and receptacle plates shall be Type 302 stainless steel, Hubbell 97000 Series or approved equal by Cooper, Leviton or Pass and Seymour.

D. Installation:
   1. Feed through wiring devices shall be pig-tailed.
   2. Wiring devices shall not be split wired.
   3. Circuit numbers shall be indicated on the inside face of the coverplate.

PART 9 - FUSES

9.02 REQUIREMENTS

A. Low voltage fuses shall be manufactured by Bussmann, Ferraz Shawmut or Littelfuse.

B. All fuses 0 to 600 amps shall be Type R rejection series.

C. All fuses shall be of the current limiting type as follows:
   1. 0 to 90 amps dual element, time delay Class RK-5; Bussmann FRN- FRS, Ferraz Shawmut TR-R TRS-R or Littelfuse FLN-R/FLS-R.
   2. 100 to 600 amps dual element, time delay, Class RK-1; Bussmann LPN- LPS, Ferraz Shawmut A2D-R A6D-R or Littelfuse LLN-RK/LLS- RK.
   3. Above 600 amps time delay, Class L; Bussmann KRP-C, Ferraz Shawmut A4BQ, 601 to 2000 amps, and A4BY above 2000 amps or Littelfuse KLP-C.
   4. Motors shall be protected by dual element, time delay fuses.
   5. Where circuit breaker panels are protected by fuses, they shall be fast acting, current limiting type.

PART 10 - DISCONNECTS

10.01 REQUIREMENTS

A. Motors located remote from the combination starters shall have a lockable disconnect in the power feeders, not a lockout stop in the control circuit.

B. Disconnects for exterior equipment and similar applications shall be rain tight, NEMA 3R.

C. All disconnect switches shall have interlock defeaters for maintenance purposes.

D. Fusible switches shall have rejection type fuse clips.

E. Disconnect switches shall be heavy duty type as manufactured by Square D, General Electric, Siemens, or Cutler-Hammer.

PART 11 – TRANSIENT VOLTAGE SUPRESSION

11.01 REQUIREMENTS

A. Surge protection devices shall be provided on each main distribution, and sub- distribution switchboard or panelboard. Surge protection devices shall be provided on branch panels that serve sensitive electronic loads (i.e., computers).

B. TVSS units shall comply with UL 1449, 2nd edition.

C. TVSS units shall be modular in design and replaceable without interrupting power to the switchboard or panelboard. Provide with non-fused switch or circuit breaker disconnect.

D. The protection levels shall be:
   1. 200 kA (L-N, L-G, L-L, N-G) MDP
   2. 100 kA (L-N, L-G, L-L, N-G) SDP
   3. 60 kA (L-N, L-G, L-L, N-G) Branch Panel

PART 12 – LIGHTING

12.02 REQUIREMENTS

A. The wiring system for interior lighting shall utilize conduit and wire. Modular type systems shall not be permitted, except in Master/Satellite systems where a ballast in the Master Luminaire also controls lamps in the Satellite luminaire.

B. Illumination levels shall be as described in the latest edition of the IESNA Lighting Handbook.

END OF SECTION 26 00 00

SECTION 26 56 00
STREET LIGHTING

PART 1 – GENERAL

1.01 EQUIPMENT

A. Street lighting fixtures as indicated on the Plans shall be furnished by the Contractor. The Contractor is responsible for coordinating with the manufacturers of specified fixtures and provide submittals for approval and to ensure that subsequent orders and delivery dates will not conflict with the job schedule. The Contractor shall apply the following procedure when ordering light fixtures:

   a. The Contractor shall maintain complete and accurate documentation of communication with suppliers.

   b. The Contractor shall request fixture submittals for the approval of the Owner within five days of notification of the award of contract and shall verify that the submittals have been received by the Owner. Allow for a review time of 15 business days.

   c. The confirmed order of purchase of the fixtures shall be placed early enough to allow for timely delivery of the fixtures. If there is to be a delay in the delivery, the Contractor shall make every reasonable attempt to inform the Owner of the delay at the soonest possible time. At a minimum, the Contractor is to secure a confirmed delivery date from the manufacturer at the time of ordering and follow up on this delivery data periodically until the order is received by the Contractor.

   d. If there is to be a delay in delivery, the Contractor is to make available to the Owner all of the written records pertaining to the order.

1.02 QUALITY ASSURANCE

A. Lighting fixtures shall be manufactured by a recognized manufacturer and bear the approval label of a test laboratory recognized by the code enforcing agency. Additionally, this label shall conform to the specific location of installation such as “damp” or “wet.”

B. All fixtures shown on the Plans are to be furnished with all necessary mounting devices and accessories. In all cases, the Contractor is responsible for installing the fixtures with proper and appropriate structural support.

C. Lamps shall be provided for all fixtures. Where specific lamps are indicated on the Plans, these lamps (or approved equal) shall be provided by the Contractor. Where general specifications of lamps are indicated on the Plans, they shall be Sylvania, General Electric, Phillips, or approved equal prior to purchase.

D. The Contractor shall exercise care when handling and installing fixtures to protect finishes, lenses, and other visible components. The Owner and Owner’s Representative reserve the right to reject any damaged or flawed materials and products.

PART 2 – PRODUCTS

2.01. MATERIALS REQUIREMENTS

A. The solar light assembly shall be modular in construction enabling plug and play installation. Each component of the assembly shall be replaceable without affecting the function of other components.

B. Individual components shall utilize plug-in quick connectors with male and female parts labelled for matchup.

C. The solar light assembly shall be capable of automatic updates, remote monitoring, and diagnostics for each unit individually through 4G/LTE connectivity.

D. The assembly shall allow for logging of weather trends to factor upcoming weather forecast to predict needed power consumption and adjust luminaire operation to prevent downtime.

E. The solar light assembly shall meet the structural requirements specified in AASHTO: Standard Specifications for Structural Supports for Highways, Signs, Luminaires and Traffic Signals, 6th Edition and be designed for a basic wind speed of 90 mph. Structural design including foundation design for the solar light pole shall be prepared by or under the direction of and signed by a structural engineer, registered in the state of California.

F. The solar light assembly shall include a lockable hand hole that is sized to provide easy access to the battery, controller, driver and/or other components necessary for the operation of the solar powered lights. The insides of the poles shall contain provisions for securely mounting or placing system components inside the pole without being suspended within the pole.

2.02. POST TOP ACORN LUMINAIRE

A. The post top luminaire shall be a glass “Acorn” style luminaire with an aesthetic appearance as shown on the plans. The LEDs shall have a life expectancy of 100,000 hours with not less than 70% of original brightness rated at 25 degrees C. The LED’s and printed circuit boards shall be 100% recyclable and shall be protected from moisture and corrosion by a conformal coating of 1 to 3 mils.

Style:	Acorn, glass.
Height:	Nominal 33 inches.
Width:	Nominal 14 inches.
Diameter:	< 16 inches.
EPA:	< 1.5 (ft^2).
Material:	356 alloy cast aluminum fitters.
LED Panel:	LED grade high efficiency prismatic glass.
Wattage:	Maximum consumption 40W.
Lumen Output:	4400 lumens (nominal).
Efficacy:	Minimum 100 lumens per watt.

Distribution:	Type 5.
Mounting:	Post top mountable on 3” diameter x 3” high tenon.
Forward Voltage:	52 VDC, +/- 10%.
Color:	Black textured.
Warranty:	7-year limited warranty.

2.03. SOLAR PANEL

A. The pole shall include a removable and field replaceable cylindrical solar module panel with 360-degree power generation coverage, capable of meeting the entire power requirements for the post top luminaires. The cylindrical solar panel shall not project more than 1/2 inch beyond the face of the structural pole when installed at any point along its circumference.

The solar panel shall meet the following requirements:

Type:	Monocrystalline silicon cells.
Material:	Scratch-resistant, self-cleaning smoothness, non-yellowing borosilicate glass.
Diameter:	Outer diameter of cylindrical solar module not to exceed 0.5 inch plus pole shaft outer diameter.
Height:	Not to exceed 6-feet per module.
Elevation:	Lowest point of the solar panel, minimum 7.5 feet above ground.
Efficiency Rating:	20% efficient, minimum.
Life Expectancy:	25-year nominal, minimum.
Mounting position:	Vertical.
Ambient Oper Temp:	-4 degrees F to 140 degrees F.

2.04. BATTERY

A. The battery for the solar powered luminaire shall be sized to be located within the pole with access through the lockable handhole cover. The battery shall be of a Lithium Ion configuration.

The battery shall meet the following requirements:

Storage Capacity:	850Wh minimum.
Turnaround Charge:	Minimum 95% efficiency.
Cycle life:	Minimum 80% retention after 2,000 cycles at 91 degrees F.
Battery Cell:	Balancing and monitoring capable for system optimization.
Operating Temp:	-4 degrees F to 140 degrees F.
Life Expectancy:	Minimum 8 years.
Warranty:	5 years, no pro-rating.

2.05. CONTROLLER

A. The controller for the solar system shall be sized to be located within the pole with access through the lockable handhole cover. The controller shall allow for system to factor past weather data for future weather forecasts to predict power consumption requirements algorithmically and adjust luminaire operation.

The controller shall meet the following requirements:

Connectivity:	4G/LTE or later allowing automatic updates, remote monitoring and diagnostics.
Comm Protocol:	GSM LTE-M TLS 1.2 or later.
System Monitoring:	Sensors for ambient temperature, power input, LED output with remote monitoring and diagnostics.
Charge control:	Minimum (2) maximum power point trackers (mppt).
GPS Capabilities:	GPS transponder allowing Lat/Lon positioning and live dusk to dawn calcs.
Reporting Capabilities:	Real-time reporting of battery charge status, battery voltage, system temp and luminaire status.
Programming Capable:	Local programming via USB port or over the air updates.
Operating Temp:	-4 degrees F to 140 degrees F
Life Expectancy:	Minimum, 8 years.
Warranty:	5 years, no pro-rating.
Remote Monitoring:	5 years included with purchase.

The batteries and controller in the solar light system shall be pre-wired by the manufacturer. The controller shall be in an “off” position during transport and storage.

2.06. SOLAR LIGHT POLE

A. The light poles shall be a Hapco solar light poles or approved equal. In general, the finish on light pole assemblies shall match that of the fixture. The Owner and Owner’s Representative reserve the right to reject unmatched material. Poles shall be handled carefully at the job site and any scratches shall be repaired. Any damaged poles are to be replaced if rejected. Poles will be direct-bury behind the sidewalk.

B. The solar light pole shall meet the following requirements: The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft assembly shall be full-length heat treated after base weld to produce a T6 temper.

Material:	6063 Aluminum Alloy.
Diameter:	8 inches (nominal).
Type:	Round, tapered aluminum.
Luminaire Mount:	Post top, 3-inch diameter x 3-inch high tenon.
Height:	Nominal 12’ to pole top, not including direct bury length.

Color	Black powder coat finish.
Foundation Type:	Direct bury or anchor bolt.
Warranty:	Lifetime warranty against corrosion. LIGHT POLE ASSEMBLIES

PART 3 – EXECUTION

3.01. LIGHTING POLE BASES

A. Where light pole assemblies include components set perpendicular to the pole, these members are to be set plumb with respect to right angles. Light fixture poles shall be set within one (1) degree of plumb.

B. The Contractor shall ensure final operation of lights.

SECTION 31 20 00
EARTHWORK

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Excavating and fill for rough grading at the site.

B. Trenching and backfilling for utilities and rainwater conveyance.

C. Stockpiling of soil for later use.

1.02 RELATED SECTIONS

A. SECTION 01 52 05, CONSTRUCTION STAGING AREAS

B. SECTION 01 74 14, CLEANING

1.03 CODES AND STANDARDS

A. State of California, Department of Transportation (CalTrans), Chapter 19, 2018

B. ASTM D 2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

C. Code of Federal Regulations Title 29 CFR Part 1926, Subpart P, Excavations.

D. Occupational Safety and Health Administration (OSHA) Document 2226.

E. ASTM 21556: Density and Unit Weight of Soil in Place by Sand-Cone Method.

F. ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 lbf/ft^3)

G. ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

H. ASTM D 2937: Density of Soil-In-Place by the Drive-Cylinder Method.

I. ASTM D 422: Standard Test Method for Particle-Size Analysis of Soils

J. ASTM D 2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate

K. Title 29 CFR Part 1926: Safety and Health Regulations for Construction.

1.04 TEST AND INSPECTIONS

A. **Fill Material**: Determine suitability of fill material not previously evaluated.

B. **Maximum Density Tests**: Determine optimum moisture content and maximum dry density of fill materials placed and compacted in accordance with ASTM D1557, Procedure A.

C. **Field Density Tests**: Determine in-place density of fill materials placed and compacted in accordance with ASTM D 1556, ASTM D 2922, or ASTM D 2937. One test should be conducted for every 10,000 square feet per lift.

1.05 DEFINITIONS

A. **Backfill** is soil material used to refill the spaces from excavation.

B. **Borrow Material** refers to material obtained from sources off the site.

C. **Dewatering** consists of discharging accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities.

D. **Embankment** is soil material being placed upon the surface of existing ground where the resulting construction will be higher than the adjacent ground surface.

E. **Excavation** is the removal of material above subgrade elevations indicated on the plans.

F. **Existing Boulders** are boulders salvaged from site areas as noted on Plans and as directed by Owner's Representative.

G. **Fill** is soil material used to raise the existing grade.

H. **Final Backfill** is the material above the select backfill zone to three (3) inches below finish grade.

I. **Initial Backfill** is material surrounding and covering pipe extending from the pipe bedding to six inches above the top of the pipe.

J. **Palliation** involves intermittently watering and sprinkling water with such frequency as will satisfactorily alleviate dust.

K. **Pipe bedding** is material placed under and around pipes to provide equal support along the length of pipe installed underground in a trench.

L. **Recycled Fill** refers to asphalt concrete paving debris from demolition work.

M. **Select Backfill** is material above the initial backfill zone and below the finish backfill zone.

N. **Site Boulders** are New, imported, boulders.

O. **Subgrade** refers to the surface of an excavation or the top surface of a fill or backfill immediately below subbase or topsoil materials.

P. **Structures** refers to retaining walls, slabs on-grade, rain tanks, curbs, electrical or mechanical appurtenances, or any other man-made stationary feature constructed above or below the ground surface.

Q. **Topsoil** is all the soil above the lower root line of fine vegetation.

1.06 EXISTING UTILITIES

A. The Contractor shall locate and mark all substructures and utilities prior to beginning excavation.

B. The Contractor shall dig test pits to confirm the location of underground facilities. These test pits shall include dewatering, backfilling, and surface restoration when necessary. If test pits are excavated in paved areas, surface restoration will consist of temporary pavement until final trenching and pavement restoration is completed.

C. When utility line excavation occurs near existing utilities, whether or not indicated on the Plans, ensure existing utility services remain fully operational. Protect and support utility lines in a manner to prevent damage. Method of protection is subject to Owner's Representative's approval.

D. Expeditiously repair damaged utilities at no cost to the Owner.

1.07 DUST CONTROL

A. Effectively dust-palliate working area, unpaved areas, and involved portions of the site throughout the entire construction period.

B. Chemical treatment of any type is not permitted. Use of reclaimed water shall conform to the requirements and guidelines of governing health authorities and be specified approved by Owner's Representative.

1.08 TRAFFIC

A. The Contractor shall minimize the amount of interference with adjacent roads, streets, walkways, and other occupied facilities during earth-moving operations.

B. The Contractor shall not block the entrance or exit of the neighboring fire station.

C. The Contractor not close or obstruct street, walkways, park, golf course or other neighboring occupied or used facilities without permission from the Twain Harte Community Services District (CSD).

1.09 DISPOSAL OF MATERIALS

A. The Contractor shall dispose of materials unsuitable for reuse in the Work offsite. Suitable materials may be reused in the Work for embankment, fill, or backfill.

B. Unless otherwise specified by Owner's Representative, material obtained from the project excavations may be presumed to be suitable for use as fill or backfill provided that all organic material, rubbish, debris, and other objectionable material is first removed.

1.10 DEWATERING

A. The Contractor shall prevent surface water and groundwater from entering excavations and from ponding on subgrades.

B. The Contractor shall reroute surface water away from excavated area and not use excavated trenches as temporary drainage ditches.

C. The Contractor shall discharge of water within the project limits. If water cannot be discharged within the project limits due to site constraints, dispose of uncontaminated water in an area approved by the Twain Harte CSD.

D. The Contractor shall ensure that any dewatering discharge does not cause erosion, scour, or sedimentary deposits that could impact natural bedding materials.

E. The Contractor shall conduct all dewatering operations in accordance with the CalTrans *Field Guide to Construction Site Dewatering.*

1.11 ALLOWABLE TOLERANCES:

A. All cut and fill shall be within a tolerance of $\pm$0.10 feet for grades indicated on the Plans.

B. All structures (including hardscape) shall be within $\pm$0.02 feet of the grades indicated on the Plans.

1.12 SUPPORTED EXCAVATION

A. The Contractor shall provide ladders, steps, ramps, or other safe means of egress for workers in trench excavations 4 feet or deeper per Occupational Safety and Health Administration (OSHA) standards.

1.13 CONTAMINATED MATERIALS

A. The Owner is not aware of any contaminated material within the project limits. If such material is encountered, the Contractor shall contact the Engineer immediately for directions.

1.14 EXPLOSIVES

A. The use of explosives is not permitted at the site.

PART 2 – PRODUCTS

2.01. BACKFILL

A. Backfill material shall be compacted to achieve a minimum relative compaction of 90%.

B. Material from excavations that is to be used for backfilling should be free of trash, debris, and stones greater than 6 inches.

C. Material excavated in excess of that required for backfilling will be disposed of away from the site, unless otherwise permitted by the Twain Harte CSD.

D. If backfill is to be placed around a structure, the material is to be spread equally around all sides.

2.02. BORROW SOIL

A. Borrow material shall be non-expansive, predominantly granular material that is free of particles less than 2 inches in any dimensions, free of organic and inorganic debris, and not more than 12 percent by weight passing the No. 200 sieve behind retaining walls and 25 percent elsewhere.

B. Borrow material must be free of man-made refuse such as concrete, asphalt concrete, residue from grinding operations, metal, rubber, debris, and rubble.

2.03. RECYCLED FILL

A. In lieu of disposal off-site, some asphalt concrete paving debris, resulting from the work of this Project only, may be crushed for limited use as recycled fill. Imported asphalt concrete debris may not be broken, crushed, or otherwise processed on-site.

B. Recycled fill shall conform to SSPWC Section 200-2.4 unless otherwise indicated by the Owner's Representative.

C. Recycled fill shall comprise no more than 10 percent (by volume, compacted) of the total fill.

D. Recycled fill is limited to not less than two feet below the bottom of concrete pads and foundations. Recycled fill is not to be used in the top one foot of landscaped areas.

E. Imported recycled fill is not acceptable.

2.04. RAIN GARDEN / BIO-SWALE SOIL MIX

A. Rain garden / bio-swale soil mix material must be suitable for the purpose intended and be free of unsuitable material and contaminants.

B. Soil Mix shall, at a minimum, be composed of 50%-60% Sand, 20%-30% of Top Soil and 20%-30% Compost.

C. Soil Mix material must be free of trash, site debris and other materials not meeting the composition mix above.

2.05. SITE BOULDERS AND COBBLES

A. Existing Site Boulders on the Twain Harte Meadows site as identified by the field survey to be relocated as per plans. Existing boulders can be observed on-site. Sizes range approximately from 1.5 by 2 feet to 3 by 3 feet.

B. The Contractor is responsible for sourcing the boulders required to supplement what is available on-site (Site Boulders) per the boulder schedule shown on the Plans. The Site Boulders shall be select, high-quality stone. Broken boulders, boulders with sharp edges, friable boulders or scarred boulders will not be accepted. All New Boulders shall be selected by and approved by the Owner's Representative. The Contractor has the option to source boulders that are like those used at the bocce ball court, which is adjacent to the proposed Twain Harte Meadows site (see company contact information below).

a. <u>Company Information:</u>
Timberline Environmental Services, Inc.
Office address: 22709 Twain Harte Dr., Twain Harte, CA 95383
Shop address: 29925 Highway 108, Cold Springs, CA 95335
Phone: (209) 586-1541 Office
Cell: (209) 481-5790 Terry Northcutt
Terry Northcutt, CEO, President
Email: terry@timberlineenv.us
Contract Administrator: dee@timberlineenv.us Dee Helzer
Accounts payable: office@timberlineenv.us
Small Business HUBZone
CAGE No. 1QUU2
Registered in SAM.gov, M7PKP57L2JM3
Website: Timberlineenvironmental.com

C. Color shall be variable, from light brown to tan and grey, as determined by the Owner's Representative from the quarry inventory.

D. In addition, the Contractor is responsible for sourcing the gravel/cobble mix (rock mulch) for the bioswales and rain gardens. Gravel and cobble placement will be field directed by the Owner's Representative. The gravel and cobble mix for rain gardens and bioswales shall be as follows:

- 2 parts ¾" to 1" wash gravel,
- 6 parts 1" to 3" wash gravel,
- 2 parts 4" to 6" wash gravel,

- 1 part 6” to 10” cobble, and
- 1 part pea gravel.

E. The Contractor is responsible for procuring and transporting all stone to the site and completing the work as specified. Contractor will have an excavator with a thumb attachment to minimize damage to boulder material and grading of park stormwater basin.

2.06. PIPE BEDDING

A. Unless otherwise indicated on the Plans, pipe bedding shall be comprised of clean sand and native free-draining granular materials, free from all vegetation and debris.

B. Bedding shall meet gradation requirements when tested in accordance with ASTM D 422 and have a minimum sand equivalent of 30 as determined by ASTM D 2419.

Sieve Size	% Passing Sieve by Weight
½ inch	100
No. 4	70 - 100
No. 16	50 - 90
No. 50	10 - 50
No. 200	0 - 10

PART 3 – EXECUTION

3.01. PROTECTION

A. The Contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other potential hazards created by earth-moving operations.

B. Do not allow earth-moving equipment within the branch spread perimeter (drip line) of existing trees that are to remain.

C. When excavation adjacent to existing trees to remain is necessary, exercise all possible care to avoid injury to trees and tree roots. Excavate by hand all areas where there are roots two inches or larger. Tunnel under and heavily wrap with burlap roots two inches or larger in diameter, except when directly in the path of the pipe or conduit, to prevent scarring and excessive drying. When a trenching machine runs close to trees that have roots smaller than two inches in diameter, hand trim the wall of the trench adjacent to the tree, making clean cuts through the roots. Paint roots one inch and larger in diameter with two coats of Tree Seal or approved equal. Close trenches adjacent to trees within 24 hours. When this is not possible, shade the side of the tree adjacent to the tree with burlap or canvas.

D. Barricade all open trenches during work hours and cover at the close of each day’s work.

E. Provide adequate barriers marked with white flags, throughout the duration of the installation to project site improvements, existing features, and stockpiles of materials.

F. Sequence, schedule, coordinate, and perform the Work to maintain safe, unobstructed passage as required for emergency egress and general site access. Provide any and all bridging of trenches of work, barricades, etc., that may be required to comply with applicable safety regulations.

3.02. DEWATERING

A. The Contractor shall reroute surface water away from excavated area and not use excavated trenches as temporary drainage ditches.

B. The Contractor shall discharge of water within the project limits. If water cannot be discharged within the project limits due to site constraints, dispose of uncontaminated water in an area approved by the Twain Harte CSD.

C. The Contractor shall ensure that any dewatering discharge does not cause erosion, scour, or sedimentary deposits that could impact natural bedding materials.

D. The Contractor shall conduct all dewatering operations in accordance with the CalTrans *Field Guide to Construction Site Dewatering.*

3.03. ROUGH GRADING

A. Site rough grading will generate a graded soil surface to the appropriate tolerances. In addition, drainage terraces, swales, and other drainage structures necessary for the protection of existing structures at the site are to be installed.

B. Rough grading includes excavating pavements and other obstructions visible on the surface and 1-foot below the surface, removing underground structures, removing abandoned drainage pipes, and removing other materials as indicated.

C. Elevations and contours indicated on the drawings are to finish grade unless otherwise indicated. Make allowances for pavement thickness, bases, and landscape material where applicable.

3.04. EXCAVATION, GENERAL

A. Excavate materials of every nature to the dimensions and elevations indicated on the Plans. Use equipment of suitable type for the materials and conditions involved in the Work.

B. Where additional excavation is required to remove unsatisfactory materials that may be encountered, such additional work shall be paid for by means consistent with the terms outlined in the Contract.

C. Place backfill on subgrades free of mud, frost, snow, or ice.

D. Uniformly grade area to a smooth surface that is free of surface irregularities.

E. Remove materials not approved for use as topsoil or fill and excess excavated materials from the site.

F. Confine excavated materials to immediate area of stockpiled location designated by the Owner's Representative.

3.05. COMPACTION

A. **Parking and Pedestrian Walkway**: Compact soils below parking areas and walkways to 90 percent of the Modified Proctor maximum dry density for the full depth of fill.

B. **Landscape Areas**: Compact soils below all landscape, planting, and sod areas to 85% of the Modified Proctor maximum dry density for the full depth of fill unless otherwise noted on the Plans.

C. **Building Areas:** Compact soils below buildings (and for a distance of five feet beyond the perimeter footing) to at least 90 percent of the Modified Proctor maximum dry density for the full depth of fill. Proof roll from a level that is two feet above ambient water table. This may require locally filling low areas prior to using a vibratory compactor. Densify subsoils by making repeated overlapping coverages of roller as it operates at its full vibrational frequency and at a travel speed of no more than two feet per second.

D. **Utility Trenches:** Compact the initial backfill to a relative compaction of 95%.

3.06. TRENCH EXCAVATION

A. The Contractor shall excavate trenches for rainwater conveyance piping, stormwater conveyance piping, and other utilities indicated on the construction Plans.

B. The Contractor shall excavate trenches to uniform widths per ASTM D2321.

C. The Contractor shall excavate and shape trench bottoms such that they support pipes and conduit. The subgrade should be shaped to provide continuous support for bells, joins, pipe barrels, joints, and fittings. The Contractor shall remove all projecting stones and shape objects along the trench subgrade.

D. The Contractor shall excavate trenches six (6) inches deeper than the elevation of the pipe invert to allow for the placement of bedding course.

E. The Contractor shall place backfill on subgrades free of mud, frost, snow, or ice.

F. Barricade all open trenches during work hours and cover at the close of each day's work.

G. Maintain trenches and other excavations free of water while lines are being placed and until backfill has been completed and approved. Ensure adequate pumping equipment is available at all times for emergencies and dispose of water in such a manner as not to create a nuisance or cause damage to property. Do not allow water to migrate outside of the construction area and use Owner-approved methods to confine water to construction areas.

H. **Bracing and shoring** – Support excavations in accordance with all legal requirements. Set and maintain sheet piling and shoring timbers in a manner that will prevent caving of walls of excavations or trenches.

I. **Bedding** – Do not cover lines until they have been inspected and approved for alignment and grade and recording for "as-built" survey information by the Owner's representative. Commence bedding immediately after approval and survey information recording. Then carefully place bedding around utility lines so as not to displace or damage the line. Fill symmetrically on each side of the line. Compact bedding to 90 percent of the maximum dry density in accordance with ASTM D 1557 using mechanical equipment.

3.07. SOIL FILL

A. Place fill in uniform lifts not exceeding eight inches in loose thickness that will uniformly compact to the required densities.

B. Bring each layer to between ± 2 percent of optimum moisture content before compaction. Add water by uniformly sprinkling and mixing it with the soil. Add or blend additional fill materials or dry out existing material as required.

C. When moisture content and condition of each layer is satisfactory, compact to the specified density. Compact areas not accessible to motor-driven equipment with mechanical or heavy hand tampers.

D. Rework compacted areas failing to meet specified density as determined by tests. Recompact and retest as required to achieve property density.

E. Prior to placing fill material on existing surfaces, scarify to a depth of six inches and recompact to the same degree of compaction as the overlying fill material.

3.09. SITE BOULDER PREPERATION AND PLACEMENT

A. Subgrade Preparation

1. Areas where Site Boulders (including existing boulders (relocated)) are to be placed shall be graded to achieve the design intent under direction from the Owner's Representative. General grade elevations are shown on the plans. Boulder elevations shall be determined in the filed by the Owner's Representative. The soil surface shall be smooth and free from any obstructions to provide adequate contact area between the soil and boulders.

2. Site Boulder and Existing Boulder Placement

i. Contractor shall provide personnel both experienced and skilled in boulder placement (high-end residential garden level craftmanship) to complete the specified boulder placement. Provide at a minimum, (1) equipment operator and appropriate machine/equipment and (2) man crew for boulder setting. Boulder placement will be field directed by the Owner's Representative.

ii. Site boulder and Existing boulder setting shall be completed under direct observation of the Owner's Representative. Approved mock-up will be used to control all boulder installation detailing and quality.

iii. Site Boulders and Existing Boulders shall be located/relocated within the site per the Plans and Owner's Representative direction.

iv. Prepare site to accept Site boulders and Existing boulders as described on the plans and as directed by the Owner's Representative. Verify placement and boulder and stone types and sizes with Owner's Representative prior to installation. Boulders shall be placed after rough site grading has been completed, and prior to site paving operations. See plans for additional information.

v. Contractor shall be required to use a track excavator with articulating thumb and zero clearance arm capable of picking up, rotating, handling, and setting 2+ ton boulders. Site boulders and exiting boulders shall be expertly set to ensure a high quality, residential garden level of boulder setting workmanship. Ensure tight, permanent fit between adjacent boulders and native soil.

vi. Transport site boulders and existing boulders to general locations shown on plans. Install site boulders and existing boulders in final locations directly by Owner's Representative in the field.

vii. Project all site improvements during the Site Boulders and Existing Boulders placement.

3.09. GRAVEL AND COBBLE PLACEMENT

A. Gravel and cobble placement in rain gardens and bioswales will be field directed by the Owner's Representative.

3.10. CLEAN UP

B. Keep project site and adjacent streets reasonably free from accumulation of debris resulting from work specified in this section.
C. Immediately remove dirt, debris, and overreaching construction clutter from buildings and structures, walls, pavements, and curbs.

END OF SECTION 31 20 00

SECTION 31 21 00
PATHWAYS

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Pathway material and construction in accordance with ADA standards.

1.02 RELATED SECTIONS

A. SECTION 31 21 00, EARTHWORK

1.03 CODES AND STANDARDS

A. ASTM C136-Sieve Analysis of Fine and Coarse Aggregates

B. ASTM D2419- Sand Equivalent Value of Soils and Fine Aggregates

C. Caltrans Standard Specifications for Public Works Construction

D. RIS-Redwood Inspection Services Grades of California Redwood

E. CalTrans Permanent Pedestrian Facilities ADA Compliance Handbook

1.04 SEQUENCING

A. Do not install work specified in this section prior to acceptance of earth moving. Coordinate work specified in this section with work specified in other sections to minimize cutting of - and operation of - heavy equipment over newly installed surfacing.

1.05 QUALITY ASSURANCE/FIELD QUALITY CONTROL

A. Installer

a. Installations 500 square feet and over up to 3,000 square feet – must be a recommended installer at a minimum. Installations 3,000 square feet and over – must be an Approved Installer.

b. The installation instructions in this Specification are meant as a guide for bidding purposes and will be superseded by the approved Submittal of installation instructions from manufacturer and any field direction.

c. The Contractor shall dig test pits to confirm the location of underground facilities. These test pits shall include dewatering, backfilling, and surface restoration when necessary. If test pits are excavated in paved areas, surface restoration will consist of temporary pavement.

B. Porous Base Rock Testing

a. Testing shall occur during installation at 1-ton increments of shipping for sieve conformance. Results shall be submitted prior to completion of the stone base installation.

i. The stone field area shall have a permeable rate no less than 14” per hour. The testing shall be per Din 8035 Part 7, ASTM 2434 (constant head), or ASTM F2898 testing methods.

ii. In addition to the lab testing, after installation of any aggregate base

cross-section, designed to conduct rainfall to the sub-soils and/or under-drain system, the finished aggregate base shall be tested, *in situ* for infiltration rate, using method ASTM F2898. **The test shall be performed by a registered Geotechnical Engineer or certified agronomist.**

b. The Contractor is responsible to meet this performance specification, before proceeding with installation, and shall bear the cost of the on-site testing and the cost of any additional work necessary to achieve compliance with the specification.

c. All test results shall be logged and documented by the Owner's Technical Representative or Geotechnical Engineer. If at any time the processed stone base does not meet specifications, it shall be the Contractor's responsibility to restore, at his expense, the processed stone base to the required grade, cross-section and density.

d. After the contractor has independently confirmed compliance with all the above tolerances (planarity and elevation verified by a licensed surveyor and compaction, gradation, & permeability verified by Geotechnical Engineer, he shall notify the appropriate party and schedule a final inspection for approval. The contractor shall make available an orbital laser system to the Inspection Team for the inspection process.

e. The compaction rate for porous base rock should be 88%. The compaction rate for non-porous base rock should be 95%.

C. Standard Specifications:

a. Shall mean the California Department of Transportation Standard Specifications, latest active edition.

b. The pathway shall have a maximum longitudinal slope of 5% and a maximum cross slope of 2%.

1.06 MOCKUP

A. Construct mockup of crushed aggregate blended with surfacing, including base course and edging, at location approved by [Owner's Representative]. Build mockup 1 days prior to installation. The intent of the mockup is to demonstrate surface finish, texture, color, and standard of workmanship.

B. Notify Owner's Representative 1 day in advance of mockup construction.

C. Allow Owner's Representative to view and obtain approval of mock-up before proceeding with rest of crushed aggregate admixture surfacing.

D. Approved mock-up may remain as first in place construction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver all Admixture materials in original, unopened packaging. Protect materials and aggregate from contamination with foreign matter. Store under waterproof cover and

protect from dampness.

1.08 FIELD CONDITIONS

B. Do not install crushed aggregate blended with admixture surfacing when sub-base is wet at saturated field capacity.

C. Do not install materials when rain falls on it within 48 hours after the install, or when the temperature will go below freezing within the next five days following installation.

PART 2 – PRODUCTS

2.01. CRUSHED AGGREGATE BLENDED WITH ADMIXTURE SURFACING MATERIALS

A. Decomposed (DG), crushed aggregate.

a. DG shall have a 3/8" maximum gradation, produced from naturally friable rock/granite with enough fines to produce a smooth walking surface. Materials should be free from clay lumps, organic matter, and deleterious material. Blends of coarse sand and rock dust are not acceptable.

b. Use a single supply source for the entire quantity required.

c. Gradation, in accordance with ASTM C136:

i. Color: Should have gold to yellow hues. To be selected by Owner's Rep from manufacturer's standard colors.

B. Aggregate binder:

a. Provide Admixture. Color: Per Owner's Representative's decision.

2.02. BASE COURSE MATERIAL

A. Class II Permeable Base Rock.

B. Soft stone materials (i.e., sandstone, limestone, and shale materials) are not suitable. Stone supplier shall certify that all supplied stone will be clean of this type of stone. All types of stone shall meet the following stability requirements.

Test Method	Criteria
LA Abrasion (Calif. Test 211)	Not to exceed 40
Durability Index (Calif. Test 229)	Not less than 40

C. In addition, if stone stability to water and vehicles is in question, Owner has the right to perform additional testing to ensure material shall adhere to requirements of Caltrans Section 68, as well as additional applicable ASTM tests.

D. All testing fees shall be paid for by the Contractor.

E. **Permeable Stone:** Stone base materials shall be washed, 100% fractured, by mechanical means, with elongated characters on each individual particle larger than 1/4". Materials shall be devoid of mineral fines. All particles smaller than 1/4" shall be produced by manufactured means only. Rounded sands or aggregates are prohibited.

F. **Delivery Moisture Content:** Processed stone shall contain 90% to 110% of the optimum moisture content to ensure that fines do not migrate in transit or during placement and to facilitate proper compaction. The contractor shall ensure that the aggregate leaving the

source plant meets this requirement. The contractor is required to apply water to the processed stone on site to attain and maintain this minimum moisture content.

G. Aggregate or aggregate blends of permeable stone shall conform to the following gradation:

Sieve	Percent Passing by Weight (Intended Result)	Range
1”	100	100
3/4”	100	90 - 100
3/8”	78	40 - 100
No. 4	36	25 – 40
No. 8	26	18 – 33
No. 30	11	5 – 15
No. 50	6	2 – 10
No. 200	2	0 - 5

Durability Index (CTM #229) – 40 min
Sand Equivalent (CTM #217) – 70
LA Rattler (CTM #211) – 500 Revs, less than or equal to 40%

H. Specs for ⅜” minus and ¾” minus Crushed Aggregate Following ASTM D 1140-17:

I. 100% fractured on all sides with no rounded particles Sieve 200 - Non-expansive Clay Fines - not to exceed 18%

J. The below test is for ⅜” minus stone, at approximately 90% compaction when tested.

Sieve Size	% Passing	Sieve Ranges
1/2"	100	100
3/8”	95	98
No. 4	85	90
No. 8	75	85
No. 16	55	70
No. 30	38	57
No. 50	24	33
No. 100	15	24
No. 200	9	18
No. 400	0	9

2.03. ACCESSORIES

K. Water: Free from contaminants that would discolor or be deleterious to crushed aggregate blended with admixture surfacing.

L. Installation: Do not use a vibratory plate to compact the pathway. Use a lawn roller filled with water to compact. Use a 36" drum roller or dual-drum roller in static position for driveways and larger installations. It is highly recommended to use a volumetric truck for driveways and larger installations; if possible, the use of a paver is highly recommended as well.

PART 3 – EXECUTION

3.01. EXAMINATION

A. Examine grading and subsoil conditions. Do not proceed until conditions are acceptable.

3.02. PREPARATION

A. Excavation: Excavate to depth required so edges of crushed aggregate blended with admixture surfacing will match adjacent grades and have a maximum longitudinal slope of 5%.

B. Base Course Installation: Class II permeable base rock at 90% compaction.

C. Edging: Install flush with crushed aggregate blended with admixture. Provide sufficient stakes to secure in place.

3.03. INSTALLATION

A. There are two installation methods: “Dry” and “Wet.”

i. The dry method is for installations up to 500 square feet (most home applications).

ii. The wet method is appropriate for installations over 500 square feet (most large, commercial installations) and may require the use of a volumetric truck.

B. Mixing Method

i. Installations of less than 500 square feet may be mixed on-site.

ii. Installations of 500 square feet and over up to 3,000 square feet, must be delivered pre-mixed to the site.

iii. Installations 3,000 square feet and over up to 5,000 square feet must be supplied by an approved pre-mix facility.

iv. Installations over 5,000 square feet require the use of a volumetric truck.

C. Installation Depth (also known as “lift”)

i. For residential/pedestrian applications, 3-inch-thick layer (“lift”) over a 4-inch subgrade of compacted Class II base rock. Compaction rates for all applications are 88% to 92%.

D. Measurements

i. CRUSHED AGGREGATE BLENDED WITH ADMIXTURE SURFACING MATERIALS

1. Residential/Pedestrian Application - (2 bag mixture) One cubic yard of aggregate/decomposed granite and two (85 lbs) sacks of admixture combined shall cover 108 square feet at a 3-inch thickness.

a. Note: Aggregate/decomposed granite should be 3/8” minus material and follow our sieve percentages in this Specification Guide within a +/- 5% range.

ii. Class II Base Rock:

1. Residential/Pedestrian Application - After final compaction, base rock should have a 4-inch depth.

E. Mixing Ratios

i. Residential/Pedestrian Application – (2 bag mixture) The aggregate/decomposed granite (DG) is mixed with admixture at a 19:1 ratio (19 units of DG to 1 unit of admixture, measured in volume).

F. DRY METHOD INSTALLATION

i. **Class II Base Rock:** Moisten and compact base rock on the entire installation area to an even depth of 4-inch application. A vibratory plate can be used to compact the base rock; it should not be used to compact the admixture for residential installations.

ii. **Admixture:** Wheelbarrow the prepared Admixture/DG mixture to the installation site and place a layer of the mixture to one-half of the desired final lift. Be sure to spread the mixture out before proceeding to step 3; this will ensure the mixture is moistened and mixed thoroughly.

iii. Moisten the material with a hose end trigger sprayer attachment, avoiding puddling - oversaturation is detrimental and will negatively affect the integrity of the finished product. Rake area lightly to evenly distribute water throughout the mix or "lift". Walking on the area is perfectly acceptable; initial compaction can be performed by walking on the edges and corners.

iv. Install a second lift as above; when doing this, make sure to pay particular attention to the edges to ensure even material height, and moisten to dampen mixture.

v. Moisten until both lifts are damp. Proper moisture content can be checked by clenching your fist, when the mixture just stays together and the color just starts to transfer to your hand, it is ready to compact.

vi. Compaction: After proper moisture is achieved for compaction, hand tamp (with a 10” hand tamp) around benches, signposts, corners, boulders, et cetera. Pay particular attention to corners and edges to ensure tight compaction.

vii. Make several passes with a 36” lawn roller (filled with water), or for larger installations, a 36” walk-behind or drum roller in static position. Hand tamp out any imperfections with a 6” wooden masonry float.

viii. Make sure to keep your 10” hand tamp, lawn roller, and wooden floats clean at all times. Fill in any divots with fresh, loose material (removing any larger stone) and hand tamp with the wooden floats to match existing finish.

ix. When laying admixture in batches, be sure to use the cold joint method below to ensure a blemish-free installation.

x. Finishing: If desired, lightly sweep the finished surface in a perpendicular pattern with a medium-bristled push broom. Then make several more passes with the lawn roller until the desired surface texture is achieved. With larger installations, a roller in a static position can be used, making sure to keep the drum clean at all times. Remove spoils off the surface.

xi. DO NOT ALLOW MIXTURE TO DRY DURING INSTALLATION. MIST LIGHTLY WITH A HOSE END SPRAY HEAD AS NECESSARY OR COVER WITH A PLASTIC TARP.

xii. The final step for installation is a dampening with water of all newly installed and compacted materials. Using a shower head/spray hose attachment, moisten the entire newly installed area - avoid puddling. For the best results, moisten all newly installed paving a second time for the following 1 to 5 days, as practical. Slow curing is important to avoid cracking.

xiii. Make sure there is no direct application of uncontrolled water (e.g. irrigation or sprinkler water) prior to final curing.

G. WET METHOD INSTALLATION

i. After DG and admixture have been mixed but BEFORE installation has begun: Mix thoroughly and moisten with water until the mixture begins to marble or clump together. Squeeze the mixture in your fist and open your hand. When the color has just started to transfer onto your hand and the mixture just begins to stay together in a clump, it’s ready for installation.

ii. **Class II Base Rock:** Moisten and compact base rock on entire installation area to an even depth of 4-inch application. A vibratory plate can be used to compact the base rock; it should not be used to compact for residential installations.

iii. **Admixture:** Wheelbarrow the prepared admixture/DG to the installation site and spread the mixture over the compacted base rock.

iv. **Compaction:** Walking on the area is perfectly acceptable; initial compaction can be performed by walking on the edges and corners. Rake or grade area with the flat side of a landscape or asphalt rake (Do not use tine side), until the admixture is one inch above finish grade.

v. Once initial compaction has been completed, hand tamp (with a 10” hand tamp) around benches, signposts, corners, boulders, et cetera. Pay particular attention to corners and edges to ensure tight compaction.

vi. Make several passes with a 36” lawn roller (filled with water), or for larger installations, a 36” walk-behind or a dual-drum roller in static position. Hand tamp out any imperfections with a 6” wooden masonry float.

vii. Make sure to keep your 10” hand tamp, lawn roller, and wooden floats clean at all times. Fill in any divots with fresh, loose material (removing any larger stone) and hand tamp with the wooden floats to match existing finish.

viii. When laying in batches, be sure to use the cold joint method below to ensure a blemish-free installation.

ix. Finishing: If desired, lightly sweep the finished surface in a perpendicular pattern with a medium-bristled push broom. Then make several more passes with the lawn roller until the desired surface texture is achieved. With larger installations, a dual-drum roller in a static position can be used, making sure to keep the drum clean at all times. Remove spoils off the surface.

x. DO NOT ALLOW MIXTURE TO DRY DURING INSTALLATION. MIST LIGHTLY WITH A HOSE END SPRAY HEAD AS NECESSARY OR COVER WITH A PLASTIC TARP.

xi. The final step for installation is a dampening with water of all newly installed and compacted materials. Using a shower head/spray hose attachment, moisten the entire newly installed area - avoid puddling. For the best results, moisten all newly installed paving a second time for the following 1 to 5 days, as practical. Slow curing is important to avoid cracking.

xii. Make sure there is no direct application of uncontrolled water (e.g. irrigation or sprinkler water) prior to final curing.

H. The following information is applicable to BOTH installation methods.

i. You may walk on pathways immediately after installation. However, the pathway gets stronger with time. Ideally, stay off the newly installed areas for at least one day; after that, foot traffic is allowed. Vehicular traffic should avoid newly installed areas for 5 – 7 days.

ii. Newly installed paving surfaces will be fully cured in 28 days. At that time, the entire surface should be blown or swept off to eliminate loose surface materials. Minor cracking may take place. However, over time, the aggregate fines will fill in the minor cracks and they should disappear. Occasional blowing off the surface will help to minimize loose surface materials.

I. Cold Joint Methods

i. Cold joints can be used at the end of the workday.

ii. Place a 2”X4” or 2”X6” piece of wood or metal edging across the installation, loosely stake it, and finish compacting the material. Leave the board in place overnight.

iii. The next day, carefully lift the wood up and away.

iv. Continue with installation: Dampen the prior installation area. Place newly mixed admixture into the area, being careful not to overlap existing compacted material. Place a three foot length of 2"x4" carefully along the edge of the new

pour and compact by hitting/tapping the board with a single jack. Then, take a medium-bristled push broom and very lightly "feather" the two pours together.

J. Installing for Vehicular Traffic

i. Installing for vehicular traffic is nearly identical to the method above, EXCEPT you will use a vibratory plate or static dual-drum roller to compact the admixture after final compaction by a lawn roller. Make sure to keep the plate clean. If any ridges or ruts occur, fill in with a hand tamp, compact, and broom over it as the finishing instructions above.

K. Recommended Equipment

Tools	Materials
(3) Rounded point or flat edge shovels for moving product	Admixture bags (85 lbs.)
6 cubic foot cement mixer for mixing small installations	3/8” minus aggregate/ decomposed granite
Wheelbarrow for moving material	Class II Base Rock or Class II Permeable Base
8” or 10” hand-tamps for compacting edges and corners, step back fills, and small areas	Curbing or Header Board materials (if desired)
Hose with a shower spray nozzle for moistening dry product	Water source
Landscape and asphalt rake with flat edge for finish grading	
Heavy lawn roller filled with water to compact	
Medium bristled push broom for finishing	
(2-3) 6”-9” wooden masonry float for finishing (1) 6”-9” steel float for cleaning hand tamp and roller	

3.04. CURING PERIOD/PROTECTION

A. For Driveway Installations: Do not allow traffic on crushed aggregate blended with admixture surfacing for 5 days after placement or until compacted crushed aggregate blended with admixture surfacing has fully cured.

B. Protect crushed aggregate blended with admixture surfacing from damage until project completion. Repair damaged areas to match specified.

3.05. MAINTENANCE & REPAIRS

A. Follow manufacturer’s recommendations.

B. Maintenance: Depending on the end users desired finish surface, maintenance may require occasional blowing off or brooming of paved surface - DO NOT use a pressure washer to clean. Depending on quality of compaction at time of installation, a thin veneer of loose aggregate material is typical after the full 28 days cure period. If

cracking appears in a surface, broom loose aggregate “fines” into cracks and compact with a rubber mallet.

C. Repair: When repairing it is important to use the original aggregate/decomposed granite and the original Admixture color to match previously installed materials. If the paved surface has large areas of raveled material (loose aggregate/decomposed granite) the initial installation may not have been properly compacted, or blended materials did not have optimum moisture content during installation. The following are suggestions for repair of raveled materials:

    i. For the large loose areas, a minimum of a 3-inch admixture can be installed. The repair areas need to be saw-cut at the agreed length, removed, and re-installed. A portable concrete mixer or wheelbarrow can be used.

    ii. In areas that collapse/fail due to equipment weight, re-form and re-install with original materials as per specifications.

    iii. Cracks: Repair by brooming existing surface fines into the cracks. Compact with rubber mallet, moisten, and “feather” material into the final finish. This may have to be done several times. Another method is to sieve the existing decomposed granite to eliminate all aggregates higher than 1/16". Mix with Admixture to a 13 to 1 ratio, fill the crack. moisten and follow the above application. The third method of application is to get "playground" sand and proceed as with the above ratio and application.

END OF SECTION 31 21 00

SECTION 32 14 33
PERMEABLE PLASTIC PAVING

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. The work described in this specification is intended for the constructability and installation of TrueGrid (or approved equal) parking area.

B. Provide and install sub-base material as shown on drawings or per recommended sub-base alternatives as provided from additional manufacturer's information. See 'Materials'

C. Provide all products and installation per the manufacturer's instructions provided on this specification sheet and other available specification material.

D. Provide and install specified fill material for gravel fill option.

1.02 RELATED SECTIONS

A. SECTION 31 20 00, EARTHWORK

1.03 SITE CONDITIONS

A. Verify site conditions where the permeable pavers are to be installed and ensure constructability and installation access is free and clear of obstructions.

B. Review installation and coordinate permeable paver work with other work affected.

C. Notify project manager/site-supervisor of any open depressions and excavations made as part of the demolition/grading work for system installation and post warning signs if applicable.

D. Protect active sewer, water, gas, electric, drainage, and irrigation indicated or, when not indicated, found, or otherwise made known to the Contractor before or during installation work. If a utility is damaged, immediately notify the Twain Harte Community Services District (CSD) for corrective action.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications:

a. Minimum of 10 years of experience of this Section.

b. Successful completion of three (3) previous projects of similar scope and complexity.

c. Manufacturer signed certificate stating the product is MADE IN THE US

B. Installer Qualifications:

a. Successful completion of (1) previous project of similar scope of complexity.

b. Maintains trained technicians on staff providing field service and warranty related work.

c. Minimum of (3) years of experience in work of this Section.

C. Installation and Excavation Safety: In accordance with OSHA requirements.

1.05 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the work in this Section. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.06 DELIVERY, STORAGE AND HANDLING

A. Do not deliver (unless otherwise specified) system components until time needed for installation and after proper protection can be provided for materials.

B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.

C. Protect from damage due to weather, excessive temperature, and construction operations.

D. Leave protective coverings in place until just prior to installation.

E. Protect materials during handling and installation to prevent damage.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within manufacturers limits for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

B. All hard surface paving adjacent to permeable paver areas, including concrete walks and asphalt paving should be completed prior to installation of permeable pavers.

C. In wet weather, do not build on wet, saturated, or muddy subgrade.

D. In cold weather, do not use frozen materials or materials mixed or coated with ice or frost, and do not build on a frozen base or wet, saturated, or muddy subgrade.

E. Protect partially completed paving against damage from other construction traffic when work is in progress.

1.08 TRANSITION FROM HARDSCAPE

A. When transitioning to an adjacent hardscape, create a clean edge with existing pavement and ensure permeable pavers are flush or slightly recessed below the surrounding grade.

B. In the case when permeable pavers are against broken asphalt, cut out a small section and pave a clean line. Then ensure permeable pavers are flush or slightly recessed below the surrounding grade.

1.09 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty (at least 10 years) against defects in materials and workmanship.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer(s) for Permeable Pavers:

   a. Airlite Plastics Co. DBA TRUEGRID Pavers or approved equal.

B. Substitutions: Not permitted unless approved by Owner's Rep.

2.03 PERMEABLE PAVER SYSTEMS

A. Permeable Pavers, TRUEGRID PRO PLUS for gravel applications.

B. AASHTO H20, HS20 Rated.

C. Manufactured in the USA.

D. High density polyethylene (HDPE): 100 percent post-consumer recycled materials

E. Recycled and recyclable content: 100 percent.

F. S-Flexural joints molded in for soil seasonal expansion and contraction.

G. Color: black- carbon black additive for long-term UV stabilization.

H. Paver size: 24 inches by 24 inches by 1.8 inches.

I. Pre-assembled: 4-foot by 4-foot sections.

J. Cylindrical cell design for column strength. Cell size: 3.30 inch inside diameter.

K. Co-joined cells at 48 places for strength.

L. Wall thickness: 0.150 inches /.250-inch nominal.

M. A minimum of 2 co-joined common walls per cell for structural integrity.

N. Connections:

   a. No clips or stakes necessary.

   b. No additional parts or tools needed.

   c. Integral male-female three-point locking system.

   d. Wall thickness at tabs: 0.290 inch.

O. Molded in X-anchors to stabilize pavers: no stakes necessary.

P. Nominal Coverage per Paver: 4 square feet.

Q. Weight per paver: 5.25 lbs.

R. Permeability of System: 100 percent.

S. Compressive Strength (filled): 17,729 psi.

T. Material Safety: Groundwater neutral, 100 percent inert.

U. Chemical Resistant: Excellent: highly resistant to hydrocarbons, oils.

2.04 PARKING DELINEATORS

A. TRUEGRID SnowSpots for gravel applications or approved equal.

2.05 ADA, Traffic, and Parking Identifiers: TRUEGRID Plates for gravel applications or approved equal.

2.06 Base Material:

A. TRUEGRID PRO PLUS was developed to accept multiple acceptable base materials. Locally sourced angular stone/clean for base material. Crushed granite, sandy gravel material, crushed concrete, limestone rock, and crushed lava are some of the acceptable materials. Common base materials include:

a. AASHTO #57 Stone.

b. Hard, clean, angular, and open-graded (uniform size) drain rock -- from 3/4" to 1-1/2".

c. Base Course: Graded aggregate base course conforming to the following sieve analysis and requirements:

i. Percent Passing: 100 - Sieve Size: 3⁄4 – 1 inch

ii. Percent Passing: 85 - Sieve Size: 3/8 inch

iii. Percent Passing: 60 - Sieve Size: #4

iv. Percent Passing: 30 - Sieve Size: #40

v. Percent Passing: <3 - Sieve Size: #200, or 3 to 8 Percent for Grass Infill

B. Gravel Fill: Obtain clean, washed angular rock to fill the 1.8-inch-tall TRUEGRID PRO PLUS cells and spaces between. TRUEGRID PRO PLUS can be filled to top of cells and exposed or overfilled to hide cells. Fill rock should be 5/8 inch to 3/4-inch diameter.

a. TRUEGRID PRO PLUS's design does not require anchors on level ground or slopes up to 10 degrees. TRUEGRID PRO PLUS is designed for slopes above 10 degrees. However, as a precaution, anchors/staking may be considered per each sloped install above 10 degrees.

b. Fill rock, level to the top of cells for ADA compliance.

PART 3 – EXECUTION

3.01 EXAMANATION AND PREPARATION

A. Place base course material over prepared subbase to grades shown on plans or from manufacturer's recommended depths per application type, in lifts not to exceed 6",

compacting each lift separately to 95% Modified Proctor. Leave minimum 1.8” for Permeable Paver unit. Fill to final grade.

B. When applicable, backfill and compact depressions caused by excavations, demolition, and removal in accordance with the requirements outlined in SECTION 31 00 00, EARTHWORK.

3.02 INSTALLATION

A. Install Permeable Paver units by placing cells face up. Sheets come preassembled in 4’x4’ sheets and connect with friction fit interlocking connectors. No tooling required to connect or disconnect paver units. (9) Individual 16”x16” pieces can be disconnected from each 4’x4’ sheet and reconfigured as needed.

B. Units can be cut around curves and organic shapes on the job site with any electrical handsaw.

C. Maintain 1” clearance to any pre-installed object or surface structure. Top of cells shall be between .25” to .5” below the surface of adjacent hard-surface pavements.

D. Rock or soil fill aggregate can be driven directly on pre-filled pavers to be dumped and spread.

E. Gravel-Fill Applications:

a. Install Gravel into paver cavities by back dumping directly from dump truck or from buckets mounted to tractors. Hand shoveling fill gravel into the cells is also acceptable for smaller jobs.

b. Direct exit the site by driving forward. Pavers can handle high load capacities while empty, avoid sharp turns over unfilled rings.

c. The gravel fill can then be spread from the pile using steer loaders, power brooms, blades, flat bottomed shovels, and/or wide “asphalt rakes” to fill the cells. The gravel should then be compacted when the cells are at capacity by using a roller for larger areas or a vibrating plate for smaller areas.

d. If fully covering pavers, typical coverage is .25” - .5” above cells.

3.03 FIELD QUALITY CONTROL

A. Any damaged sections of pavers during installation shall be removed and replaced with no evidence of replacement apparent.

3.04 DISPOSAL OF REMOVED MATERIALS AND DEBRIS

A. Remove all excess materials, debris, and equipment from site upon completion of installation.

B. Clean and protect products in accordance with manufacturer’s recommendations.

C. Touch-Up, repair or replace products before substantial completion.

D. Dispose of scrap materials, waste, trash, and debris from the installation of the rainwater harvesting system in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by the Twain Harte CSD.

E. Burying or burning trash and debris on site will not be permitted.

F. Scrap materials, trash, and debris shall become the property of the CONTRACTOR and shall be removed from the site and be disposed of in a legal manner. Location of the disposal site and length of haul shall be the CONTRACTOR's responsibility.

3.05 MAINTENANCE

A. Gravel Fill: If the installation is one that is initially a cell covered installation, raking gravel back over exposed cell tops may be necessary if over fill aggregate migrates.

B. When snow removal is required, keep the edged plow blade a minimum of 1" above the paver surface to avoid damage to the paver surface.

END OF SECTION 32 12 43

SECTION 32 16 00
CURBS AND SIDEWALK RAMPS

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Concrete curb and sidewalk ramps shall be constructed per the dimensions indicated on the plans and the following section of the specifications.

1.02 CODES AND STANDARDS

A. Allowable Tolerances

a. The face, top, and back of the curb shall not deviate from the plans more than ¼-inch over 10 feet as tested with a 10-foot straightedge or curve template, longitudinally along the surface.

B. Specifications and standards:

a. Section 73, Concrete Curbs and Sidewalks, of CalTrans Standard Specifications

b. ASTM C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method

c. ASTM C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

d. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

e. ASTM D8139 - Standard Specification for Semi-Rigid, Closed-Cell Polypropylene Foam, Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction

f. Americans with Disabilities Act Accessibilities Guidelines (ADAAG)

1.03 PART 2 – PRODUCTS

2.01. CONCRETE

A. The construction of curbs or minor concrete containing at least 463 pounds of cementitious material per cubic yard. For extruded or slip form curb construction, the maximum aggregate size must be from 3/8 to 1 inch. The cementitious material content must be at least 505 pounds per cubic yard if a maximum of 3/8-inch aggregate is used.

2.02. MORTAR

A. Mortar must comply with Section 51-1.02F of CalTrans Standard Specifications.

2.03. JOINT FILLER

A. Preformed expansion joint filler must comply with ASTM D1751. As an alternative, a semi-rigid, closed-cell polypropylene foam, preformed joint filler that complies with ASTM D8139 may be used.

2.04. DETECTABLE WARNINGS

A. Detectable warning materials shall be durable with a non-slip surface not subject to spalling, chipping, delamination, or separation. All detectable warnings shall be approved by the Owner's Representative.

B. The truncated dome dimensions and spacing for detectable warnings shall be in accordance with the guidelines defined by the ADAAG for optimal detect-ability and public safety. Detectable warnings shall consist of raised truncated domes aligned in a square grid pattern in conformity with the ADAAG. Truncated domes shall have the following nominal dimensions: base diameter of 1.0 inches (0.9 inches minimum), top diameter of 50 percent of the base diameter minimum to 65 percent of the base diameter maximum, and a height of 0.2 inches. Dome center-to-center spacing of 2.35 inches, measured between the most adjacent domes on the square grid. Dome center-to-center spacing for radial installations shall be 1.6 inches to 2.4 inches with a base-to-base spacing of 0.65 inches minimum. Detectable warning edges shall be sized and installed so that dome spacing is maintained across adjoining edges. Each dome shall have a minimum static friction of coefficient of 0.8 as tasted per ASTM C1028.

C. Detectable warnings shall contrast visually with adjoining surfaces, either light-on-dark or dark-on-light. Specific colors to be used shall be approved by the Owner's Representative.

PART 3 – EXECUTION

3.01. GENERAL

A. The top and face of the finished curb must be true and straight. The top surface of the curb must be uniform in width and free from humps, sags, or other irregularities. Clean any discolored concrete by abrasive blast cleaning or other authorized method.

B. Except for curbs on structures, you may place curbs with an extrusion machine or a slip form paver if:

i. Finished curb is true to line and grade.

ii. Concrete contains the maximum quantity of water that maintains the curb's shape without surface.

iii. Required surface texture is attained.

C. Check the flatness of the top and face of the curb and the surface of the gutter with a 10-foot straightedge. The surfaces must be flat to within 0.01 foot except at grade changes or curves.

3.02. SUBGRADE PREPARATION

A. The subgrade shall be constructed and compacted true to grades and lines shown on the plans. All soft or unsuitable material shall be removed to a depth of not less than 6 inches below subgrade elevation and replaced with material satisfactory to the Owner's Representative and the Engineer. Removal and replacement of soft or unsuitable material will be paid for as extra work.

3.03. FORMWORK

A. Concrete curbs shall be constructed by the conventional use of forms, or may be constructed by means of an appropriate machine when approved by the Owner's Representative.

B. Forms conforming to the dimensions of the curb and sidewalk ramps shall be carefully set to line and grade, and securely staked in position. The forms and subgrade shall be watered immediately in advance of placing concrete.

C. Forms shall be thoroughly cleaned each time they are used and shall be coated with a light oil, or other releasing agent of a type which will not discolor the concrete.

    i. Form oil must be of commercial quality, allow for the ready release of forms, and not discolor the concrete.

3.04. DETECTABLE WARNINGS

A. Detectable warnings shall be either placed in freshly poured concrete (wet-set) or recessed into pre-formed concrete. Detectable warnings using wet-set placement shall have an anchoring method that assures constant contact of the detectable warning bottom surface with the concrete as it cures, thus rendering the ramp a single monolithic structure. The thicker and heavier detectable warnings lowered into pre-formed recesses in the concrete substrate must demonstrate a firm fitting into metal reinforced frames without gaps along the edges that can channel water, sand, or debris. They must also be able to resist movement (i.e., sliding, rocking, or lifting) once in service. All attachment systems shall be approved by the Owner's Representative.

3.05. JOINTS

A. Joints shall be constructed in a straight line, vertical plane and perpendicular to the longitudinal line of the single curb, except in cases of curved alignment, where they shall be constructed along the radial lines of the curve.

B. Construct contraction and expansion joints at right angles to the line of the curb. Space contraction joints at 20-foot intervals. For curbs adjacent to existing concrete, align the curb joints with the existing concrete's pavement joints.

C. Expansion joints shall be constructed to the full depth and width of the concrete. The expansion joint material shall extend fully through the concrete and one inch into the subgrade with the top of the expansion joint material one-quarter inch below the top surface. Expansion joint material shall be secured in place prior to placement of concrete.

D. Unless otherwise specified, the large aggregate in contraction joints shall be separated to either side of the joint for a minimum depth equal to 25% of the concrete thickness, the finished depth shall be a minimum of ¾ inch.

SECTION 32 84 00
IRRIGATION SYSTEM

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. The work described in this specification is intended for the constructability and installation of the Irrigation system per applicable codes and standards. This section includes specifications for the Irrigation system and its components, quality assurance and inspection.

B. Irrigation System:

a. Irrigation Materials and Components

b. Installation Codes and Standards

c. System Location and Layout

d. Installation of Pipe, Equipment and Components

e. Irrigation Controller

f. Field Quality Control

g. Plant Establishment Period

1.02 RELATED SECTIONS

A. SECTION 31 20 00, EARTHWORK

B. SECTION 32 90 00, PLANTING

1.03 APPLICABLE CODES AND STANDARDS

A. International Organization for Standardization (ISO):

a. ISO 9001 – Quality management systems requirements.

B. California Plumbing Code (CPC-2022)

a. Title 24, Part 5

b. Chapter 15: Alternate Water Sources for Non-Potable Applications

c. Chapter 16: Non-Potable Rainwater Catchment Systems

C. ASTM A53 – Specifications for Pipe, Steel

D. ASTM D1784 – Specification for Rigid Poly (PVC)

E. ASTM D1785 - Specification for Poly (PVC) Schedule 40, 80, and 120

F. ASTM D2241 - Specification for Poly (PVC) SDR-Series

G. ASTM D2464 - Specification for threaded Poly (PVC)

H. ASTM D2466 - Specification for Poly (PVC) Fittings

I. ASTM D2564 - Specification for Solvent Cements for Poly (PVC)

1.04 SITE CONDITIONS

A. Verify site conditions where the Irrigation system is to be installed and ensure constructability and installation access is free and clear of obstructions.

B. Notify project manager/site-supervisor of any open depressions and excavations made as part of the demolition/grading work for system installation and post warning signs if applicable.

C. Protect active sewer, water, gas, electric, drainage, and irrigation indicated or, when not indicated, found, or otherwise made known to the CONTRACTOR before or during installation work. If a utility is damaged, immediately notify the Twain Harte Community Services District (CSD) for corrective action.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:

   a. Minimum of 10 years of experience of this Section.

   b. Successful completion of previous projects of similar scope and complexity.

   c. Maintain ISO-9001 production facilities including quality management protocols for production.

B. Installer Qualifications:

   a. Successful completion of (3) previous projects of similar scope of complexity.

   b. Maintain trained technicians on staff providing field service and warranty related work.

   c. Minimum of (3) years of experience in work of this Section.

C. Installation and Excavation Safety: In accordance with OSHA requirements.

1.06 SUBMITTALS

A. Product Data: Submit manufacturer's product data of the following items:

   a. Irrigation Controller

   b. Master Shut-Off Valve

   c. Remote Controlled Valves

   d. Backflow Preventer Assembly

   e. Valve Boxes

   f. Irrigation Heads and Emitters

   g. Related Equipment

B. Operation and Maintenance (O&M) Manual: Provide an operations and maintenance manual for the following items:

   a. Remote Controlled Valves

   b. Irrigation Controller

c. Maintenance Schedule

C. Manufacturers Installation Instructions: Submit installation instructions for control valves, meters, and irrigation controllers.

D. Irrigation Map and Schedule: Provide an Irrigation Zone Map along with the watering schedule (O&M) Operations and Maintenance Manual.

1.07 EXISTING IRRIGATION SYSTEM

A. Not Applicable

1.08 PRE-INSTALLATION CONFERENCE, SEQUENCING AND SCHEDULING

A. Convene a conference before the scheduled commencement of the work in this Section. Attendees shall include Architect, Irrigation Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

B. Coordinate layout and installation of Irrigation Sleeves, conduits, and piping under paved areas and other features prior to their construction.

C. Coordinate installation of Irrigation System with excavation of planting areas. Refer to SECTION 32 09 00, Planting for requirements. Typically, the irrigation system shall be installed after planting areas have been excavated and graded.

D. The Irrigation System shall be installed and tested prior to installation of plant material. Coordinate layout and installation of irrigation system with location and installation of plant material to assure that there will be complete uniform irrigation coverage of plating as indicated.

E. Tree and shrub locations shall be staked in the field prior to installation of irrigation pipe and heads. Refer to the plant list on the construction drawings for plant setbacks and spacing requirements.

1.09 WRENCHES AND KEYS

A. Furnish and deliver to Twain Harte CSD, two each of the following items upon completion of the work of this Section:

a. Wrench for each type of valve

b. Keys for valve box covers, controller panels, enclosures and backflow preventer assembly enclosure.

1.10 DELIVERY, STORAGE AND HANDLING

A. Do not deliver (unless otherwise specified) system components until time needed for installation and after proper protection can be provided for materials.

B. Store and handle in strict compliance with manufacturer’s written instructions and recommendations.

C. Protect from damage due to weather, excessive temperature, and construction operations.

D. Leave protective coverings in place until just prior to installation.

E. Store irrigation components inline with manufacturers recommended handling during transportation and site construction. System components shall be protected from damage during delivery.

1.11 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within manufacturers limits for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.12 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty against defects in materials and workmanship.

PART 2 – PRODUCTS

2.01 IRRIGATION MATERIALS, EQUIPMENT, AND FACILITIES

A. The CONTRACTOR shall furnish all materials, tools, equipment, devices, appurtenances, facilities, and services as required to perform the installation of the irrigation system as shown in the construction drawings and described in the specifications.

B. The landscape irrigation system shall consist of a completely automatic, electrically controlled drip emitter and spray irrigation system. The system shall be designed to provide complete coverage with minimum maintenance. The system shall be designed to prevent overspray.

C. The irrigation system shall be furnished and installed complete, including the following functions and features: connection to irrigation stub-out (point of connection), backflow preventer assemblies and enclosures, all pipe, fittings valves, electric automatic valves, irrigation heads and emitters, valve boxes, and any accessories required for a complete install.

D. Irrigation materials and equipment shall be new, non-corroded, non-defective, that meet the specified standards.

E. Piping: Above grade piping shall be galvanized steel or an approved equivalent. Below grade mains and laterals shall be rigid polyvinyl chloride (PVC).

a. Galvanized Steel Pipe: Galvanized steel pipe shall be Schedule 40, conforming to ASTM A53, Grade B, with 150 pound banded, galvanized malleable iron screwed fittings.

b. Plastic Pipe: Shall be solvent welded PVC 1120 or 1220 pressure-rated pipe. Supply lines shall be ASTM D1785, Class 12454-B, PVC1120 or PVC1120, Schedule 40.

c. Irrigation Laterals: Shall be ASTM D2241, Standard Dimension Ratio (SDR) 13.5 (Class 315), for ½ inch and smaller and ASTM D1785, Class 12454-B (schedule 40), for pipe ¾ inch and larger.

d. Fittings: Shall be molded PVC, Schedule 40, conforming to ASTM D2466, Class 1433. Fittings shall be capable of withstanding maximum pressure rating of the pipe with which it is used. Provide Schedule 80 fittings conforming to ASTM D2464 where indicated or required.

e. Pipe thread sealant compound: Shall comply with requirements of ASTM D1784 or ASTM D2564, as applicable.

F. Conduit: Provide rigid non-metallic conduit conforming to UL Standard No. 651 for rigid non-metallic conduit, such as Schedule 40 PVC conduit, unless otherwise indicated.

G. Remote Control Valves: Remote control valves shall be Rainbird Series or approved equivalent for 2" and 1" sizes.

a. Valves shall have a contamination proof (CP) self-flushing nylon screen located at the valve inlet to filter out grit and prevent clogging of hydraulic control ports and assure reliable operation.

b. Valves shall be normally closed and be of the size indicated.

c. Valves shall be serviceable from the top without removing the valve body from the system.

d. Valves shall be equipped with a device that will regulate and adjust the flow of water, and with a manual shut-off.

e. The automatic closing time shall not be less than 5 seconds.

f. Valves shall be compatible with the electric automatic controllers.

g. Valve solenoid shall be designed for operation at 24-volts, AC, at 0.41 amps maximum in-rush current.

H. Unions: Unions shall be a minimum of 150-pound galvanized malleable iron with ground joints for above grade locations, and PVC schedule 80 threaded for below grade locations, and shall be provided on both sides of the wye strainer, control valves, and pressure reducing valve. Valves or strainers having integral union(s) are acceptable substitutes for union(s).

I. Irrigation Controller: Controller shall be having the following features:

a. Independent control over each station start and stop time (dwell time), and number of cycles per day.

b. 24-hour timer; 14-day minimum calendar period; dwell times adjustable in one minute increments for 1 to 360 minutes and cycles of minimum 4 starts in 24 hours.

c. 24-volt, 1.5-amp minimum output capacity with circuit breaker and with automatic reset and controller and valve surge protection.

d. Number of stations as indicated.

e. Six repeat watering program (cycles, windows) per day capability.

f. Two-minute dwell time for each station in event of power interruption.

g. Simple “user friendly” keyboard programming with messages flashed on display screen to prompt entries by user.

h. Retention of volatile program memory setting, time, and date for up to 18 hours in event of power failure with rechargeable battery and trickle charger provided. Non-volatile, entry erasable programmable memory (EEPROM) is preferred.

i. Shutdown and bypass of station in event of excess flow.

j. Manual actuation of each valve locally at the controller. This is in addition to the capability requirements for valve control by transceiver and remote control, statistical reporting to, and random access and reprogramming from the central computer.

J. Control, Common and Spare Wires:

a. Low voltage control wire shall be Type UF, 600-V size as recommended by the manufacturer of the controller furnished for this project, but not smaller than No. 14 AWG. Common wire shall not be smaller than No. 12 AWG. Insulation shall be of a type approved by the California Electrical Code for underground direct burial, Class 2 wiring, 24-volt, 60 cycle, A.C. service.

b. Controller valve main wire insulation shall be black or red. Furnish different color control wire for each controller. Each common line shall be white with a color stripe to match the color of control wires it serves. Spare wire shall be a color different from control and common wires.

c. Control wire identification tags shall be 2-1/4 inches by 2-3/4 inches in size.

d. All splices made to electrical wires shall utilize waterproof connectors. This includes a twist-on connector for making a UL-listed mechanical connection. Once the mechanical connection is made, it shall be inserted into a gel-filled tube and the twist-on connector shall lock in place when it reaches the bottom of the tube. The lid of the tube shall then be closed such that it applies pressure on the insulation of the wires and creates strain relief. Splices shall be capable of satisfactory operations under continuous submersion in water.

K. Shut Off Valves: Valves for underground service shall be, at a minimum, 125-pound rating with non-rising stem. Valves shall be easily accessible, housed in a valve box as specified.

L. Valve Boxes and Control Wire Junction Boxes: Commercial grade valve boxes shall be sized adequately to house the specific irrigation components indicated, including the electric remote-control valve, shut off valves furnished with a lockable cover with lift handle.

M. Valve Boxes for flush and air relief valves: Commercial grade round boxes shall be sized adequately to house the specific valves indicated.

N. Backflow Assembly Enclosure:

a. A vandal-resistant solid aluminum cover shall enclose the backflow preventer, filter unit, and pressure-reducing valve. The filter shall be mounted upstream of the backflow

preventer and provide 9-inches clearance between the filter drain valve and pad surface. The pressure reducing valve shall be provided downstream of the filter. Unions shall be provided on both sides of each component.

b. The cover shall be equipped with all stainless steel hardware and flush-mounted lockable hatch assembly designed for ease in handling. The cover shall be 3 inches clear of valve operating handles and appurtenances and shall be constructed of aluminum, with rigid, reinforced construction having a minimum corner angle, mid-section reinforcement and pre-punched viewing ports with rolled or relieved edges. The cover shall be bolted to a 4-inch thick reinforced poured-in-place concrete pad that shall extend a minimum of 3 inches beyond the cover. The cover shall be anchored to the pad at each corner using minimum 1/4 x 2-1/2-inch anchor bolts of galvanized steel.

c. The padlock will be furnished by Twain Harte CSD.

O. **Filters:** The filter unit shall have a removable cylinder and integral resilient seat ball type drain valve. The free flow principle shall be intrinsic in the unit design, causing the water flowing along the cylinder to seep through the cylinder perforations, allowing particles to drop to the bottom for accumulation. The filter shall be suitable for 75 psi operating pressure and equipped with 155 mesh media. The unit shall have a factory-applied label affixed to the housing indicating media size and a flow arrow cast on the housing. The filter inlet and outlet for 2-inch and smaller units shall be male pipe thread and for 3-inch and larger units shall be 150 psi flanged.

P. **Sleeves for Conduit and Water Lines:** For pipe 3/4 inch through 4 inches in diameter, provide PVC Schedule 40 pipe, two pipe sizes larger than the water line and two pipe sizes larger than conduit. For pipe 6 inches in diameter and larger, provide corrugated metal pipe (galvanized) a minimum of one pipe size larger than the sleeved pipe.

Q. Irrigation Heads and Drip Emitters: The sprinkler body, stem, nozzle and screen shall be constructed of heavy-duty, ultraviolet resistant plastic.

a. **Sprinkler Heads and Bodies:** Sprinklers shall be as specified on Irrigation Plans. Sprinkler shall have a 12-inch popup height, an integral check valve that holds up to 8 feet of head (3.50 psi), a heavy-duty stainless steel retraction spring, pressure regulation capability, flow shield build into the stem, a soft elastomer pressure-activated wiper seal, and a ratcheting system for easy alignment of the pattern. Riser nipples for all sprinkler heads shall be the same size as the riser opening in the sprinkler body. Or approved equal determined by the Owner's Representative.

b. Drip Emitters shall be 0.5 GPH pressure compensating and installed on 1/2 inch poly drip line as specified. Tubing shall be 1/2 inch minimum nominal diameter with a minimum wall thickness of 0.050. Or approved equal determined by the Owner's Representative.

c. **Line Flushing Valves:** 1/2 inch PVC.

R. **Backflow Preventer:** 1" Zurn 375-XL Reduced Pressure Backflow Preventer. Or approved equal determined by the Owner's Representative.

S. **Water Flow Meter:** The water flow meter shall be a line-mounted, corrosion-resistant construction.

2.02 MANUFACTURERS

A. Acceptable Manufacturer(s) for Irrigation System:

a. DripWorks USA

b. Rainbird

c. Hunter

B. Substitutions: Any substitutions shall be equal to the equipment specified, as determined by the Owner's Representative.

PART 3 – EXECUTION

3.01 EXAMANATION AND PREPARATION

A. Do not proceed with installation until project site have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

C. When applicable, backfill and compact depressions caused by excavations, demolition, and removal in accordance with the requirements outlined in SECTION 31 20 00, EARTHWORK.

3.02 INSTALLATION STANDARDS

A. The landscape irrigation system shall be installed in accordance with applicable requirements of the California Plumbing Code and California Electrical Code, and the requirements of the jurisdictional water company or utility district.

B. Manufactured materials and equipment shall be installed in accordance with the respective manufacturer's instructions for the location and conditions.

C. Electric automatic controller, electric remote control valves, electrical wiring, and the installation thereof shall conform with applicable provisions and codes.

3.03 SYSTEM LAYOUT

A. It shall be the Contractor's responsibility to lay out the irrigation system. Location of facilities indicated on Contract Drawings are approximate and diagrammatic and may require adjustment. Work shall be laid out as accurately as possible to conform with the construction drawings. Provide additional offsets, fittings, sleeves, and other devices that are required to complete the installation.

B. Irrigation system shall avoid conflicts with plant materials, lighting standards, signposts, architectural features, above and below ground utilities, and drainage system. Irrigation piping layout is schematic, showing location of pipes and fittings approximately. For example, where pipe is shown parallel or close to planting bed areas, it is intended that pipe be located inside the planting bed area.

C. Minimum flow through any spray valve shall be eight gallons per minute with 30 psi at the downstream side of the remote-control valve and pressure-reduce valve.

D. Minimum flow through any drip circuit valve shall be 3 gallons a minute with 25 psi at the downstream side of the remote-control valve and pressure valve.

E. Sprinkler head spacing shall be in accordance with manufacturer's recommendations for overlapping coverage. All sprinkler heads shall provide head-to-head coverage with a minimum of one foot overlap.

F. Laterals shall be installed not less than 12 inches from fences, curbs, sidewalks, and pavement, unless otherwise indicated.

G. Modifications: Provide modifications to the irrigation system to avoid blockage of sprinkler irrigation patterns, to prevent overspray and excessive runoff onto walkway and parking areas, and to provide full irrigation coverage to the planted areas. Such modifications also include trimming and adding heads as required to spray around trees, light poles, sign posts, other objects that obstruct spray pattern, and adjustments required as a result of trees being relocated or removed due to underground utility or drainage problems.

3.04 TRENCHING AND BACKFILL

A. Trenches shall be only wide enough to provide sufficient working space on each side of the pipe for making joint and compacting bedding materials and backfill. The bottom of trench shall be graded and prepared to provide a firm and uniform bearing throughout the length of the pipe, sleeve, or conduit.

   a. Trenches for lateral piping shall provide for a minimum of 12 inches of cover.

   b. Trenches for mains and conduits shall provide for a minimum of 18 inches of cover.

   c. Trenches under paving shall provide for a minimum of 24 inches of cover.

   d. Trenches for subsurface drip lines/tubes shall be 6 inches deep, or as recommended by the drip line manufacturer.

B. After trenches have been excavated, pipe shall be installed, tested, and inspected, and the trench shall be backfilled without undue delay.

C. Before pipeline trenches are backfilled, the irrigation system shall be pressure tested and the location of irrigation heads modified as required to obtain complete and uniform coverage of each plant's root ball.

3.05 FIELD QUALITY CONTROL

A. **Field Inspection:** Coordinate filed inspection in accordance with appropriate sections and the California Plumbing Code.

B. System Testing:

   a. Installation oversight and technical support.

   b. Terminate and test control system wiring and operation of electrical components.

   c. Demonstrate proper pump and controls operation.

d. Make adjustments to meet user-defined system performance.

e. Review operation and maintenance procedures with Twain Harte CSD.

C. Each system shall be tested and approved by Owner's Representative before backfilling trenches. Electrical circuits shall be tested and operative prior to backfilling of trenches. Leaks in the irrigation system shall be repaired, defective materials replaced, and the test shall be performed again.

D. Prior to testing, sufficient backfill materials may be placed on pipes between fittings, couplings, and connections to ensure stability of the line. Fittings, couplings, and connections shall remain visible for the full period of the test. Before pressure testing, the system shall be flushed with control valves open. Pipe shall be plugged or capped where irrigation heads are to be installed, while testing the system.

E. The entire system shall be checked for uniform and complete coverage after installing and testing.

F. Mains, laterals, valves, fittings, and automatic electrical control valves shall be pressure tested. After assembly and installation, and after joints have cured for 24 hours, test main first, then capped laterals (before installation of heads). For mains, pump to 100 psi static pressure, then disconnect pump. Pressure gages shall be located at two points in the system and shall show no loss after a period of six hours. Laterals shall be tested at line pressure.

G. Pipes, where pavement will be installed above, shall be retested, after subbase and base course material have been installed.

H. Irrigation System Function Test: Function tests shall be performed for each electric automatic controller and associated automatic irrigation system. The function test shall consist of not less than five consecutive working days during which time each controller shall have completed at least ten complete cycles automatically for each station controlled by said controller. If unsatisfactory performance of the system develops, the condition shall be corrected, and the test repeated until continuous satisfactory operation for five consecutive working days is obtained.

I. Backflow Preventer Test:

a. Testing of back flow preventers shall be conducted by a certified back flow preventer tester. The tester shall hold a valid certification as a back flow preventer tester from the county or other jurisdictional authority in which the device to be tested is located.

b. Test for back flow preventers shall be satisfactorily completed after installation of the back flow preventer assemblies and before operation of the irrigation system. Back flow preventers that fail the required tests shall be repaired or replaced and retested.

J. Final Inspection: Prior to acceptance of the work, clean and adjust all systems. Operate all systems under the observation of the Architect. Irrigation heads shall be visually inspected for coverage. Remote control valves shall be properly balanced.

3.06 PLANT ESTABLISHMENT PERIOD

A. The plant establishment period shall be as specified in Section 32 90 00, Planting.

B. Timing of irrigation controllers shall be adjusted for optimum performance and, to prevent flooding, on a cycle to end not later than 6:30 a.m.

C. Upon completion of landscape planting and clean-up operations, the Contractor shall request a final inspection by the Architect. The Contractor will not be permitted to begin the plant establishment period until after the Engineer has approved the landscape irrigation system installation in writing.

D. The Contractor shall maintain electrical and irrigation systems throughout the plant establishment period. Defective equipment shall be replaced.

E. The Contractor shall provide a summary of the recommended irrigation schedule after completion of the establishment period.

3.07 DISPOSAL OF REMOVED MATERIALS AND DEBRIS

A. Clean and protect products in accordance with manufacturer's recommendations.

B. Touch-Up, repair or replace products before substantial completion.

C. Dispose of scrap materials, waste, trash, and debris from the installation of the irrigation system in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by the Twain Harte CSD.

D. Burying of trash and debris on site will not be permitted. Similarly, burning of trash and debris at the site will not be permitted.

E. Scrap materials, trash, and debris shall become the property of the CONTRACTOR and shall be removed from the site and be disposed of in a legal manner. Location of the disposal site and length of haul shall be the CONTRACTOR's responsibility.

END OF SECTION 32 84 00

SECTION 32 90 00
PLANTING

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. The work of this Section consists of:

I. Providing labor

II. Equipment and materials for the acquisition and installation of:

i. Soils

ii. Plant materials

iii. Plant establishment maintenance.

1.02 RELATED SECTIONS

A. SECTION 31 23 00, EARTHWORKS

1.03 CODES AND STANDARDS

A. All local, municipal, and state laws, codes and regulations relating to all portions of this work are to be incorporated as part of these Specifications. These specifications shall not be construed to conflict with any of the below codes, regulations, or requirements. The Specifications and Drawings shall take precedence when they call for materials, workmanship or construction of a better quality or higher standard than required by the above-mentioned codes and regulations. Furnish without extra charge additional materials and labor required to comply with above rules and regulations.

B. State of California Model Water Efficient Landscape Ordinance (MWELO)

C. Public utility agency having jurisdiction over the project work.

D. "Sunset Western Garden Book," current edition.

E. "American Standards for Nursery Stock," American Association of Nurseryman, 230 Southern Building, Washington, D.C. 20005.

F. International Society of Arboriculture, Guide for Plant Appraisal, latest version.

G. United States Composting Council Compost Analysis Program (CAP)

H. United States Composting Council (USCC) Seal of Testing Assurance (STA) program.

I. Test Methods for the Evaluation of Composting and Compost (TMECC)

J. Manufacturer's recommendations.

1.04 QUALIFICATIONS:

A. **Labor Force:** Provide a foreperson and landscape installation and maintenance force thoroughly familiar with, and trained in, the work necessary to complete the tasks described herein in a competent, efficient manner acceptable to the Owner.

1.05 REQUIREMENTS

A. **Site Visit:** At beginning of work, visit and walk the site with the Owner's Representative and all sub-consultants to clarify scope of work and understand existing project/site conditions.

B. **Supervision:** The foreperson shall directly supervise the work force at all times and be present during the entire installation. Foreperson shall notify Owner's Representative of all changes in supervision.

C. **Identification:** Provide proper identification at all times for landscape maintenance firm's vehicles and a labor force uniformly dressed in a manner satisfactory to Owner's Representative.

D. Protect all existing and new plants from construction activities, deer, and rodents: Contractor shall be responsible for protection of all planting per Part 3.

E. All material substitutions shall be reviewed and approved by the Owner's Representative.

1.06 SITE PREPERATION FOR PLANTING AREAS

A. Prior to digging for the purpose of soil amending and planting, Contractor shall be aware of all underground utilities, pipes and structures. Contractor shall contact all utility companies for field location of underground utility lines prior to any excavation. Contractor shall take sole responsibility of any cost.

B. Do not proceed with planting installation as designed if obstructions and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of Owner's Representative. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.

C. Contractor shall be responsible for any coordination with subcontractors as required to accomplish planting operations.

D. Coordinate installation of large plant material with installation of structures such as wall footings, pavements, and curb and gutter.

1.07 PLANT MATERIAL STANDARDS

A. Quality and Size of Plants: Conform to the State of California Grading Code of Nursery Stock, No. 1 grade.

B. The contractor shall provide healthy, vigorous plant stock grown under climatic conditions similar to the conditions in the locality of the project.

C. Contractor shall furnish plant material free of insect pests or plant diseases. The Contractor shall comply with federal and state laws requiring inspection for plant diseases and infestations. The Contractor shall submit inspection certificates required by law with each shipment of plants, and deliver certificates to the Owner. Finally, the Contractor shall obtain clearance from the County Agricultural Commissioner as required by law, before planting plants delivered from outside the County in which planted.

D. Contractor shall warranty all plant materials per the specifications.

E. Contractor shall do their own quantity take-offs for all plant materials and sizes shown on plans.

F. See details and specifications for staking method, plant pit dimensions and backfill requirements.

G. Plant crown elevations relative to finish grade are shown on planting details and shall be strictly adhered to. Proper compaction of backfill to prevent settlement shall be required.

H. Trees and shrubs shall be installed prior to planting groundcover.

1.08 SOIL AMENDMENTS

A. Remove rocks larger than three inches from planting areas.

B. For soils less than six percent organic matter in the top six inches of soil, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be incorporated to a depth of six inches into the soil.

C. On-site soils with an organic content of at least five percent can be properly stockpiled (to maintain organic content) and reused.

D. Contractor to loosen compacted soils and mix soil amendments and conditioners to a minimum depth of 12 inches in planting areas.

1.09 FINISHED GRADES IN PLANTING AREAS

A. The Contractor shall allow for the addition of specified quantities of soil amendments and conditioners in soil preparation and finish grading.

B. The Contractor shall be responsible to establish the specified finished elevation, including importing soil or excavation, removal and disposal at an approved location. The Contractor shall furnish and install supplementary amended import soil in any planting areas as necessary to achieve the specified finish planting grades. Imported soil shall be free of unwanted seeds.

1.10 WARRANTY AND REPLACEMENT

A. Maintenance Period: See Part 3.

B. Warrant all plants to be in a healthy, thriving condition until the end of the maintenance period, and deciduous trees, shrubs and vines beyond that time until active growth is evident.

C. Replace all dead and damaged plants and plants not in a vigorous condition immediately upon discovery and as directed by the Owner's Representative and at no cost to the owner. Install replacement plants before the final acceptance of the maintenance period in the size specified.

PART 2 – PRODUCTS

2.01. EXISTING PLANTING SOIL (TOPSOIL)

A. Existing Planting Soil is defined as on-site topsoil that is either to be removed and stockpiled for reuse or to remain in place during construction. Satisfactory planting soil shall be free of subsoil, clay, lumps, stones, and other objects over 4" in diameter, and without weeds, roots, and other objectionable material. The soil shall be fertile, friable, natural, productive soil containing a normal amount of humus, and shall be capable of

sustaining healthy plant life. Soil shall not be infested with nematodes or with other noxious animal life or toxic substances. Soil shall be obtained from well-drained, arable land, and shall be of an even texture. Soil shall not be taken from areas on which are growing any noxious weeds listed in Cal IPC (California Invasive Plant Council) such as morning glory, equisetum, or Bermuda grass, etc.

B. Minimize the extent of disturbance activities to minimize impacts to soil outside the project's construction limits.

C. Mitigate construction-related soil compaction in vegetation areas.

D. Stockpile and reuse native soils in construction impact areas. When stockpiling topsoil, store on a flat site, mound soil no higher than 4 feet high for less than 12 months, ideally 6 months. Regardless of time stockpiled onsite, cover to prevent soil erosion and contamination by weeds.

E. Mitigate construction-related soil compaction in vegetation restoration areas by ripping the soil to loosen its structure. After final slope grading and prior to placement, cut slopes should be cross-ripped horizontal to the slope to assist in anchoring the topsoil. The spacing of the ripping shanks should be three feet and penetration should not exceed 12 inches in depth. Where embankments are constructed, offsetting lifts of material to create an uneven surface prior to topsoil placement should be considered. Smooth slopes are not acceptable. Alternative approaches to soil ripping will be considered for terrain which is inaccessible by machine. Proposed alternate methods must be submitted to Owner's Representative for approval prior to implementation.

F. Use only well composted soil amendments and incorporate them per manufacturer recommendations unless otherwise specified by soil lab.

G. Following construction, stockpiled topsoil should be uniformly redistributed (placement) to a depth of six inches. Placed topsoil should be cat tracked vertically to the slope to compact the topsoil and to create horizontal pockets (safe sites) to hold seed and water.

H. The contractor shall avoid walking, operating equipment or driving vehicles on planting areas after soil preparation is complete.

2.02. COMPOST AMENDMENT FOR PLANTING SOILS

A. Compost shall be well decomposed, stable and weed free. It shall be derived from one or more locally sourced organic materials such as: food waste or urban plant debris, agricultural crop residue or herbivore animal manures with a preference for urban plant debris and food waste. It shall not contain mixed solid waste. The product shall contain no substances toxic to plants and will possess no objectionable odors.

B. The composted yard waste amendment shall be a mixture of feedstock materials including green material consisting of chipped, shredded, or ground vegetation and mixed food waste, or clean processed recycled wood products. Single source, biosolids (sewage waste) compost will not be acceptable.

C. Composted Yard Waste Soil Amendment properties to conform to the following:

1. Soluble Salts: See above.

2. Moisture Content: 35-60%.
3. Contaminants: The compost shall be free of contaminants such as glass, metal and visible plastic. Heavy meals, fecal coliform and Salmonella shall not exceed levels outlined as acceptable in the California integrated waste management regulations.
4. Maturity: Physical characteristics suggestive of maturity include:
    i. Color: Dark brown to black.
    ii. Acceptable Odor: None, soil-like, or musty.
    iii. Unacceptable Odor: Sour, ammonia or putrid.
    iv. Particle Characterization: Identifiable wood pieces are acceptable, but the balance of the material shall be soil-like without recognizable grass or leaves.

2.03. PLANTS

A. Plant the variety, quantity and size indicated on drawings. The total quantities indicated on the drawings are considered approximate and furnished for convenience only. Contractor shall perform plant quantity calculations and provide all plants shown on the drawings.

B. Take precautions to ensure that the plants will arrive at the site in proper condition for successful growth. Protect plants in transit from windburn and sunburn. Protect and maintain plants on site by proper storage and watering.

C. Install healthy, shapely and well rooted plants with no evidence of having been root-bound, restricted or deformed.

D. Tag plants of the type or name indicated and in accordance with the standard practice recommended by the American Association of Nurserymen.

E. If plant species shown on drawings are not obtainable, proposed substitutions of nearest equivalent size or variety and with an equitable adjustment of contract price must be submitted in writing to and approved by Owner's Representative in writing.

F. Tree Form – Large Container

1. Trees shall have a symmetrical form as typical for the species/cultivar and growth form.
2. Central Leader for Single Trunk Trees: Trees shall have a single, relatively straight central leader and tapered trunk, free of co-dominant stems and vigorous, upright branches that compete with the central leader. Preferably, the central leader should not have been headed; however, in cases where the original leader has been removed, an upright branch at least ½ the diameter of the original leader just below the pruning point shall be present.
3. Potential Main Branches: Branches shall be evenly distributed radially around and appropriately spaced vertically along the trunk, forming a generally symmetrical crown typical for the species.
4. Headed temporary branches should be distributed around and along the trunk as noted above and shall be no greater than 3/8" diameter, and no greater

than ½ diameter of the trunk at point of attachment.

5. Measure trees with branches in normal position. Height and spread dimensions indicated refer to the main body of the plant, and not from branch tip to tip.

G. Tree trunk – Large Container

1. Trunk diameter and taper shall be sufficient so that the tree will remain vertical without the support of a nursery stake.
2. Trunk shall be free of wounds (except properly made pruning cuts), sunburned areas, conks (fungal fruiting-bodies), wood cracks, bleeding areas, signs of boring insects, galls, cankers and/or lesions.
3. Tree trunks shall be undamaged and uncut with all old abrasions and cuts completely callused over. Do not prune plants prior to delivery.

H. Tree Rots – Large Container

1. Trunk root collar (root crown) and large roots shall be free of circling and/or kinked roots. Contractor may be required to remove soil near the root collar to verify that circling and/or kinked roots are not present.
2. The tree shall be well rooted in the container. When the trunk is lifted the trunk and root system shall move as one and the root ball shall remain intact.
3. The top-most roots or root collar shall be within one inch above or below the soil surface. The soil level in the container shall be within the limits shown in above table.
4. The root ball periphery shall be free of large circling and bottom-matted roots.
5. On grafted or budded trees, there shall be no suckers from the root stock.

I. All seed shall conform with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test.

2.04. TREE STAKES

A. Provide three-inch (3") diameter by ten feet (10') long for trees greater than 8' high and 1" caliper.

2.05. MULCH

A. A minimum 3-inch layer of organic wood chip mulch shall be applied on all exposed soil surfaces of planting areas except grass areas, creeping or rooting ground covers, or direct seeding applications where mulch is contra-indicated.

PART 3 – EXECUTION

3.01. PREPARATION

A. If project timeline allows, planting shall occur during the wet season to maximize the benefit of seasonal rains. Avoid planting during extreme heat or freezing temperatures.

3.02. PLANT PROTECTION AND REPLACEMENT

A. Inspect and protect all existing and new plants and trees against damage from construction activities, erosion, trespass, insects, rodents, deer, disease, etc. and provide proper safeguards, including trapping of rodent and applying protective sprays and fencing to discourage deer browsing. Maintain and keep all temporary barriers (Tree Protection Fencing) erected to prevent trespassing.

3.03. GENERAL PREPARATION OF PLANTING SOIL

A. All planting soils to be amended as specified in soil laboratory analysis report(s).

B. Provide a minimum of three-inch depth of amended planting soil in all planting areas, or more where shown or specified otherwise. Install soil in maximum six-inch to nine-inch lifts. Compact each lift prior to installing subsequent lifts.

C. Thoroughly wet down the planting areas to settle the soil and confirm irrigation coverage and operation. Allow soil to dry to be workable as described herein.

D. Prior to planting, soil shall be loose and friable to a minimum depth of 12 inches with a relative maximum compaction of 85%.

E. Prior to planting, soil shall be moist, but not so moist that it sticks to a hand shovel. Do not work planting soil in a wet or muddy condition or dump or spread in areas where subgrade is not in proper condition.

F. Finish Grade: Hold finish grade surface in planting areas 1/2-inch below adjacent pavement surfaces, tops of curbs, manholes, etc. Drag finish grade to a smooth, even surface. Grade to form all swales and berms. Pitch grade with uniform slope to catch basins, streets, curb, etc., to ensure uniform surface drainage. Areas requiring grading include adjacent transition areas that shall be uniformly sloped between finish elevations. Slope surface away from walls so water will not stand against walls or buildings. Control surface water to avoid damage to adjoining properties or to finished work on the site. Take required remedial measures to prevent erosion of freshly graded areas.

G. Planting operations shall be performed only during periods when beneficial results can be obtained. When excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped until conditions are satisfactory.

3.04. PLANT DELIVERY

A. If plant materials are not acquired from a local nursery, they shall be delivered to a temporary nursery/ staging area at the project site up to one month prior to implementation. This will facilitate proper acclimatization and “hardening off” of plants to local conditions prior to planting. Staging/nursing area location will be as instructed by the Owner’s Representative.

B. Temporary nursery shall have adequate space to stage all the plant materials in one location. The temporary nursery shall be equipped with sufficient water for irrigation,

fencing to exclude herbivory and tampering, and frost blanket to protect against temperature extremes.

3.05. TREE, SHRUB AND PERENNIAL PLANTING

A. Layout plants per the planting plan for approval by Owner's Representative prior to planting.

B. Tree and Shrub Planting:

1. Plants are to be hand planted with the planting hole excavated to 1-1/2 times the depth and 3 times the diameter of the plant container. Fill holes with water to saturate the surrounding soil.

2. The plant shall be centered in the hole and placed to a depth equal to the soil level within the container. Previously excavated native subsoil may be properly amended and used as planting soil, then backfilled into the planting hole prior to placing the plant in order to achieve proper planting depth and to center the plant within the hole. Once the plant is properly placed within the planting hole, the remainder of the planting soil shall be placed back into the hole. The soil shall be lightly tamped and firmed into place, such that voids and air pockets do not exist within the planting hole. Soil shall be replaced only to the level of the surrounding undisturbed soil and shall not be mounded around the stem of the plant.

3. Create a shallow watering basin for each plant (1 to 2 inches deep x 12 inches wide), except in Riparian Corridor planting areas.

4. ADD ALT: Protect each plant with a cage. Add stakes or staples to ensure cage will be stable and secure.

3.06. MULCH

A. Mulch all new planting with organic wood chip mulch to a minimum 3-inch depth.

B. Keep mulch away from base (trunk) of plant by a minimum of four inches.

3.07. WATERING

A. Water all plantings immediately after planting. Apply water to all plants as often and in sufficient amount as conditions may require to keep the plants in a healthy vigorous growing condition until completion of the Contract. Do supplemental hand watering through the plant establishment maintenance period.

3.08. MAINTENANCE OF PLANTING

A. Maintain plants from time of delivery to site until final acceptance of landscape installation.

3.09. PRE-MAINTENANCE PERIOD REVIEW AND APPROVAL OF PLANTING

A. Receive approval of the installed planting prior to commencement of planting establishment maintenance period. Notify the Owner's Representative a minimum of

seven (7) days prior to requested review. Before the review, complete the following.

1. Complete all construction work.
2. Present all planted areas with all plants installed and appearing healthy.

3.10. PLANTING ESTABLISHMENT MAINTENANCE

A. Approach

1. Plantings shall be maintained in a manner consistent with the establishment and long-term sustainability of native vegetation.
2. Plantings are intended to be informal in appearance, to promote a naturalized setting, and to help blend the facilities in with the surrounding landscape. Excessive manicuring or tidying is inappropriate and not required.

B. Method

1. Plant establishment maintenance period shall be for a period of 120 days from approval of plant installation.
2. Pruning of planted materials shall be avoided, except where stems and branches interfere with pedestrian or vehicular circulation, walls, and eaves of buildings, or where a line-of- sight needs to be maintained.
3. Raking and leaf removal within planted areas shall be avoided. Accumulated litter and duff will create a more natural appearance, help to build soil fertility, retain soil moisture and help preclude the establishment of weeds. However, litter and duff materials removed from other areas (after planting and during regular maintenance) shall not be applied to planted areas to avoid over-accumulation and deleterious effects to planted materials.
4. Keep all walks and paved areas clean. Keep the site clear of debris resulting from landscape work or maintenance.
5. Keep watering basins in good condition.
6. Remove non-native weeds by hand only.

C. General Requirements

1. Maintenance Period: The planting establishment maintenance period required shall be 120 calendar days after all planting and irrigation is complete, seed is installed/seeded, and as approved by Owner's representative. A longer period may be required if the plants are not thick, vigorous and even, or if the plant material is not acceptably maintained during the maintenance period. The start of the maintenance period to be confirmed by Owner's Representative. Contractor to notify Owner's Representative of start and end dates of maintenance period.
2. Planting establishment maintenance immediately follows, coincides with, and is continuous with the planting operations, and continues through seed installation, and after all planting is complete and accepted; or longer where necessary to establish acceptable stands of thriving plants.

3. Protect all areas against damage, including erosion, trespass, insects, rodents, disease, etc. and provide proper safeguards. Maintain and keep all temporary barriers erected to prevent trespass.
4. Keep all walks and paved areas clean. Keep the site clear of debris resulting from construction or maintenance activities.
5. Repair all damaged planted areas and replace plants and reseed immediately upon discovery of damage or loss, except during periods of extreme heat or freezing, in which case replanting shall resume once conditions improve.
6. Keep contract areas free from weeds by cultivating, hoeing or hand pulling. Contractor shall not use chemical weed killers or line trimmers.

D. Tree and Plant Maintenance

1. Maintain during the entire establishment period by regular watering, cultivating, weeding, repair of stakes and ties, and spraying for insect pests. Prune when requested by the Owner's Representative.
2. Keep watering basins in good condition and weed-free at all times. Replace all damaged, unhealthy or dead trees, shrubs, and grasses with new stock immediately; size as indicated on the drawings.

3.11 PLANT REPLACEMENT

A. Approach

1. Plant Replacement shall occur during the planting establishment maintenance period.
2. Dead plants shall be replaced in roughly the same location and species selection as originally planted, as informed by monitoring activities and site observations.
3. Replacement plants shall be provided at the Contractor's expense. Coordinate with the Owner's Representative.

3.12 FINAL PLANTING REVIEW AND ACCEPTANCE

A. At the conclusion of the planting establishment period, schedule a final review with the Owner's Representative. On such date, all project improvements and all corrective work shall have been completed. If all project improvements and corrective work are not completed, continue the planting establishment, at no additional cost to the Owner, until all work has been completed. This condition will be waived by the Owner's Representative under such circumstances wherein the Owner has granted an extension of time to permit the completion of a particular portion of the work beyond the time of completion set forth in the Agreement.

B. Submit written notice requesting review at least 10 days before the anticipated review.

3.13 CLEANUP AND PROTECTION

A. Contractor shall exercise caution to avoid washing or sweeping dirt and debris into the storm drain system.

3.14 DISPOSAL

A. Recycle all waste. Reuse or return unused items such as palettes, flats and pots. All plant debris shall be separated from other refuse and taken to a facility where it will be recycled i.e., to produce compost or mulch.

END OF SECTION 32 90 00

SECTION 33 14 00
SITE WATER DISTRIBUTION

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. On-site potable water distribution systems, including connections to existing systems, sterilization, testing of water mains, and all appurtenances required for the complete systems. Refer to Section 22 14 53 for the piping and plumbing specifications associated with the rainwater conveyance system.

B. System design pressure is 125 psig.

1.02 REQUIREMENTS

A. Comply with all requirements of the District, including:

a. No connection shall be made to potable, fire, or industrial water lines without written approval from the District.

b. If construction water is needed by the Contractor, no connection to the existing main shall be used until an approved backflow prevention device is installed by the Contractor.

c. Valves of existing public systems shall not be operated by any person other than District personnel.

d. No connection will be allowed from new to existing water mains until a pressure test has been conducted successfully.

e. All new potable water and/or fire systems shall be sterilized (chlorinated) by the Contractor.

1.03 SPECIFICATIONS AND STANDARDS

A. Twain Harte Community Services District (CSD) Water Standard Specifications and Details, November 2006

B. AWWA C900 - High Pressure Water Pipe

C. ASTM D1785 - Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120

D. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

E. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

F. AWWA C111/A21.11 – Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings

G. AWWA C110/A21.10 – Ductile-Iron and Gray-Iron Fittings

H. AWWA C153/A21.53 – Ductile-Iron Compact Fittings

I. AWWA C104/A21.4 – Cement-Mortar Lining for Ductile Iron Pipe and Fittings

J. AWWA C601-68 – Standard for Disinfecting Water Mains

1.04 SUBMITTALS

A. Submit brochures and shop drawings. Allow ample time for review and correction procedures.

B. Shope drawings and detailed descriptions for items which are not manufactured, and which have to be specially fabricated for work associated with this Contract.

C. Provide product data to the Owner's Representative. Specifically, provide the name or other identification of each item to be provided as part of work of this Contract. The assembled brochures shall show saw cuts and fully detailed descriptions of all manufactured items furnished.

PART 2 – PRODUCTS

2.01. ACCEPTABLE MANUFACTURERS

A. Ductile Iron Pipe shall be a US pipe as specified or equivalent by American.

B. Shut-off valves: Mueller as specified or equivalent by Clow, Dresser, Kennedy, or Stockham.

2.02. MATERIALS AND METHODS

A. Water Piping

a. 4 inches and larger: Polyvinyl chloride (PVC) pipe in conformance with all requirements of AWWA C900, Class 200.

b. 3 inches and smaller: Schedule 80 PVC pipe in conformance with requirements of ASTM D1785, Type 1, Grade 1.

B. Fittings

a. For all ductile iron pipe and PVC pipes that are four inches and larger: Cement-lined ductile or cast iron, 250 lb.

i. Use tapped tees or flanged adapters at connections of copper piping to ductile iron or PVC piping.

b. For PVC pipe 3 inches and smaller, use PVC socket fittings for solvent welding.

C. Joints for pipe and fittings:

a. PVC piping:

i. 4 inches and larger: integral bell containing a lock-in ring and spigot.

1. Pipe joints shall be push-on as specified as ASTM D3139.

2. Provide each joint connection with an elastomeric gasket suitable for the bell or coupling installation.

3. Gaskets for push-on joints for pipe shall conform to ASTM F477.

4. Gaskets for push-on joints and compression type joints or mechanical joints for connections between pipes and metal fittings, valves, and other accessories shall be as specified in AWWA C111/A21.11.

5. Polyvinyl chloride (PVC) Water Main Fittings shall be gray-iron or ductile iron conforming to AWWA C110/A21.10 or AWWA C153/A21.53 and

shall have cement mortar lining conforming to AWWA C104/A21.4, standard thickness unless otherwise indicated on Drawings. Fittings shall be mechanical joints.

6. 3 inches and smaller: Solvent welded per manufacturer's recommendations.

b. Flanges

   i. For ductile iron pipe: 125 lb., ductile or cast iron, threaded, ASTM A126 and ANSI B16.1.

   ii. Gaskets: Non-asbestos type composition, 1/16-inch thick, equivalent to Garlock Style 3000.

   iii. Bolting Materials: Carbon steel heavy hex bolts and nuts, ASTM A307, Type B.

c. Valves, hydrants, and accessories:

   i. Shut-off valves: Mueller as specified or equivalent by Clow, Dresser, Kennedy, or Stockham.

      1. Valves 4 inches and larger: AWWA approved, 200 lb.

      2. Valves 14 inches and larger: AWWA approved, 150 lb.

         a. Buried: Mueller #A-2360-23, with 2-inch square operating nut, and mechanical joint ends provided with retainer glands as specified under paragraph "Joints for pipe and fittings" section for ductile iron piping. Provide concrete support block under buried valve.

            i. Provide cast iron adjustable type valve box with proper extension to six inches below bottom of grade and cast-iron collar and cover. Cast "WATER" in cover.

         b. Above grade: Mueller #A-2380-6, with wheel handles and flanged ends.

      3. Valves less than four inches in size: Federal Specifications WW-V-54, Class A, Type III, bronze, double wedge, non-rising stem, screwed bonnet, 200 psi W.O.G working pressure, stuffing box repackable under pressure, all parts renewable.

   ii. Provide backflow preventers where indicated on the plans.

   iii. Pressure regulating valve: Applies to valves that are pressure reducing, pressure sustaining, and check valves. Size shall be 8-inch, 125 lb., flanged, rated for 15 to 75 psi downstream and 20 to 200 psi upstream.

d. Pipe guards shall be 4-inch Schedule 40 galvanized steel pipe filled with concrete. Pipe guards shall be seven feet long, extending four feet above finished grade, and set in a concrete footing (1.5 feet in diameter by 3.5 feet deep).

e. Corrosion protection: All buried, uncoated, and/or otherwise unprotected valves, clamps, flanges, bolts, nuts, etc., shall be cleaned, primed, and coated with a coal tar

base protective coating (1/32 inch thick). Apply protective coating in accordance with the manufacturer's instructions.

PART 3 – EXECUTION

3.01. EXCAVATION, TRENCHING, BACKFILL, AND COMPACTION

A. Perform in accordance with the requirements outlined in Section 31 20 00.

3.02. INSTALLATION

A. Coordinate the installation at this part of the work with the overall construction schedule.

B. Provide concrete thrust blocks at all buried fittings and stub ends on 4-inch and larger PVC lines and as indicated on the Drawings.

C. Repair all damaged lines according to AWWA C104.

D. Connect to existing system where indicated.

E. Test the entire system at 1.5 times system design pressure. Maintain test pressure for at least four hours or longer as directed by Owner to prove tightness without leaks.

F. Install pipes and fittings in accordance with manufacturer’s recommendations. Provide 30 inches cover from top of pipe to finish grade.

3.03. DISINFECTION

A. Thoroughly clean, chlorinate, drain, and flush all pipes, fittings, valves, and appurtenances which have been exposed to contamination by construction in accordance with AWWA Specification C601-68.

B. Owner’s Representative should be notified 24 hours in advance of disinfection of all new potable water lines.

i. Flush line prior to disinfection. Flushing shall produce minimum velocity of 2.5 feet per second in pipe.

ii. Disinfect pipe using sodium hypochlorite to produce a dosage of 50 mg/L for a 24-hour contact period.

iii. Open and close all valves several times during disinfection period.

iv. After a 24-hour retention period, flush chlorinated water from the line until chlorine concentration of water leaving the main is no higher than that generally prevailing in the existing system, or less than 1.0 mg/L.

v. Provide corporation stoop or similar connection and obtain sample for bacteriological analysis.

vi. Repeat disinfection procedure until bacteriological analysis results are acceptable to Owner.

SECTION 33 31 11
SANITARY SEWER LINE CONSTRUCTION

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Gravity Sanitary Sewer Pipe.

B. Cleanouts.

C. Testing.

1.02 CODES AND STANDARDS

A. Tests and Inspections:

a. Conduct leakage tests before flows are allowed in the line.

b. Test the entire system for exfiltration in the presence of Owner's Representative. Limit leakage to 100 gallons per inch of pipe diameter per mile of length in 24 hours.

B. Allowable tolerance:

a. The horizontal location of inlets and cleanouts should be within ±3 inches, in any direction.

C. Specifications and standards:

a. Twain Harte Community Services District Sewer Standard Specifications and Details, November 2006.

b. Chapter 7 of the California Plumbing Code (CPC).

c. AASHTO M198 Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.

d. ASTM A48 Gray Iron Castings.

e. ASTM A746 (ANSI/AWWA C151/21.51) Ductile Iron Pipe.

f. ASTM C94 Ready-Mixed Concrete.

g. ASTM C150 Portland Cement.

h. ASTM C443 Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

i. ASTM C478 Precast Reinforced Concrete Manhole Sections.

j. ASTM C923 Watertight Resilient Connectors for Manhole to Pipe Seal.

k. ASTM D1248 Polyethylene Plastics Molding and Extrusion Materials.

l. ASTM D1784 Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds.

m. ASTM D2122 Determining Dimensions of Thermoplastic Pipe and Fittings.

n. ASTM D2321 Underground Installation of Flexible Thermoplastic Sewer Pipes.

o. ASTM D2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

p. ASTM D3034 Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

q. ASTM D3212 Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

r. ASTM F477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

s. ANSI/AWWA C105/A21.5 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.

t. ANSI/AWWA C111/A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

u. ANSI/AWWA C150/A21.50 Thickness Design of Ductile-Iron Pipe.

v. ANSI/AWWA C151/A21.51 Ductile-Iron Pipe, Centrifugally Cast for Water or Other Liquids.

1.03 SUBMITTALS

A. Product data, including the manufacturer's detailed technical materials, fabrication, and installation data, including technical bulletins, drawings, specifications, guides, or manuals that may be applicable to this project.

B. The manufacturer's certification that the pipe and fittings have been inspected and tested at the point of origin and are in compliance with specified requirements.

PART 2 – PRODUCTS

2.01. PIPE AND FITTINGS

A. PVC pipe and fittings for main lines 15 inches or small shall conform to ASTM D3034 and SDR 26.

B. Manufacture pipe from approved, Type 1, Grade 1, PVC 12454-C conforming to ASTM D1784 and meeting requirements of ASTM D2122 and ASTM D2412. Pipe shall have integral wall thickened bells or extruded couplings with gasket seals. Solvent weld joints will not be permitted.

C. Pipe joints shall be gasket push-on type complying with ASTM D3212 and ASTM F477.

D. Pipe shall be UL/FM approved.

E. Fittings shall conform to the same specifications as pipe in which they are installed.

F. Pipe shall be identified on the exterior of the pipe with the following information:

a. Nominal pipe size and outside diameter (O.D.) base.

b. Material code designation number (12454C)

c. Dimension ratio number (SDR 35).

d. Pipe Stiffness Designation (PS 46).

e. ANSI/ASTM Designation (D3034).

f. Pipe's manufacturer's name and production code.

G. Cast iron pipe and fittings. Conform to ASTM A74, service weight bell and spigot pipe with the following acceptable gasket types:

   a. Dual Tite.

   b. Rich-Seal.

   c. Ty-Seal.

PART 3 – EXECUTION

3.01. INSTALLATION PERFORMANCE

A. Excavating, trenching, backfilling, and compacting should be performed in accordance with Section 31 20 00, “Earthwork.”

3.02. PIPE LAYING

A. Lay pipe as indicated on the plans, as specified herein, and in compliance with applicable portions of ASTM D2321.

B. Grade trench bottom to elevations indicate elevation of pipeline and shape bottom to fit lower quadrant of pipe. Excavate holes at each bell hub such that the pipe will be uniformly supported the entire length of the barrel only.

C. Pipe installation and jointing shall be performed in accordance with the pipe manufacturer’s specifications and instructions for type of pipe used and applicable requirements specified herein. All pipe having a defective joint, bell, or spigot is unacceptable, shall be rejected, removed from site, and replaced with an acceptable unit.

D. Commence pipe laying at the lowest point of the finished trench, or from a point designated by the Owner’s Representative. Lay the pipe upgrade from the point of connection with all bell ends forward.

E. Install pipe to homing mark on spigot. On field cut pipe, provide a homing mark on the spigot end in accord with manufacturer’s recommendations.

F. Maintain pipe alignment and joint closure until sufficient haunching and backfill is in place such that it can adequately hold pipe in position.

G. Prevent foreign materials from entering the pipe when it is being placed in the trench. Do not place debris, tools, or other material in the pipe at any time.

H. For each length of pipe that is placed in a trench, assemble joints and bring pipe to the intended line and grade. Bed and secure pipe in place. When pipe laying is delayed for 10 minutes or longer, close the open ends of the pipe using a watertight plug or other means approved by the Owner’s Representative to ensure the inside of the pipe remains clean and free of debris.

3.03. PIPE JOINTING

A. Pipe installation and other jointing shall be in accordance with the manufacturer's specifications, instructions, and the applicable requirements specified herein.

B. Ensure that the interior of the pipe and jointing seal is free of sand, dirt, trash or other foreign materials prior to installation. All pipe and fittings that have been installed with dirt or other deleterious material shall be removed, cleaned, and re-laid. Furthermore, the bells

of pipe shall remain free of sand, dirt, or rocks so that the joints may be properly assembled without overstressing the bells.

3.04. FIELD QUALITY CONTROL

A. Inspect sanitary sewer lines to determine if displacement of pipe has occurred during backfilling and compaction.

B. Correct, at no additional cost, sections of piping that are deficient in material, alignment, grade, or joints.

SECTION 33 42 00
STORM DRAIN SYSTEM

PART 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. This section covers pipeline construction used for the conveyance of irrigation water and storm drainage. The size and type of pipe shall be as shown on the plans. Pipe stronger than that specified in the following section may be furnished at the Contractor's option at no additional cost to the District.

1.02 CODES AND STANDARDS

A. Allowable tolerance:

a. Variations from the alignment shown on the plans shall not exceed 0.10 feet and the rate of departure from or return to established grade or alignment shall be no more than 1 inch in 10 feet of pipe line unless otherwise approved by the Engineer.

B. Specifications and standards:

a. CalTrans Standard Specifications, Division VII Drainage Facilities

b. ASTM F894 – Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe

c. AASHTO M-252 – Standard Specification for Corrugated Polyethylene Drainage Pipe

d. ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Material

e. ASTM D1248 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

f. ASTM D2837 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products

1.03 SUBMITTALS

A. Product data, including the manufacturer's detailed technical materials, fabrication, and installation data, including technical bulletins, drawings, specifications, guides, or manuals that may be applicable to this project.

B. The manufacturer's certification that the pipe and fittings have been inspected and tested at the point of origin and are in compliance with specified requirements.

PART 2 – PRODUCTS

2.01. PIPE MATERIAL

A. Pipe material and fittings shall, in accordance with ASTM F894, be made from polyethylene (PE) plastic compound meeting the requirements of Type III, Class C, Category 5, Grade P34 as defined in ASTM D1248 and with established hydrostatic design basis (HDB) of not less than 1,250 psi for water at 73.4 degrees Fahrenheit as determined in accordance with ASTM D2837. Materials meeting the requirements of cell classification PE 334433 C or higher cell classification, in accordance with ASTM D3350 are also suitable. Corrugated pipe

base material shall comply with the requirements of AASHTO M-252 (Type S) and have a minimum cell classification PE 335420C.

2.02. RISER INLET

A. The riser inlets attached to the inlet side of the storm pipes shall be comprised of polypropylene or alternative approved by the District. The riser inlet material will contain an ultraviolet (UV) inhibitor. Riser inlets shall be installed in accordance with manufacturer recommendations and specifications.

2.03. CARE OF PIPE MATERIAL

A. Pipe in shipping and/or storage shall be stacked in accordance with manufacturer's instructions. Pipe that is gouged, marred, or scratched forming a clear depression shall not be installed and shall be removed if damaged during the installation process.

PART 3 – EXECUTION

3.01. INSTALLATION PERFORMANCE

A. Excavating, trenching, backfilling, and compacting should be performed in accordance with Section 31 20 00, "Earthwork."

3.02. FIELD QUALITY CONTROL

A. Inspect storm drainage lines to determine if displacement of pipe occurred during installation and compaction.

B. Correct, at no additional cost, sections of piping that are deficient in material, alignment, grade, or joints.

PART VIII
PROJECT DRAWINGS

TWAIN HARTE MEADOWS PARK

CLIENT

TWAIN HARTE COMMUNITY SERVICES DISTRICT
22945 MEADOW DRIVE
TWAIN HARTE, CA 95383

PROJECT TEAM

WATERSHED PROGRESSIVE

CENTRAL SIERRA OFFICE
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CENTRAL COAST OFFICE
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PROJECT MANAGER
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CIVIL ENGINEER
PAIGE BRUE, P.E.
PAIGE@H2OPROGRESSIVE.COM

PROJECT LEAD LANDSCAPE DESIGNER
AJA BULLA-RICHARDS
AJA@H2OPROGRESSIVE.COM

THE FOLLOWING IS A GENERAL LIST OF BIDDABLE ITEMS FOR THIS PROJECT (SEE SPECIFICATIONS FOR A MORE DETAIL DESCRIPTION OF EACH BIDDABLE ITEM):

- GENERAL SITE WORK (TREE PROTECTION, TEMPORARY FENCING IF DEEMED NECESSARY FOR SECURITY, CLEANUP, AND STORM DRAIN PROTECTION).
- DEMOLITION, REMOVAL, AND LEGAL DISPOSAL OF ASPHALT, A PORTION OF THE POOL, ABANDONED PIPES, AND OTHER UNUSABLE DEBRIS ON SITE.
- EARTHWORK (INCLUDES EXCAVATION FOR TANK-3) AND REMOVAL OF ALL ROCKS GREATER THAN 6 INCHES FROM BACKFILL.
- BOULDER, COBBLE, AND ROCK MULCH PLACEMENT (FIELD DIRECTED BY OWNER'S REPRESENTATIVE). BOULDER SELECTION WILL ALSO BE DIRECTED BY OWNER'S REPRESENTATIVE.
- PERMEABLE PATHWAY (INCLUDES PEDESTRIAN BOARDWALKS).
- PERMEABLE PARKING LOT.
- CURB AND CURB RAMP INSTALLATION.
- STREET LIGHT INSTALLATION.
- PREFABRICATED RESTROOM PREPARATION AND COORDINATION.
- PAVILION (INCLUDING GT-1)
- ELECTRICAL WORK.
- UNDERGROUND UTILITIES (SANITARY SEWER AND WATER).
- OTHER UNDERGROUND UTILITIES (IRRIGATION, RAINWATER CONVEYANCE, AND STORM DRAINS).
- TOWN CHRISTMAS TREE INSTALLATION.
- PADS AND SETTING OF SIX POLY TANKS (TANK-1).
- PADS AND SETTING OF ONE CORRUGATED METAL TANK (TANK-2).

NOTE: REFER TO SPECIFICATIONS FOR A MORE DETAILED DESCRIPTION OF BIDDABLE ITEMS. FOR CLARIFICATION PURPOSES, BIDDABLE ITEMS WILL BE INDICATED WITH AN ASTERISK (*) ON THIS PLAN SET. HOWEVER, THESE MARKINGS ARE ONLY A GUIDE AND DO NOT SUPERSEDE THE MEASUREMENT AND PAYMENT SPECIFICATIONS.

THE FOLLOWING IS A GENERAL LIST OF NON-BIDDABLE/EXCLUDED ITEMS (WORK TO BE DONE BY OTHERS) SHOWN ON THESE PLANS INCLUDE:

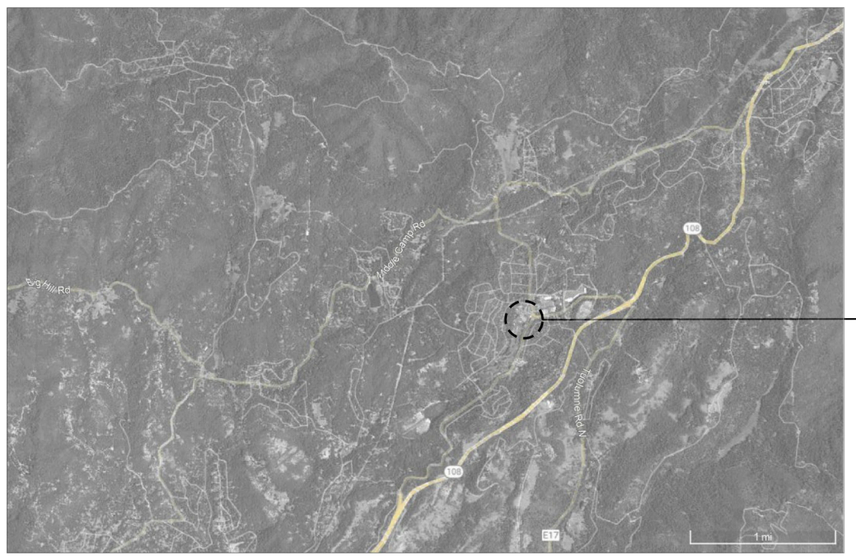
- LANDSCAPING, PLANTING, AND MULCHING
- PREFORMED SCOUR HOLE INSTALLATION
- IRRIGATION EMITTER PLACEMENT
- RESTROOM GREYWATER PLUMBING
- GREYWATER PLANTINGS
- INSTALLATION OF ABOVEGROUND PLUMBING, VALVES, AND ACCESSORIES FOR RAIN TANKS
- RAINWATER PUMP INSTALLATION
- LOW-VOLTAGE LIGHTING (E.G., PEDESTRIAN WALKWAYS AND CHRISTMAS TREE UPLIGHT)
- PICNIC TABLE ASSEMBLY
- BARBEQUE ASSEMBLY AND INSTALLATION
- SINK AND LARGE BARBEQUE IN THE PAVILION
- EDUCATIONAL/DISCOVERY LAB SIGNAGE
- FLUME AND WATER PLAY DISCOVERY LAB
- TANK-3 INSTALLATION AND ASSOCIATED ACCESSORIES
- PARK ENTRANCE SIGN AND INSTALLATION
- PREFABRICATED RESTROOM PURCHASE, WHICH INCLUDES PLACEMENT WITH A CRANE.

ABBREVIATIONS

(E)	EXISTING
(N)	NEW
LOD	LIMIT OF DISTURBANCE
POC	POINT OF CONNECTION
VAC	AC VOLTAGE
CW	COLD WATER
RW	RAINWATER
GW	GREYWATER
SW	STORMWATER
LP	LOW POINT
HP	HIGH POINT
RSP	ROCK SLOPE PROTECTION
LFG	LOW FINISH GRADE
HFG	HIGH FINISH GRADE
TC	TOP OF CURB
SF	SQUARE FOOT
LF	LINEAL FOOT
CY	CUBIC YARD
U/S.	UPSTREAM
D/S	DOWNSTREAM
INV	INVERT
STD SPEC	STANDARD SPECIFICATION
CMP	CORRUGATED METAL PIPE
USFS	UNITED STATES FOREST SERVICE

SHEET INDEX

VICINITY MAP

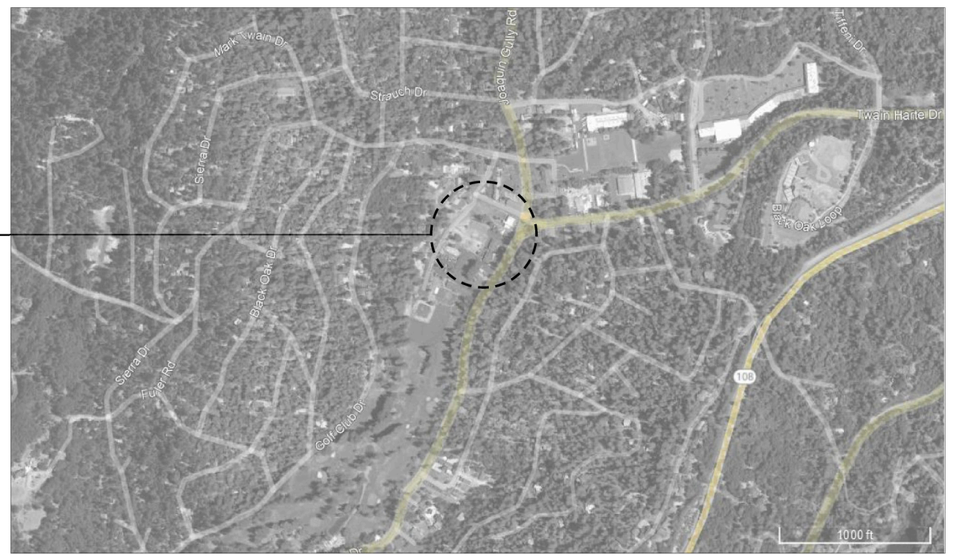


PROJECT VICINITY

N

PROJECT LOCATION MAP

PROJECT LOCATION



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JACQUELINE P. BRUE
C 91542
EXP. 09/30/24
CIVIL
STATE OF CALIFORNIA

Twain Harte Meadows
22945 Meadow Drive, Twain Harte, CA 95383

DATE:
PROJECT NO.

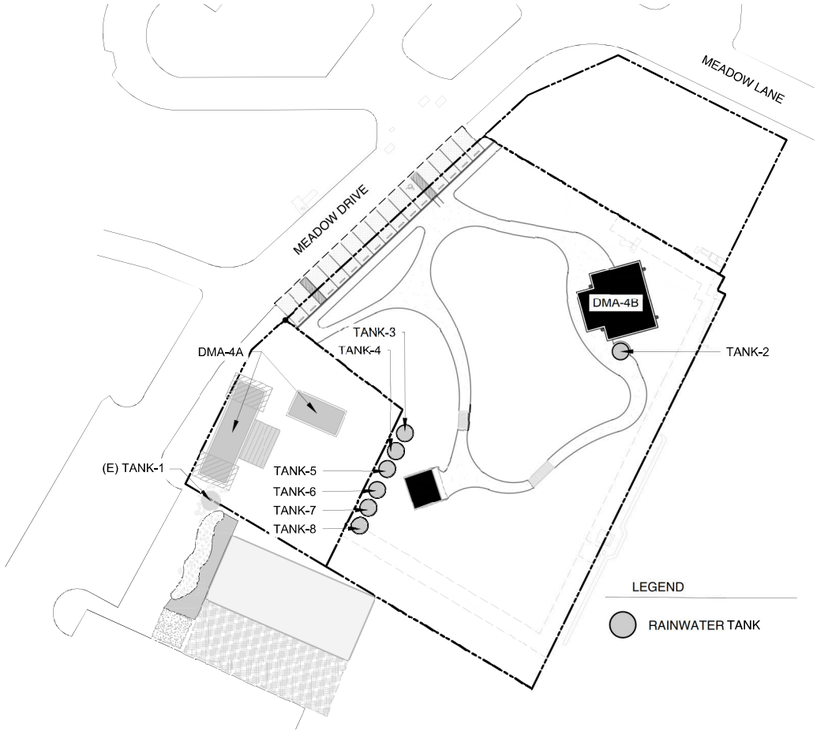
REVISION	DATE
1 60% DRAFT TO CSD	05.31.22
2 60% TO CSD	06.15.22
3 60% TO SWB	07.28.22
4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: MS,JS
DRAWN BY: MS,JS
REVIEW BY: JPB, RH, NS

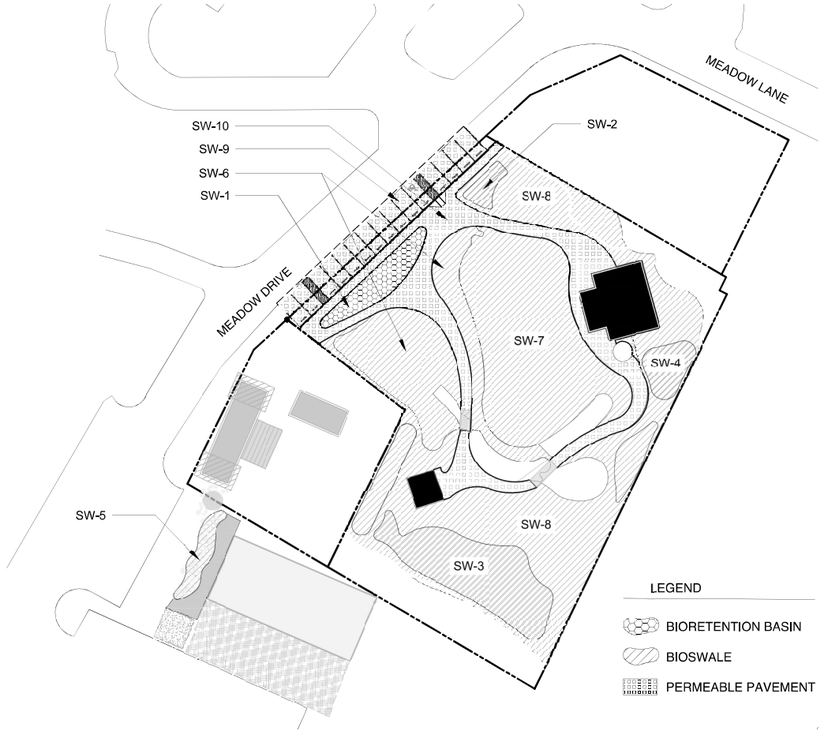
COVERSHEET

L0.0

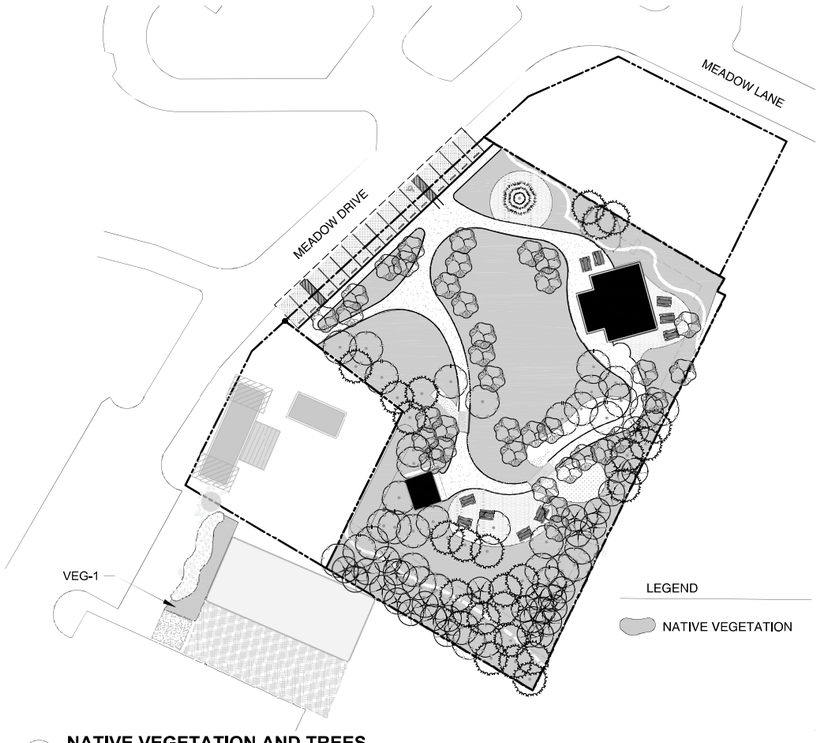
100% CD



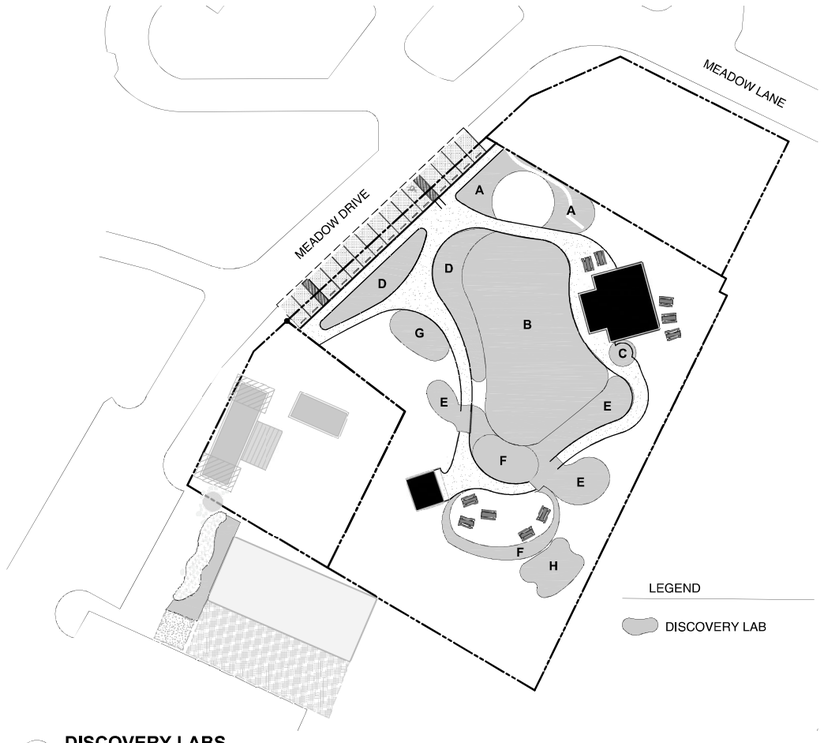
1 **RAINWATER HARVESTING**



2 **STORMWATER BENEFITS**



3 **NATIVE VEGETATION AND TREES**



4 **DISCOVERY LABS**

1 RAINWATER HARVESTING

RAINWATER HARVESTING BENEFIT					
PROPOSED BMP RUNOFF TREATMENT	PLAN REFERENCE	TANK VOLUME	DMA ID	DMA AREA	TREATED DMA VOLUME
		GAL		ACRES	AFY
RAINWATER HARVESTING TANKS	TANK-1	4,333	DMA-4A	0.02	0.10
	TANK-2	5,000	DMA-4B	0.04	0.19
	TANK-3	5,000			
	TANK-4	5,000			
	TANK-5	5,000			
	TANK-6	5,000			
	TANK-7	5,000			
	TANK-8	5,000			
TOTAL		**39,333**		**0.05**	**0.29**

2 STORMWATER BENEFITS

STORMWATER BENEFITS				
PROPOSED BMP RUNOFF TREATMENT	PLAN REFERENCE	AREA (SQ-FT)	TOTAL AREA (SQ-FT)	MINIMUM REQUIRED (SQ-FT)
BIORETENTION BASIN	SW-1	1,004	1,004	900
BIOSWALES	SW-2	327	27,315	25,800
	SW-3	3,166		
	SW-4	698		
	SW-5	500		
	SW-6	4,810		
	SW-7	6,789		
	SW-8	11,025		
TOTAL			**28,319**	
PERMEABLE PAVEMENT-PARKING	SW-9	2,672	2,672	2,400
PERMEABLE PAVEMENT-PATHWAY	SW-10	5,656	5,628	5,400

NOTE: A BIOSWALE IS A VEGETATED, SHALLOW DEPRESSION THAT IS DESIGNED TO CAPTURE AND TREAT STORMWATER RUNOFF.

3 NATIVE VEGETATION AND TREES

NATIVE VEGETATION BENEFIT				
PROPOSED BMP RUNOFF TREATMENT	PLAN REFERENCE	AREA (SQ-FT)	TOTAL AREA (SQ-FT)	MINIMUM REQUIRED (SQ-FT)
NATIVE VEGETATION	VEG-1	622	**622**	500

NATIVE VEGETATION BENEFIT		
PROPOSED BMP RUNOFF TREATMENT	NUMBER OF TREES	MINIMUM NUMBER REQUIRED
TREES	**124**	33

4 DISCOVERY LABS

DISCOVERY LAB BENEFIT		
DISCOVERY LAB DESCRIPTION	PLAN REFERENCE	AREA (SQ-FT)
Living Food Bioswale Fence	A	1,335
Magic of Plants and Pollinators	B	6,790
Rainwater Harvesting	C	191
Stormwater Discovery	D	2,236
Water Play Discovery	E	3,299
Me-Wuk Tribal Stormwater Garden	F	1,486
Soils	G	656
Greywater	H	744
TOTAL		**16,737**

SCALE: 1"=40'
0 40 80 120

N

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EXP. 09/30/24
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STATE OF CALIFORNIA

Twain Harte Meadows Park
22945 Meadow Drive, Twain Harte, CA 95383

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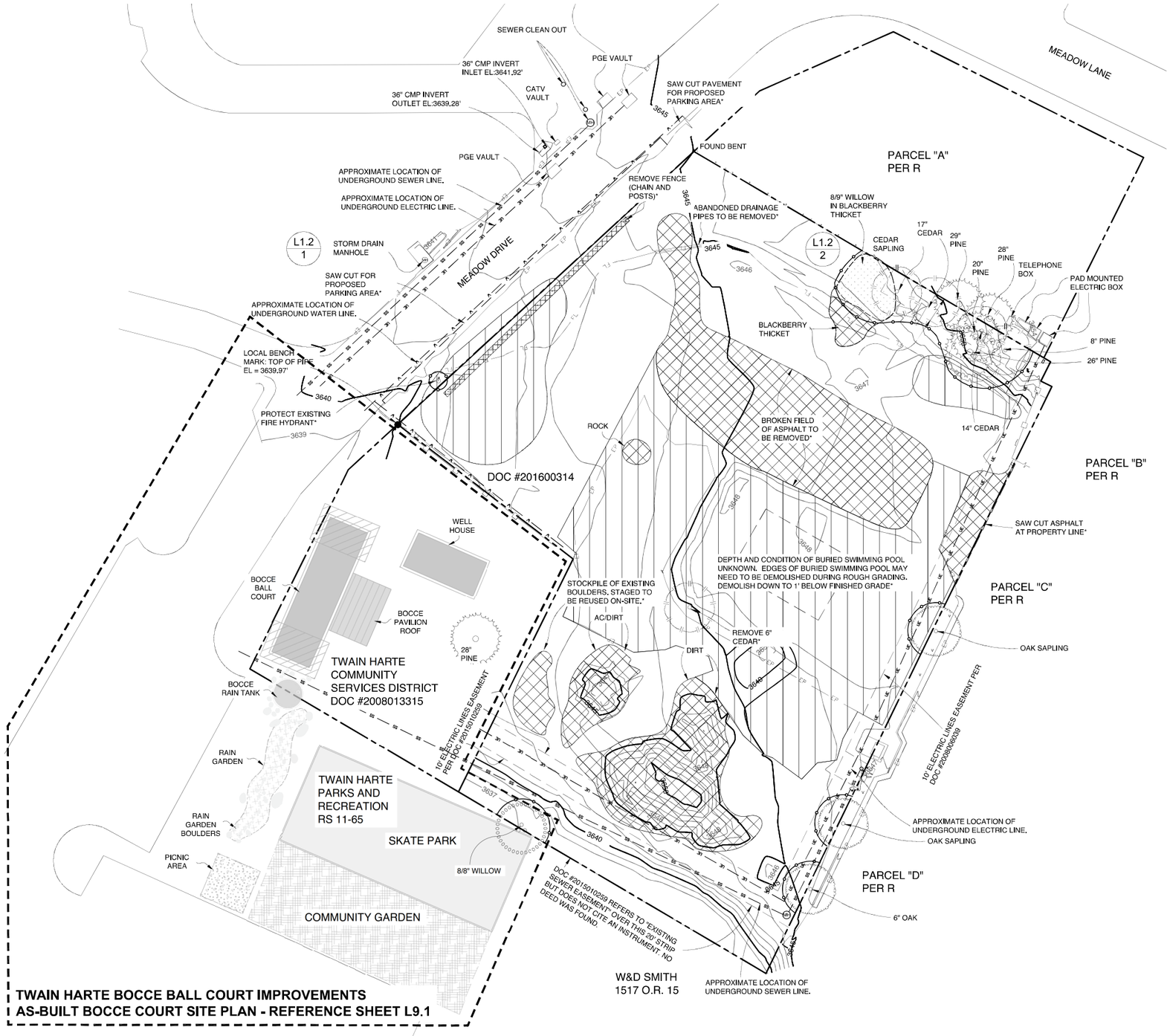
DESIGN BY: MS,JS
DRAWN BY: MS,JS
REVIEW BY: JPB, RH, NS

STORMWATER BENEFITS

L0.1

100% CD



GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. ALL EXISTING TREES TO BE AVOIDED AND PROTECTED WITH CONSTRUCTION FENCING AT EACH TREE DRIPLINE UNLESS OTHERWISE NOTED FOR REMOVAL.

C. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

LEGEND

- PROPERTY BOUNDARY
- 1795 EXISTING CONTOURS 1'
- 1795 EXISTING CONTOURS 5'
- SS 6" SANITARY SEWER
- W WATER
- FL FLOW LINE
- EP EDGE OF PAVEMENT
- FENCE
- TREE AND SITE AMENITY PROTECTION FENCE
- EXISTING POST
- V WATER VALVE
- BOULDER
- MH MANHOLE
- FIRE HYDRANT
- SEWER CLEAN-OUT
- DEMOLITION SCOPE
- DEMOLITION SCOPE - ASPHALT/CONCRETE TO SUBGRADE

SURVEY SHEET NOTES

TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

SHOWN DIMENSIONS ARE RECORD DATA PER RECORD OF SURVEY 45
R - RECORD PER PM 49-17
R2 - RECORD PER R/S 45-60

SURVEYOR
DAVID RAGLAND
ENGINEERING AND LAND SURVEYING
19545 ROGERS ROAD
PHONE: (209) 532-7491
FAX: (209) 532-8590
EMAIL: DRAGLAND@MLODE.COM

DEMOLITION NOTES

A. THE INTENT OF THE DEMOLITION ON THIS PROJECT INVOLVES THE COMPLETE REMOVAL AND LEGAL DISPOSAL OF ASPHALT, CONCRETE, STOCKPILED SOIL MOUNDS, ABANDONED PIPES, AND OTHER MATERIALS AS INDICATED. *

B. ALL ROCK LARGER THAN 6 INCHES, CONCRETE, ASPHALT, AND OTHER EXISTING MATERIALS INDICATED ON THE PLANS TO BE REMOVED FROM SITE BY CONTRACTOR. *

C. CONTRACTOR TO VERIFY LOCATIONS OF EXISTING EQUIPMENT, PIPING AND SYSTEM COMPONENTS PRIOR TO DEMOLITION. IF EXISTING CONDITIONS ARE DIFFERENT THAN WHAT IS INDICATED ON THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.*

D. MINIMIZE DISTURBANCE AND/OR DAMAGE TO EXISTING PROPERTY. WHERE DEMOLITION OF SYSTEM COMPONENTS DAMAGES EXISTING PROPERTY TO REMAIN OCCURS, PROPERTY SHALL BE RESTORED TO BE THE SAME CONDITION AS ORIGINAL AT CONTRACTORS COST. RESTORATION MUST BE PERFORMED BY WORKMEN SKILLED IN PERFORMING SUCH WORK. *

E. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE SITE PRIOR TO SUBMITTING A BID. DUE TO THE NATURE OF THIS PROJECT AND THE STATE OF THE EXISTING SITE. IT IS IMPOSSIBLE TO COMPLETELY RELATE THE SCOPE OF THE DEMOLITION REQUIRED TO THE CONTRACTOR THROUGH THE CONTRACT DOCUMENTS. FAILURE TO VISIT THE SITE WILL NOT RELIEVE THE CONTRACTOR OF DEMOLITION RESPONSIBILITIES UNDER THIS CONTRACT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND COORDINATE THE EXACT CONTENT OF DEMOLITION NECESSARY TO PROVIDE A RENOVATED AND UPGRADED SPACE AND TO FACILITATE NEW WORK.*

F. VERIFY EXTENT OF PIPING, EQUIPMENT, COMPONENTS AND CONTROLS TO BE RETAINED OR REUSED PRIOR TO THE DEMOLITION OF SPECIFIC SYSTEM. PROTECT ITEMS WHICH ARE TO BE REUSED ON SITE TO MINIMIZE POST CONSTRUCTION REPAIRS. ANY ITEMS WHICH ARE DAMAGED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE CONTRACT.*

G. PROTECT ALL EXISTING TREES WHICH ARE TO REMAIN WITH TREE PROTECTION FENCING.*

H. THE CONTRACTOR SHALL REFER TO ALL SECTIONS AND DRAWINGS OF THE CONTRACT DOCUMENTS FOR DEMOLITION OF SYSTEM COMPONENTS INCLUDED IN THE CONTRACT. NOTIFY THE ENGINEER/OWNER OF ALL DISCREPANCIES OR QUESTIONS PERTAINING TO EXTENT OF WORK PRIOR TO BIDDING.*

I. DEMOLITION CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER CONTRACTORS INVOLVED AS DEFINED IN THE SPECIFICATIONS.*

SCALE: 1"=20'
0 20 40 60
N

1 EXISTING CONDITIONS SURVEY AND DEMOLITION

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EXP. 09/30/24
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STATE OF CALIFORNIA

Twain Harte Meadows Park
22945 Meadow Drive,Twain Harte, CA 95383

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4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: MS
DRAWN BY: MS JS
REVIEW BY: JPB

EXISTING CONDITIONS SURVEY AND DEMOLITION

L1.1

100% CD

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Twain Harte Meadows Park
22945 Meadow Drive,Twain Harte, CA 95383

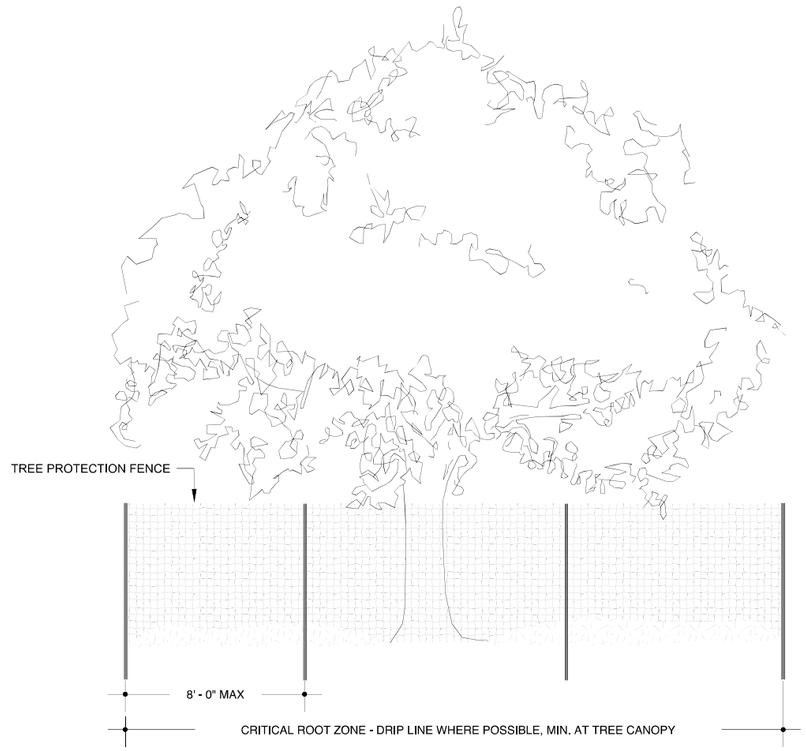
DETAIL NOTES:

1) COMPOST FILLED SILT SOCK (8" - 12" TYP.)
2) 2" X 2" WOOD STAKE PLACED 10' O.C.

GENERAL NOTES:

A. COMPOST SOCKS TO BE APPLIED DURING RAINY SEASON (MID OCTOBER TO MID APRIL).
B. COMPOST SOCKS THAT ARE 8 INCHES IN DIAMETER WILL BE INSTALLED ALONG 2:1 SLOPES OR STORM DRAINS.
C. COMPOST SOCKS THAT ARE 12 INCHES IN DIAMETER WILL BE INSTALLED ALONG THE TOE OF 4:1 SLOPES OR STORM DRAINS.
D. COMPOST SOCK WILL BE INSTALLED IN ACCORDANCE WITH CAL-TRANS STANDARD PLAN H51.
E. COMPOST SOCK WILL BE MADE OF NATURAL FIBERS (E.G., COTTON, JUTE, SISAL, BURLAP, WOOD-BASED YARN, OR COIR). THE COMPOST SOCK SHOULD NOT CONTAIN A POLYPROPYLENE MESH.

1 EROSION CONTROL: WATTLE/COMPOST SOCK
(N.T.S)



DETAIL NOTES:

1. CONTRACTOR SHALL USE TREE PROTECTION FENCING TO PROTECT OAK AND OTHER NATIVE TREES DURING CONSTRUCTION - INCLUDING INVASIVE TREE REMOVAL, GRADING, AND OTHER CONSTRUCTION - TO PROTECT CRITICAL ROOT ZONE.
2. CONTRACTOR SHALL NOT CUT OR FILL WITHIN CRITICAL ROOT ZONE DURING GRADING.
3. CONTRACTOR SHALL CONSULT A CERTIFIED ARBORIST BEFORE CUTTING ROOTS ON OAKS AND OTHER NATIVE TREES.
4. CONTRACTORS SHALL NOT STOCKPILE CONSTRUCTION MATERIALS, TOOLS, OR MACHINERY WITHIN CRITICAL ROOT ZONE.
5. WHEN REMOVING INVASIVE TREES IN CLOSE PROXIMITY TO OAKS AND OTHER NATIVE TREES WHERE FENCING MAY NOT BE POSSIBLE, CONTRACTOR SHALL USE AS MUCH PROTECTION AS IS POSSIBLE TO AVOID DISTURBING ROOT ZONE.
6. WHEN LAWN REMOVAL AND NEW PLANTING IS SPECIFIED WITHIN CRITICAL ROOT ZONE, CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE ROOT DISTURBANCE.

2 TREE PROTECTION FENCING
(N.T.S)

DATE:
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1 60% DRAFT TO CSD	05.31.22
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3 60% TO SWB	07.28.22
4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: MS
DRAWN BY: MS,JS
REVIEW BY: JPB

DEMOLITION AND EROSION CONTROL DETAILS

L1.2

100% CD

1 GRADING AND DRAINAGE PLAN

SCALE: 1"=20'
0 20 40 60
N

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

C. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

D. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING HIS OR HER OWN QUANTITY TAKE-OFF. QUANTITIES ARE PROVIDED AS ESTIMATE ONLY AND AS SUCH ARE NOT TO BE USED FOR BID PURPOSES UNLESS VERIFIED.

E. THE ELEVATIONS SHOWN ON THIS PLAN REPRESENT FINISHED GRADE (FG).

LEGEND

- PROPERTY BOUNDARY
- BIOSWALE CENTER CHANNEL LINE
- LOD — LIMIT OF DISTURBANCE
- (E) EXISTING
- (N) NEW

	SHEET NOTES		
* 1	SEE PUBLIC RESTROOM COMPANY PLANS FOR RESTROOM PAD DETAILS.	284	SF
* 2	PROPOSED PAVILION (SEE STRUCTURAL PLANS)*		
* 3	PROPOSED RETAINING WALL (SEE DETAIL 1 ON SHEET L2.4)*	23	LF
* 4	3-INCH HDPE PIPE	63	LF
* 5	6-INCH HDPE PIPE	38	LF
* 6	CATCH BASIN INLET (SEE DETAIL 4 ON SHEET L2,3)	4	EA
* 7	GRAVEL PAD FOR RAIN TANK FARM (SEE DETAIL 10 ON SHEET L6.4)	106	SF
8	PREFORMED SCOUR HOLE (SEE DETAIL 3 ON SHEET L2,3)	4	EA
* 9	GRAVEL PAD FOR RAINWATER HARVESTING DISCOVERY LAB (SEE DETAIL 10 ON SHEET L6.4)	744	SF
* 10	PERMEABLE PATHWAY (SEE SHEET L3.2)	5656	SF
* 11	TRUEGRID PRO PLUS PERMEABLE PAVER (OR APPROVED EQUAL) PARKING LOT (SEE DETAIL 2 ON SHEET L2,4)	2366	SF
* 12	SINGLE CURB (SEE CALTRANS STANDARD PLAN A87A, TYPE B1-6)	157	LF
* 13	ADA CURB RAMP (SEE CALTRANS STANDARD PLAN A88A, CASE C)	1	EA
* 14	TRUEGRID PERMEABLE DECK OR APPROVED EQUAL	306	SF
* 15	TRUEGRID SNOWSPOT PAVING MARKERS OR APPROVED EQUAL		
* 16	TANK-3 EXCAVATION (SEE DETAIL 12 ON SHEET L6,5)		
17	WATER PLAY DISCOVERY LAB (SEE SHEET L8.1)		
18	GRAVEL OR WALKABLE MULCH BASE FOR WOODEN FLUME	220	SF
* 19	SAWCUT TO CREATE A CLEAN EDGE WITH EXISTING PAVEMENT. ENSURE PAVERS ARE FLUSH OR SLIGHTLY RECESSED BELOW SURROUNDING GRADE. (SEE DETAIL 3 ON SHEET L2.4)	149	LF
20	PAINT VISUAL CONNECTION OF EXISTING BOCCE BALL COURTS TO PROPOSED TWAIN HARTE MEADOWS PARK		
* 21	PEDESTRIAN BOARDWALK (SEE USFS STANDARD PLAN FOR SAWN TIMBER STRINGER TRAIL BRIDGE)	141	SF
22	EXISTING BIOSWALE (SEE SHEET L9.1)		
23	EXISTING RAIN TAINK (SEE SHEEET L9.1)		
24	LIMITS OF DISTURBANCE	0.95	AC
* 25	GRAVEL ACCESS WALKWAY FOR RESTROOM	62	SF

ESTIMATED EARTHWORK QUANTITIES	
RAW FINISHED GRADE CUT (-)	1,104 CY
RAW FINISHED GRADE FILL (+)	280 CY
FILL REDUCTION FOR MATERIALS BELOW FG (-)	129 CY
FILL INCREASE FOR DIRT LOSS ACROSS GRADING AREA (+)	164 CY
NET QUANTITY (+ FOR IMPORT)	-790 CY
DEPTH IMBALANCE ACROSS THE GRADING AREA	-0.5 FT

NOTE: 150 CY OF GRADE CUT CAN BE ATTRIBUTED TO THE DEBRIS PILES DEPICTED IN THE TOPOGRAPHIC SURVEY.

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209.732.0616

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OJAI OFFICE
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LICENSED PROFESSIONAL ENGINEER
JACQUELINE P. BERGE
C 91542
EXP. 09/30/24
CIVIL
STATE OF CALIFORNIA

Twain Harte Meadows Park
22945 Meadow Drive,Twain Harte, CA, 95383

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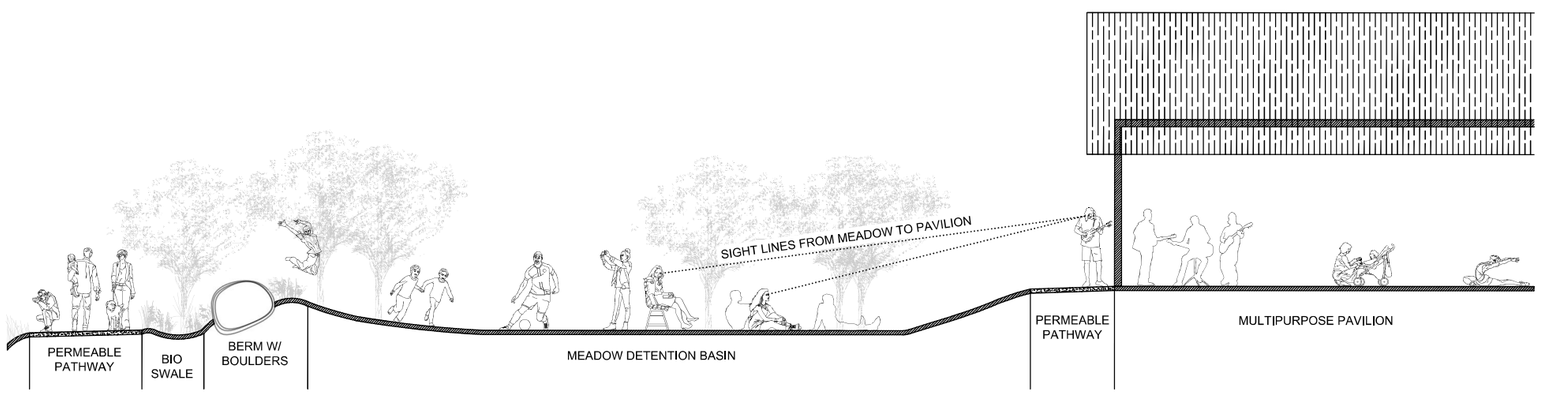
DESIGN BY: ABR
DRAWN BY: JS, MS
REVIEW BY:RH, NS, JPB

GRADING AND DRAINAGE PLAN

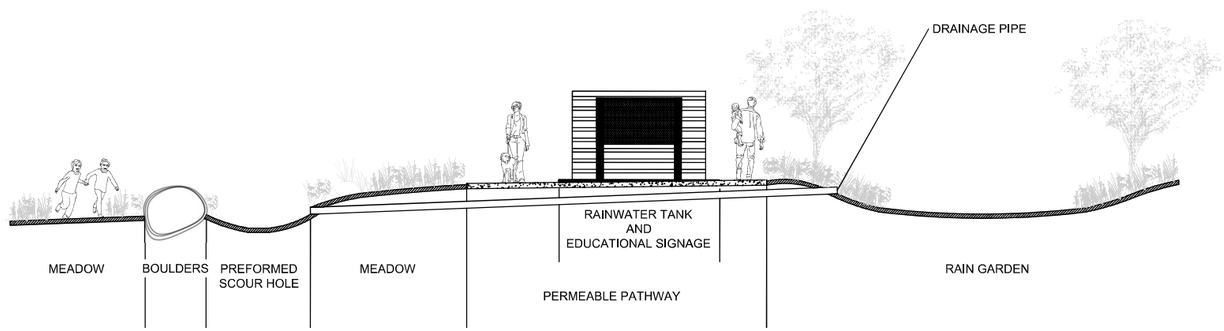
L2.1

100% CD



1 SECTION: PAVILION AND MEADOW

SCALE 1" = 5'
0 5 10 15



2 SECTION: RAIN GARDEN TO MEADOW

SCALE 1" = 5'
0 5 10 15

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209.732.3018

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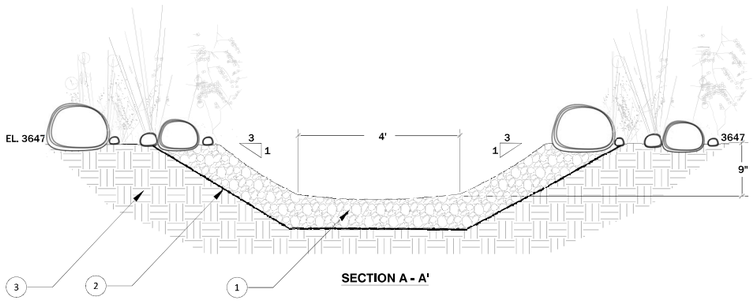
DESIGN BY: ABR
DRAWN BY: JS, MS
REVIEW BY: RH, NS, JPB

GRADING AND DRAINAGE SECTIONS

L2.2

100% CD



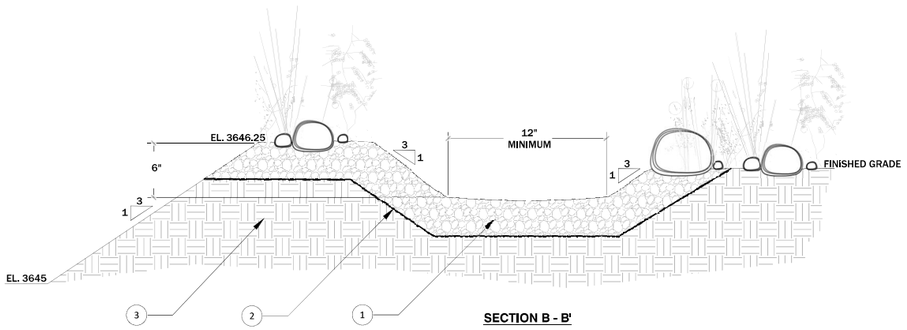
SECTION A - A'

DETAIL NOTES:

1. 6" GRAVEL (CLASS II PERMEABLE PER CALTRANS STD SPEC 68-2.02F(3)) COMPACTED TO 95%
2. RSP FABRIC
3. UNDISTURBED SUBGRADE

1 SW-4 RAIN GARDEN DETAIL

NOT TO SCALE



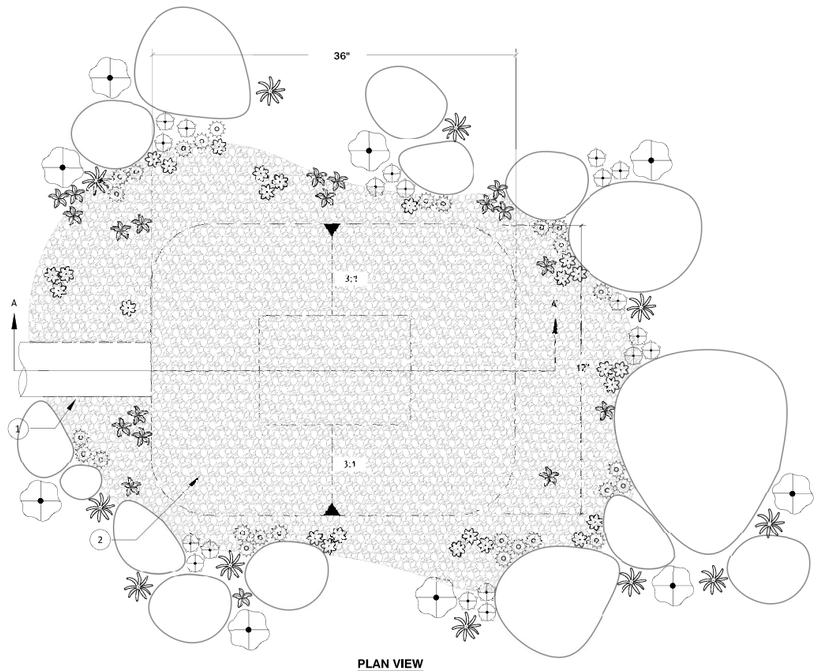
SECTION B - B'

DETAIL NOTES:

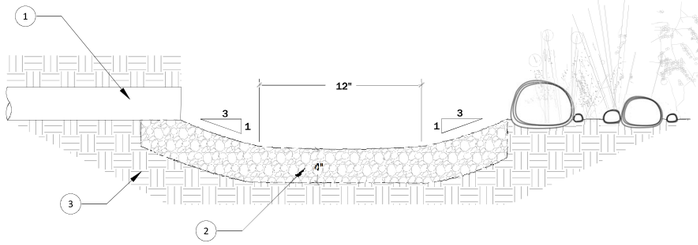
6" GRAVEL (CLASS II PERMEABLE PER CALTRANS STD SPEC 68-2.02F(3)) COMPACTED TO 95%
1. RSP FABRIC
2. UNDISTURBED SUBGRADE

2 SW-4 RAIN GARDEN DETAIL

NOT TO SCALE



PLAN VIEW



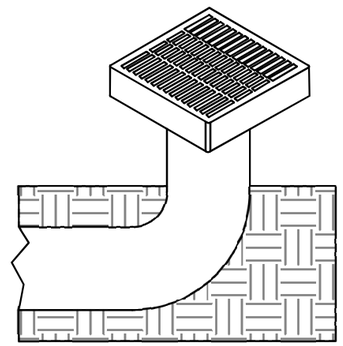
SECTION A - A'

DETAIL NOTES:

1. HDPE PIPE (SIZE VARIES - REFERENCE PLANS)
2. GRAVEL (CLASS II PERMEABLE)
3. UNDISTURBED SUBGRADE

3 PREFORMED SCOUR HOLE

NOT TO SCALE



4 INLET BOX FOR HDPE PIPES (TYP.)

NOT TO SCALE

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DESIGN BY: ABR
DRAWN BY: JS, MS
REVIEW BY: RH, NS, JPB

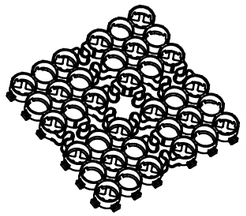
GRADING AND DRAINAGE DETAILS

L2.3

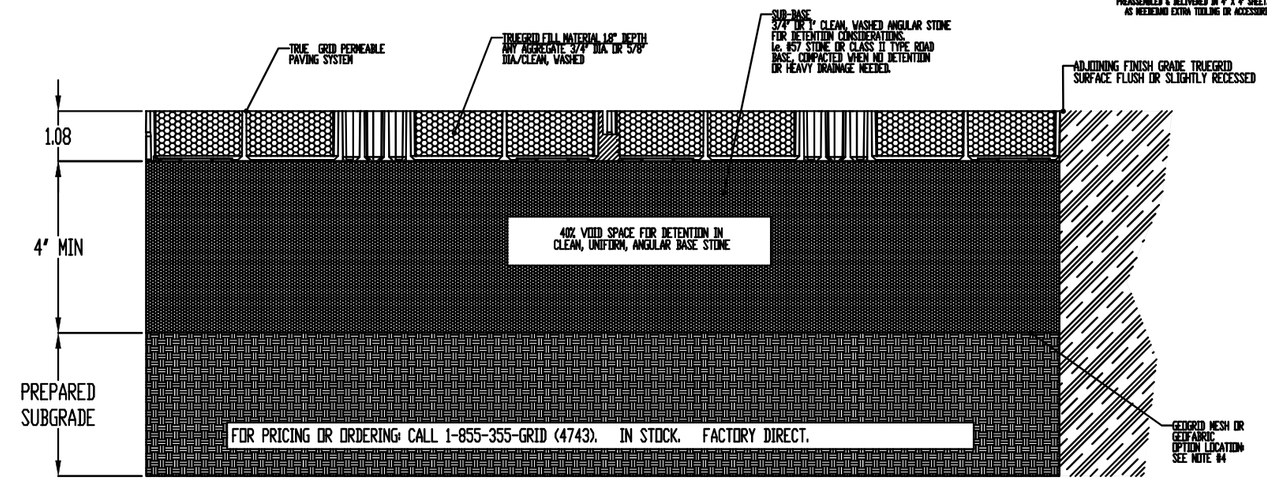
100% CD

NOTES:

1. SUB-BASE DEPTH AND PREPARATION IS DEPENDENT ON SITE CONDITIONS PLUS LOADING REQUIREMENTS.
2. TRUEGRID PRO PLUS PRODUCTS DESIGNED FOR LOAD CAPACITIES OF 120,000 LBS PER SQ. FT. TRUEGRID PRODUCTS STRENGTHEN WITH FILL MATERIAL.
3. TRUEGRID PRO PLUS PRODUCTS ARE SUFFICIENTLY RATED FOR H-20 /HS-20 LOADING AND GREATER.
4. GEOGRID MESH OR GEOFABRIC MAY BE REQUIRED BETWEEN SUB-GRADE & SUB-BASE FOR CERTAIN SOILS AND SITE SPECIFIC REQUIREMENTS.
5. INCREASE SUB-BASE DEPTH FOR INCREASED STORM WATER DETENTION.
6. NO STAKING NECESSARY WITH TRUEGRID PRO PLUS WHEN SLOPE IS BELOW 10 DEGREES. ASSESS PROJECT, AS NEEDED.
7. FINAL ENGINEERED CROSS SECTION AGGREGATES AND DEPTH SHOULD ALLOW FOR EXPECTED INFILTRATION RATES, STORAGE CAPACITIES, OUTLET FLOW RATES, AND OTHER SITE SPECIFIC CONDITIONS AND LOAD REQUIREMENTS.
8. THIS CROSS SECTION IS FOR INFORMATION ONLY.



TRUEGRID BLOCK REFERENCE VIEW
PREASSEMBLED & DELIVERED IN 4' X 4' SHEET. RECONFIGURED AS NEEDED NO EXTRA TOOLING OR ACCESSORIES REQUIRED



GRAVEL FILL MEDIUM LOAD TRUEGRID PRO PLUS

APPLICATION:
PARKING LOT, RV PARKING, PARKING PADS, DRIVEWAYS

REV					
03	UPDATED TRUEGRID STANDARDS	JT	JT	CV	9/29/2017
REV	REVISION	DRAWN	CHECKED	APPROVED	DATE

1-855-355-GRID (4743)
MADE IN U.S.A.
TRUEGRIDPAVER.com

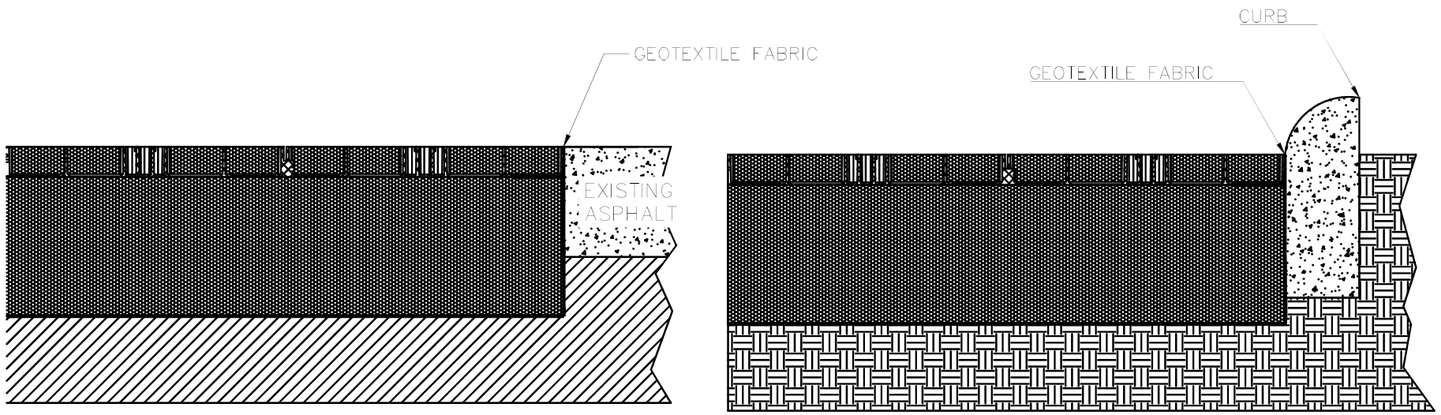
CLIENT / PROJECT

TRUEGRID
True to your project. True to the environment.

TRUEGRID GRAVEL FILL INSTALLATION MEDIUM LOAD

T6-GRV-ML | REV 03

2 GRAVEL FILL MEDIUM LOAD PERMEABLE PAVER
NOT TO SCALE



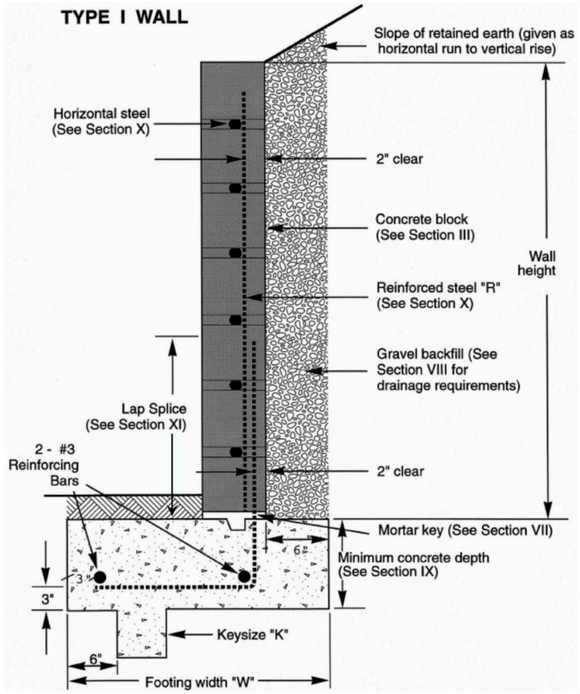
3 PERMEABLE PAVER TRANSITION TO HARDSCAPE AND CURB
NOT TO SCALE

TABLE A

Wall Height (feet)	Slope of Retained Earth (Horizontal Run to Vertical Rise)																	
	Level				3 to 1				2 to 1				1.5 to 1				1 to 1			
	T	R	K	W	T	R	K	W	T	R	K	W	T	R	K	W	T	R	K	W
1.5'	A	1	N	1'-4"	A	1	N	1'-4"	A	1	N	1'-4"	A	1	N	1'-6"	A	1	N	1'-7"
2.0'	A	1	N	1'-4"	A	1	N	1'-4"	A	1	N	1'-4"	A	1	D	1'-8"	A	1	D	1'-10"
2.5'	A	1	N	1'-7"	A	1	N	1'-7"	A	1	N	1'-7"	A	1	D	1'-10"	A	1	E	2'-2"
3.0'	A	1	N	2'-0"	A	1	N	2'-0"	A	1	D	2'-0"	A	1	E	2'-2"	B	1	F	2'-5"
3.5'	A	1	N	2'-1"	A	3	D	2'-1"	A	3	D	2'-1"	B	1	E	2'-4"	B	4	F	3'-4"
4.0'	B	1	N	2'-4"	B	1	D	2'-4"	B	1	D	2'-4"	B	4	F	2'-5"	B	6	G	3'-4"
4.5'	B	1	N	2'-6"	B	2	D	2'-6"	B	4	E	2'-6"	B	6	F	3'-1"	C	5	G	3'-9"
5.0'	B	4	D	2'-9"	B	5	E	2'-9"	B	6	F	2'-9"	C	5	G	3'-5"				
5.5'	B	5	D	3'-0"	B	6	E	3'-0"	C	5	F	3'-2"	C	5	G	3'-9"				
6.0'	C	5	E	3'-3"	C	5	E	3'-4"	C	5	F	3'-6"	C	6	G	4'-2"				
7.0'	C	5	E	3'-10"	C	6	G	3'-11"	C	7	G	4'-1"								
8.0'	C	5	G	4'-6"																

TABLE B

T Wall Type*	R Reinforcing Steel	K Key Size (Width x Depth)
A – Type I, 6" block	1 - #3 Bars @ 24" o.c.	D – 6" x 6"
B – Type I, 8" block	2 - #4 Bars @ 32" o.c.	E – 8" x 8"
C – Type II, first 32" of block must be 12" wide masonry, regardless of wall height (see sketch), 8" block for remainder	3 - #3 Bars @ 16" o.c.	F – 12" x 12"
	4 - #4 Bars @ 24" o.c.	G – 12" x 18"
	5 - #4 Bars @ 16" o.c.	N – None
	6 - #5 Bars @ 16" o.c.	
*See pages 4 & 5 for wall types	7 - #6 Bars @ 16" o.c.	



NOTE: The bottom leading edge of all retaining wall footings shall be 7'-0" minimum from FACE of slopes where the ground slopes away from the wall.
COUNTY OF SAN DIEGO, PLANNING AND DEVELOPMENT SERVICES

1 PAVILION RETAINING WALL DETAIL
NOT TO SCALE

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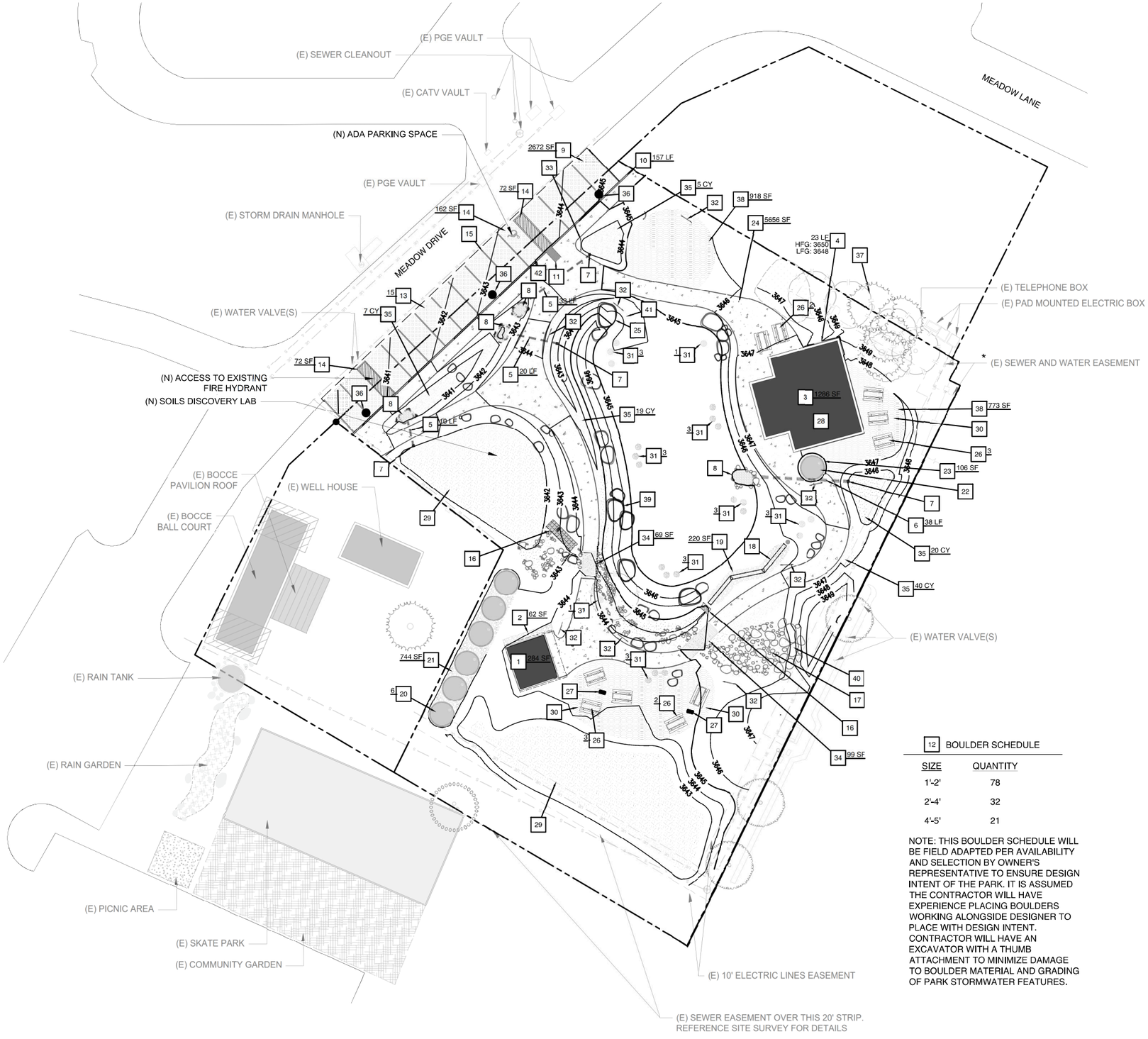
DESIGN BY: ABR
DRAWN BY: JS, MS
REVIEW BY: RH, NS, JPB

GRADING AND DRAINAGE DETAILS

L2.4

100% CD



12 BOULDER SCHEDULE

SIZE	QUANTITY
1'-2'	78
2'-4'	32
4'-5'	21

NOTE: THIS BOULDER SCHEDULE WILL BE FIELD ADAPTED PER AVAILABILITY AND SELECTION BY OWNER'S REPRESENTATIVE TO ENSURE DESIGN INTENT OF THE PARK. IT IS ASSUMED THE CONTRACTOR WILL HAVE EXPERIENCE PLACING BOULDERS WORKING ALONGSIDE DESIGNER TO PLACE WITH DESIGN INTENT. CONTRACTOR WILL HAVE AN EXCAVATOR WITH A THUMB ATTACHMENT TO MINIMIZE DAMAGE TO BOULDER MATERIAL AND GRADING OF PARK STORMWATER FEATURES.

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

C. ALL PATHWAYS SHALL BE A MINIMUM OF 48" IN WIDTH TO COMPLY WITH CALIFORNIA ADA REQUIREMENTS.

D. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

		SHEET NOTES	
*	1	SEE PUBLIC RESTROOM COMPANY PLANS FOR RESTROOM PAD DETAILS	284 SF
*	2	GRAVEL ACCESS WALKWAY FOR RESTROOM	62 SF
*	3	PROPOSED PAVILION (SEE STRUCTURAL PLANS)	1286 SF
*	4	PROPOSED RETAINING WALL (SEE DETAIL 1 ON SHEET L2.4)	23 LF
*	5	3-INCH HDPE PIPE	63 LF
*	6	6-INCH HDPE PIPE	38 LF
*	7	CATCH BASIN INLET (SEE DETAIL 4 ON SHEET L2.3)	4 EA
	8	PREFORMED SCOUR HOLE (SEE DETAIL 3 ON SHEET L2.3)	4 EA
*	9	TRUEGRID PRO PLUS PERMEABLE PAVER (OR APPROVED EQUAL) PARKING LOT (SEE DETAIL 2 ON SHEET L2.4)	2366 SF
*	10	SINGLE CURB (SEE CALTRANS STANDARD PLAN A87A, TYPE B1-6)	157 LF
*	11	ADA CURB RAMP (SEE CALTRANS STANDARD PLAN A88A, CASE C)	1 EA
*	12	BOULDER SCHEDULE	15 EA
*	13	PARKING SPOTS (18 FT X 9 FT)	15 EA
*	14	TRUEGRID PERMEABLE DECK OR APPROVED EQUAL*	306 SF
*	15	TRUEGRID SNOWSPOT PAVING MARKERS (OR APPROVED EQUAL)*	
	16	TANK-3 INSTALLATION (SEE DETAIL 12 ON SHEET L6.5)	
	17	WATER PLAY DISCOVERY LAB (SEE SHEET L8.1)	
	18	WOODEN FLUME (SEE SHEET L6.6)	
	19	GRAVEL OR WALKABLE MULCH BASE FOR WOODEN FLUME	220 SF
*	20	POLY RAINWATER HARVESTING TANKS (TANK-1)	6 EA
*	21	GRAVEL PAD FOR RAIN TANK FARM (SEE DETAIL 10 ON SHEET L6.4)	744 SF
*	22	CORRUGATED METAL TANK FOR RAINWATER HARVESTING DISCOVERY LAB (TANK-2)*	1 EA
*	23	GRAVEL PAD FOR RAINWATER HARVESTING DISCOVERY LAB (SEE DETAIL 10 ON SHEET L6.4)	106 SF
*	24	GRANITECRETE (OR APPROVED EQUAL) PERMEABLE PATHWAY (SEE LAYOUT PLAN ON SHEET L3.2 AND DETAIL 4 ON SHEET L3.4)	5656 SF
*	25	PLACE BOULDERS (SEE BOULDER SCHEDULE, DETAIL 2 AND 3 ON SHEET L3.3)	
	26	PICNIC TABLE WITH CONCRETE FOOTINGS (SEE SECTION 12 93 00 OF SPECIFICATIONS)	10 EA
	27	BARBEQUE WITH CONCRETE FOOTING (SEE SECTION 12 93 00 OF SPECRICATIONS)	2 EA
	28	LARGE BARBEQUE, SCULLERY SINK, AND OUTDOOR KITCHEN ISLAND TO BE INSTALLED IN PAVILION (BY OTHERS)	
	29	LANDSCAPED AREA	
	30	PICNIC AREA	3 EA
	31	STEPPING STONE	23 EA
	32	DISCOVERY LAB EDUCATIONAL SIGNAGE	8 EA
	33	PARK ENTRANCE SIGN	
*	34	RAISED BOARDWALKS PER USFS STD TRAIL PLAN FOR SAWN TIMBER STRINGER TRAIL BRIDGE SHEETS: STD_962-10-01 TO STD_962-10-04	168 SF
*	35	ROCK MULCH AND COBBLE (SEE SECTION 31 20 00, 2.05D OF SPECIFICATIONS)	91 CY
*	36	HAPCO SOLAR LIGHTS (OR APPROVED EQUAL), DIRECT BURY, SEE ELECTRICAL PLANS AND SPEC SECTION 26 56 00.	3 EA
	37	EXISTING VEGETATED AREA (SEE SHEET L1.1)	
	38	MULCHED AREA	1691 SF
*	39	BOULDERS IN BIOSWALE (SEE BOULDER SCHEDULE AND DETAIL 3 ON SHEET L3.3)	
*	40	BOULDER OUTCROPPING (STEPPED BOULDERS)	
	41	MAGIC OF PLANTS AND POLLINATORS DISCOVERY LAB	
*	42	HANDICAP SIGN	1 EA

1 **MATERIALS PLAN**

SCALE: 1"=20'
0 20 40 60

N

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OJAI OFFICE
206 N. SIGNAL ST., SUITE S
OJAI, CALIFORNIA 93023

LICENSED PROFESSIONAL ENGINEER
JACQUELINE P. BIBLE
C 91542
EXP. 09/30/24
CIVIL
STATE OF CALIFORNIA

Twain Harte Meadows Park
22945 Meadow Drive,Twain Harte, CA, 95383

DATE:
PROJECT NO.

REVISION	DATE
1 60% DRAFT TO CSD	05.31.22
2 60%TO CSD	06.15.22
3 60%TO SWB	07.28.22
4 100%TO CSD	12.14.22
5 100%TO CSD	04.28.23
6 100%TO CSD	06.07.23

DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

MATERIALS PLAN

L3.1

100% CD

1 LAYOUT PLAN

SCALE: 1"=20'

0 20 40 60

N

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

C. ALL PATHWAYS SHALL BE A MINIMUM OF 48" IN WIDTH TO COMPLY WITH CALIFORNIA ADA REQUIREMENTS.

D. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

Line Table

Line #	Length	Direction	Start Northing	Start Easting	End Northing	End Easting
L33	1.71	N18° 29' 01.75"W	4999.26	10282.21	5000.88	10281.66
L34	4.00	S71° 30' 58.25"W	5000.88	10281.66	4999.62	10277.87
L35	9.40	S18° 29' 01.75"E	4999.62	10277.87	4990.70	10280.85
L36	4.05	S18° 29' 01.75"E	4990.70	10280.85	4986.86	10282.13
L37	5.35	S18° 29' 01.75"E	4986.86	10282.13	4981.79	10283.83
L38	3.41	N71° 30' 58.25"E	4981.79	10283.83	4982.87	10287.06
L49	47.11	S46° 39' 29.95"W	5138.26	10268.76	5105.92	10234.50
L50	25.13	S46° 39' 29.95"W	5105.92	10234.50	5088.67	10216.22
L51	4.12	S46° 39' 29.95"W	5088.67	10216.22	5085.85	10213.23
L52	89.62	N46° 39' 29.95"E	5080.38	10200.13	5141.89	10265.31
L53	13.33	N46° 39' 29.95"E	5141.89	10265.31	5151.04	10275.01
L1	10.62	S46° 39' 29.95"W	5185.54	10318.87	5178.26	10311.14
L2	9.80	S46° 39' 29.95"W	5178.26	10311.14	5171.53	10304.02
L3	17.22	S46° 39' 29.95"W	5171.53	10304.02	5159.71	10291.49
L9	17.88	S79° 41' 20.69"E	5142.65	10322.42	5139.45	10340.01
L10	14.51	S79° 41' 20.69"E	5139.45	10340.01	5136.85	10354.28
L11	7.20	S79° 41' 20.69"E	5136.85	10354.28	5135.56	10361.36
L13	15.00	N74° 52' 41.82"E	5115.80	10383.30	5119.71	10397.78
L17	27.00	S74° 52' 41.97"W	5081.09	10408.22	5074.05	10382.15
L18	2.62	S14° 57' 04.47"E	5074.05	10382.15	5071.52	10382.83

Line Table

Line #	Length	Direction	Start Northing	Start Easting	End Northing	End Easting
L55	0.52	S59° 25' 55.08"E	5188.46	10313.94	5188.19	10314.39
L56	19.46	S46° 39' 29.95"W	5188.19	10314.39	5174.83	10300.23
L57	16.68	S46° 39' 29.95"W	5174.83	10300.23	5163.39	10288.10
L58	5.00	S46° 39' 29.95"W	5163.39	10288.10	5159.95	10284.47

Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Start Northing	Start Easting	End Northing	End Easting
C25	20.41	58.54	19.98	S2° 07' 51"E	20.31	5112.59	10356.46	5092.30	10357.22
C26	15.01	58.54	14.69	S19° 27' 45"E	14.96	5092.30	10357.22	5078.19	10362.20
C27	34.95	58.54	34.21	S43° 54' 46"E	34.44	5078.19	10362.20	5053.38	10386.09
C28	11.54	14.14	46.77	S33° 26' 16"E	11.23	5053.38	10386.09	5044.02	10392.27
C29	20.66	14.14	83.73	S31° 48' 41"W	18.89	5044.02	10392.27	5027.98	10382.33
C30	44.40	101.44	25.08	S57° 58' 46"W	44.05	5027.98	10382.33	5004.63	10344.98
C20	6.90	18.50	21.38	N6° 12' 28"W	6.87	5112.59	10356.46	5119.41	10355.72
C21	6.90	18.50	21.38	N27° 35' 20"W	6.87	5119.41	10355.72	5125.50	10352.54
C22	7.09	18.50	21.95	N49° 15' 10"W	7.05	5125.50	10352.54	5130.09	10347.21
C23	8.37	18.50	25.92	N73° 11' 11"W	8.30	5130.09	10347.21	5132.49	10339.27
C47	16.65	228.93	4.17	S13° 07' 32"W	16.65	5022.10	10292.80	5005.89	10289.02
C48	7.97	19.53	23.37	S24° 43' 41"W	7.92	5005.89	10289.02	4998.71	10285.71
C49	4.37	2.00	125.10	N81° 02' 04"W	3.55	4998.71	10285.71	4999.26	10282.21
C50	1.12	2.00	32.09	N55° 28' 14"E	1.11	4982.87	10287.06	4983.49	10287.97
C51	2.18	22.30	5.61	N51° 01' 18"E	2.33	4983.49	10287.97	4984.86	10289.67
C52	21.91	22.30	56.30	N81° 58' 39"E	21.05	4984.86	10289.67	4987.80	10310.50
C53	27.54	35.96	43.88	N87° 50' 22"E	26.88	4987.80	10310.50	4988.81	10337.35
C54	20.91	28.90	41.46	N85° 30' 40"W	20.47	4993.11	10333.17	4994.71	10312.77
C55	5.76	28.90	11.41	N59° 04' 33"W	5.75	4994.71	10312.77	4997.67	10307.84
C56	4.56	24.89	10.50	N46° 27' 19"W	4.56	4997.67	10307.84	5000.81	10304.54

SHEET NOTES

* 1. SEE ADDITIONAL CURVE TABLES ON SHEET L3.3.
* 2. PATHWAYS SHOULD BE CONSTRUCTED IN ACCORDANCE WITH ADA STANDARDS.

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DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

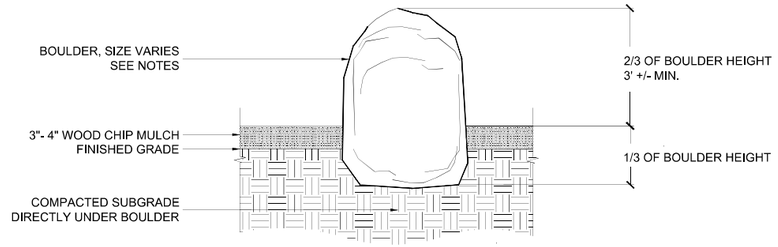
LAYOUT PLAN

L3.2

100% CD

Curve Table									
Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Start Northing	Start Easting	End Northing	End Easting
C57	7.44	24.89	17.12	N32° 38' 38"W	7.41	5000.81	10304.54	5007.05	10300.54
C58	15.04	24.89	34.62	N6° 46' 20"W	14.82	5007.05	10300.54	5021.76	10298.79
C62	19.58	333.67	3.36	N64° 26' 31"E	19.60	5080.83	10216.27	5089.28	10233.93
C63	16.66	333.67	2.86	N61° 19' 50"E	16.69	5089.28	10233.93	5097.27	10248.54
C64	29.44	64.99	25.95	N41° 04' 08"E	29.21	5097.27	10248.54	5119.27	10267.72
C65	17.27	64.99	15.23	N20° 28' 39"E	17.22	5119.27	10267.72	5135.41	10273.74
C66	3.83	3.00	73.10	N23° 41' 17"W	3.57	5135.41	10273.74	5138.68	10272.31
C67	3.83	3.00	73.10	S83° 12' 34"W	3.57	5138.68	10272.31	5138.26	10268.76
C71	8.16	3.00	155.75	S31° 13' 01"E	5.87	5085.85	10213.23	5080.83	10216.27
C32	2.64	3.00	50.51	S21° 24' 21"W	2.60	5159.71	10291.49	5157.33	10290.56
C33	2.64	3.00	50.51	S29° 05' 58"E	2.56	5157.33	10290.56	5155.09	10291.80
C34	11.81	71.25	9.49	S59° 12' 55"E	11.80	5155.09	10291.80	5149.06	10301.94
C35	13.21	71.25	10.62	S69° 16' 25"E	13.20	5149.06	10301.94	5144.39	10314.27
C36	8.33	71.25	6.70	S77° 56' 10"E	8.33	5144.39	10314.27	5142.65	10322.42
C37	30.63	32.80	53.50	S47° 58' 48"E	29.55	5135.56	10361.36	5115.80	10383.30
C38	9.48	5.84	92.91	S86° 30' 34"E	8.47	5071.52	10382.83	5071.00	10391.28
C39	6.39	5.84	62.65	S8° 43' 46"E	6.08	5071.00	10391.28	5065.00	10392.21
C40	0.00	5.84	0.00	S22° 35' 55"W	0.00	5065.00	10392.21	5065.00	10392.21
C42	7.12	9.64	42.30	S38° 57' 57"E	6.96	5064.99	10392.22	5059.58	10396.59
C43	8.02	69.10	6.65	S21° 09' 05"E	8.02	5059.58	10396.59	5052.10	10399.49

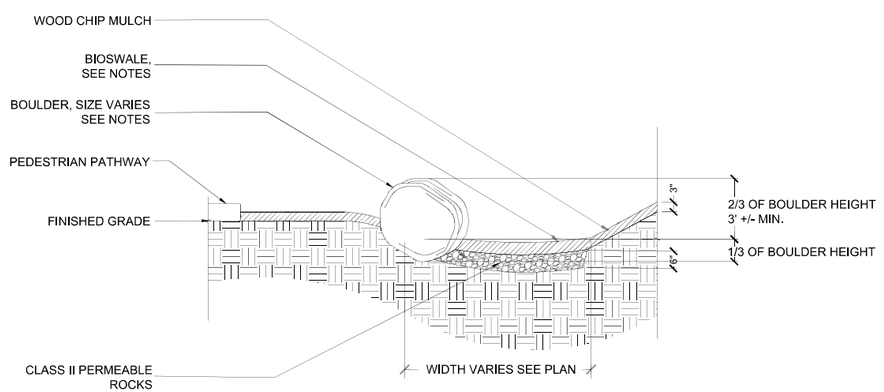
Curve Table									
Curve #	Length	Radius	Delta	Chord Direction	Chord Length	Start Northing	Start Easting	End Northing	End Easting
C44	10.67	22.01	27.79	S12° 18' 46"E	10.57	5052.10	10399.49	5041.78	10401.74
C45	28.10	22.01	73.15	S38° 09' 18"W	26.24	5041.78	10401.74	5021.16	10385.54
C46	42.28	91.61	26.44	S60° 12' 02"W	41.92	5021.16	10385.54	5000.33	10349.17
C12	14.84	176.26	4.82	N81° 06' 23"W	14.83	5132.49	10339.27	5134.79	10324.61
C13	7.42	176.26	2.41	N77° 29' 20"W	7.42	5134.79	10324.61	5136.39	10317.37
C14	7.42	176.26	2.41	N75° 04' 38"W	7.42	5136.39	10317.37	5138.30	10310.20
C15	9.19	25.83	20.39	N83° 48' 35"W	9.15	5138.30	10310.20	5139.29	10301.11
C16	16.43	25.83	36.43	S67° 46' 59"W	16.19	5139.29	10301.11	5133.18	10286.16
C17	19.04	25.83	42.23	S28° 27' 19"W	18.61	5133.18	10286.16	5116.82	10277.29
C18	20.26	25.83	44.92	S15° 07' 15"E	19.75	5116.82	10277.29	5097.76	10282.44
C9	18.01	91.24	11.31	S30° 33' 59"E	18.00	5097.76	10282.44	5082.28	10291.59
C10	50.30	91.24	31.59	S9° 07' 00"E	49.66	5082.28	10291.59	5033.24	10299.45
C7	46.84	75.78	35.41	S12° 17' 56"E	46.09	5078.62	10283.65	5033.59	10293.46
C1	14.87	30.19	28.23	N47° 02' 25"W	14.74	5078.62	10283.65	5088.66	10272.87
C2	19.85	30.19	37.67	N79° 59' 17"W	19.51	5088.66	10272.87	5092.05	10253.67
C3	8.44	30.19	16.02	S73° 10' 03"W	8.43	5092.05	10253.67	5089.61	10245.62
C4	31.15	392.00	4.55	S62° 50' 55"W	31.18	5089.61	10245.62	5075.40	10217.90
C5	7.41	392.00	1.08	S60° 01' 49"W	7.41	5075.40	10217.90	5071.69	10211.48



NOTES:
1. DETAIL APPLIES TO BOULDERS THAT ARE 1' IN DIAMETER OR GREATER.
2. BOULDERS SHALL BE FREE OF CRUMBLING, SHARP CORNERS, OPEN CRACKS OR HOLES. GRIND SMOOTH FOR SHARP CORNERS. BOULDERS SHALL BE SET FIRMLY INTO THE SOIL SO THAT THEY WILL NOT ROLL, ROTATE, OR SETTLE.
3. CONTRACTOR MAY USE ON-SITE BOULDERS. IF ANY ADDITIONAL BOULDERS ARE REQUIRED, FINAL BOULDER SELECTION TO BE APPROVED BY OWNER'S REPRESENTATIVE. MARK OR TAG SPECIMEN BOULDERS AT SUPPLY YARD. OWNER'S REPRESENTATIVE WILL VISIT SUPPLY YARD AND INDICATE WHICH BOULDER IS APPROVED.
4. PLACEMENT OF BOULDERS WILL BE DIRECTED IN THE FILED BY OWNER'S REPRESENTATIVE.
5. DO NOT COMPACT SOIL IN PLANTING BEDS.

2 BOULDER *

NOT TO SCALE



NOTES:
1. DETAIL APPLIES TO BOULDERS THAT ARE 1' IN DIAMETER OR GREATER.
2. LAYOUT OF DRY CREEK AND BOULDERS TO BE APPROVED BY OWNER'S REPRESENTATIVE IN THE FIELD PRIOR TO INSTALLATION.
3. INFILTRATION AREAS SHOULD BE EXCAVATED AND CONSTRUCTED WITH AN EXCAVATOR OPERATING OUTSIDE THE AREA FOOTPRINT. EXCAVATED MATERIAL SHOULD BE PLACED AWAY FROM THE OPEN EXCAVATION.
4. ADJACENT TRADITIONAL CONCRETE CONSTRUCTION TO OCCUR AFTER BASE COURSE PLACEMENT IS COMPLETE TO PROVIDE SUITABLE WORKING SURFACE FOR FORMS.
5. CONTRACTOR TO PROTECT BASE COURSE BY TEMPORARILY COVERING WITH PLASTIC SHEETING DURING ADJACENT CONVENTIONAL CONCRETE CONSTRUCTION.

3 BOULDERS IN BIOSWALE *

NOT TO SCALE

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DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

MATERIALS DETAILS

L3.3

100% CD

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Twain Harte Meadows Park
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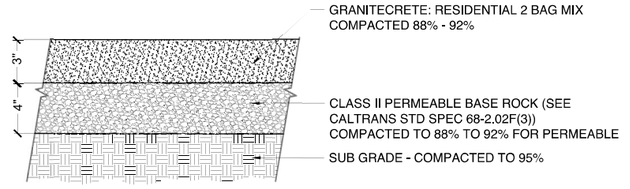
NOTES:
1. SEE CROSS SECTION 1 IN GRANITECRETE SPECIFICATIONS DOCUMENT.



GRANITECRETE PAVING - RESIDENTIAL, PEDESTRIAN

4 GRANITECRETE (OR APPROVED EQUAL) PERMEABLE PATHWAY CROSS SECTION *
NOT TO SCALE

DATE:
PROJECT NO.

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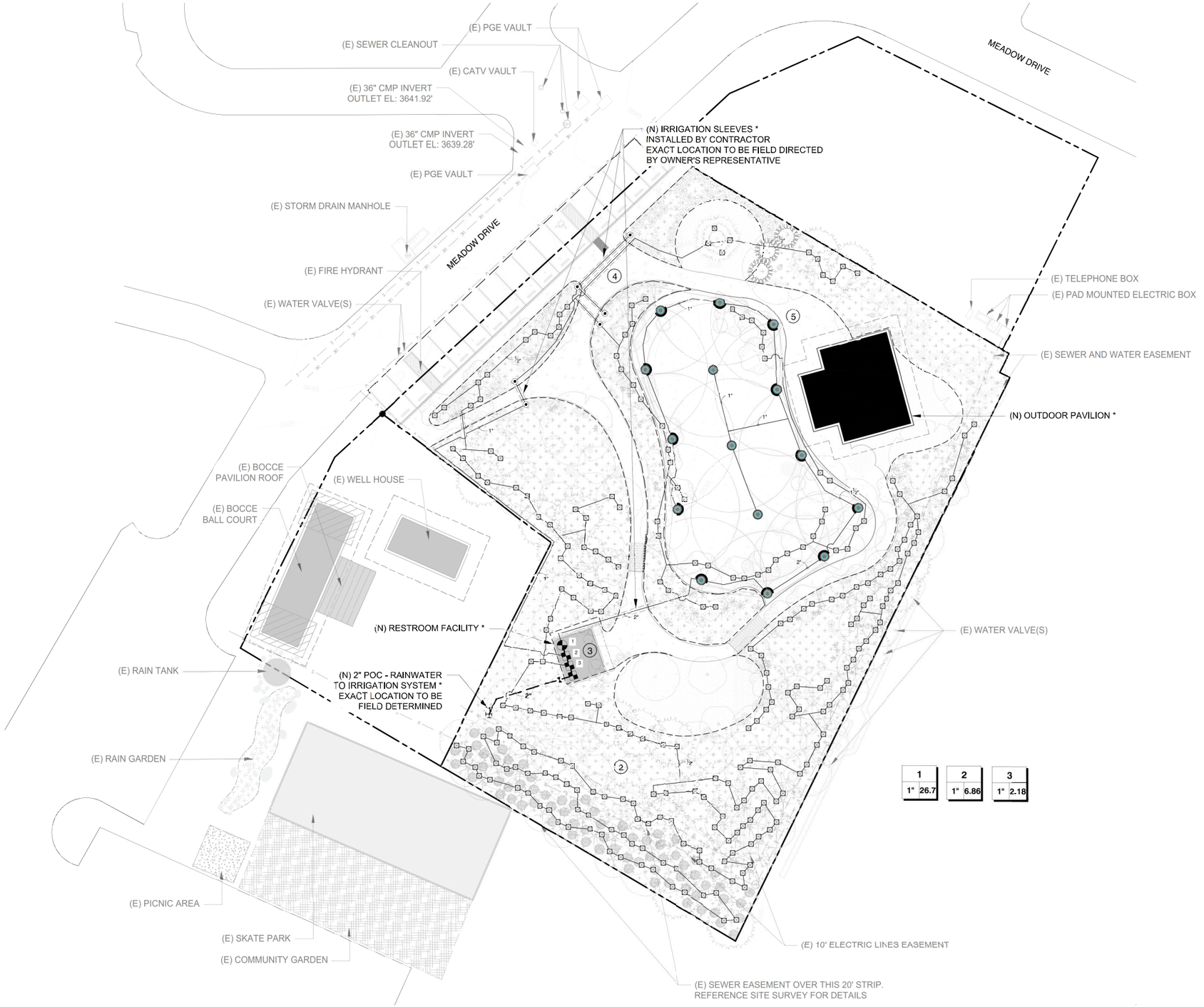
DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

MATERIALS DETAILS

L3.4

100% CD



GENERAL NOTES

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B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

C. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

LEGEND

- PROPERTY BOUNDARY
- 1795 EXISTING CONTOURS
- EXISTING BUILDING
- PROPOSED BUILDING
- BUILDING OFFSET
- W WATER
- UE UNDERGROUND ELECTRIC
- SS 6" SANITARY SEWER
- PIPE BREAK / CONTINUATION
- TREE EMITTERS - VALVE 3
- DRIP EMITTER IRRIGATION AREA - VALVE 2
- IRRIGATION VALVES
- PIPE TRANSITION POINT
- POP-UP MP ROTATORS OR APPROVED EQUAL- VALVE 1
- SHUT OFF VALVE - IRRIGATION
- IRRIGATION LATERAL LINE
- * IRRIGATION MAIN LINE
- * SLEEVE UNDER PATHWAYS
- POC-1 IRRIGATION POINT OF CONNECTION
- (E) EXISTING
- (N) NEW

SHEET NOTES

* 1. IRRIGATION SYSTEM LAYOUT AND INSTALLATION TO BE FIELD DIRECTED BY OWNERS REPRESENTATIVE.
2. INSTALLATION OF DRIP EMITTERS BY OTHERS: INSTALL DRIP EMITTERS QUANTITIES AS SPECIFIED IN IRRIGATION SCHEDULE BY PLANT SIZE.
3. INSTALLATION OF IRRIGATION VALVES BY OTHERS: INSTALL JUMBO VALVE BOX IN GROUND. REFERENCE IRRIGATION DETAILS FOR SPECIFICATIONS.
* 4. INSTALLATION OF PIPE SLEEVES UNDER PATHWAYS BY CONTRACTOR AS SPECIFIED IN PLAN, SCHEDULE AND SPECIFICATIONS.
5. ADJUST POP-UP SPRAY PATTERNS AFTER INSTALLATION TO MINIMIZE OVER SPRAY ON PATHWAYS BY OTHERS.

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DESIGN BY: MS
DRAWN BY: MS
REVIEW BY: JPB

IRRIGATION PLAN

L4.1

100% CD

1 IRRIGATION PLAN

SCALE: 1"=20'
0 20 40 60

N

IRRIGATION BID NOTES

* 1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF UNDERGROUND UTILITIES FOR IRRIGATION CONVEYANCE TO MARKED POINT OF CONNECTIONS AS SHOWN ON IRRIGATION PLAN. INLCUDING BUT NOT LIMITED TO TRENCH WORK, EXCAVATION, PIPE BEDDING, PIPE LAYING AND COORDINATION WITH OWNER'S REPRESENTATIVE.

* 2. CONTRACTOR RESPONSIBLE FOR FURNISHING AND INSTALLING ALL PERTINENT MATERIALS AS SHOWN AND SPECIFIED ON IRRIGATION SCHEDULE: EQUIPMENT, FITTINGS, APPURTENANCES ASSOCIATED WITH IRRIGATION, AND UNDERGROUND POINT OF CONNECTIONS.

* 3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY IRRIGATION EQUIPMENT SUBSTITUTIONS WITH THE APPROVALS BY THE OWNER'S REPRESENTATIVE.

* 4. CONTRACTOR TO INSTALL AND COORDINATE ALL POINT OF CONNECTIONS STUB-OUTS ABOVE GROUND AS SHOWN ON IRRIGATION PLAN WITH OWNER'S REPRESENTATIVE.

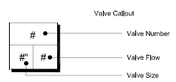
5. INSTALLATION OF ABOVE GROUND IRRIGATION EQUIPMENT (EMITTERS, VALVES, VALVE BOXES, ROTORS) BY OTHERS.

IRRIGATION EQUIPMENT SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
3000	HUNTER MP3000 PROS-06-PRS40-CV-R OR APPROVED EQUIVALENT TURF ROTATOR, 12IN. POP-UP WITH FACTORY INSTALLED CHECK VALVE, RECLAIMED BODY CAP, PRESSURE REGULATED TO 40 PSI, MP ROTATOR NOZZLE ON PRS40 BODY. ARCS 90-210, 210-270, 360.	15	40

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD XCZ-100-IVM 1" OR APPROVED EQUIVALENT WIDE FLOW IVM DRIP CONTROL KIT FOR COMMERCIAL APPLICATIONS. 1IN. BALL VALVE WITH 1IN. PESB IVM SMART VALVE W/ FACTORY INSTALLED IVM-SOL 0.3-20 GPM AND 1IN. PRESSURE REGULATING 40PSI FLOW-INDICATING BASKET FILTER 0.3-20 GPM	3
	PIPE TRANSITION POINT PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP EMITTER TUBING; INSTALLED IN 6" ROUND VALVE BOXES.	7
0.5	DRIP EMITTERS FOR TREES (DRIP WORKS) OR APPROVED EQUIVALENT 0.5 GPH, EMITTERS (2 ASSIGNED TO EACH 15 GAL. TREE) RECOMMENDED PRESSURE FROM 20 PSI-50 PSI, OPTIONAL DIFFUSER CAP MAY BE UTILIZED FOR HIGHER FLOWS AND CLOG PROTECTION.	263
	AREA TO RECEIVE DRIP EMITTERS FLOW RATE OF 0.5 GPH. RECOMMENDED PRESSURE FROM 20 PSI-50 PSI. REFERENCE DRIP EMITTER QUANTITIES PER PLANT SIZE BELOW.	24,487 s.f.
	EMITTER NOTES: 0.5 GPH EMITTERS (2 ASSIGNED TO EACH 1 GAL. PLANT)	892
	0.5 GPH EMITTERS (2 ASSIGNED TO EACH 5 GAL. PLANT)	564

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB-PRS-D-NP-HAN 2" OR APPROVED EQUIVALENT 2" INDUSTRIAL VALVE. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION. WITH PRESSURE REGULATOR MODULE, AND PURPLE FLOW HANDLE FOR NON-POTABLE WATER USE.	1
XX 2"	POINT OF CONNECTION 2" RAINWATER POINT OF CONNECTION	1
	IRRIGATION MASTER SHUT-OFF VALVE 2"	1
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	
	POLY LATERAL LINE: 1/2" FOR DRIP EMITTERS	2,400 l.f.
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 3/4"	100 l.f.
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 1"	300 l.f.
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 1 1/4"	20 l.f.
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 1 1/2"	80 l.f.
*	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 2"	140 l.f.
*	IRRIGATION MAINLINE: PVC SCHEDULE 40	80 l.f.
*	PIPE SLEEVE: PVC CLASS 200 SDR 21 SLEEVE SIZE: 2 TIMES THE DIAMETER OF PIPE OR WIRE BUNDLE WITHIN.	100 l.f.



IRRIGATION NOTES

1. READ THOROUGHLY AND BECOME FAMILIAR WITH THE SPECIFICATIONS AND INSTALLATION DETAILS AND RELATED WORK PRIOR TO CONSTRUCTION.
* 2. COORDINATE UTILITY LOCATIONS ("CALL BEFORE YOU DIG - 811") PRIOR TO CONSTRUCTION.
* 3. AREAS, AS IDENTIFIED TO HAVE NEW IRRIGATION SYSTEM, SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES BY LICENSED CONTRACTORS AND EXPERIENCED WORKMEN.
* 4. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE THEMSELVES WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALLS, EXISTING TREES ETC. CONTRACTOR SHALL REFERENCE PLAN AND SPECIFICATIONS AS NOTED, FOR THE LOCATION, SIZE AND THE INSTALLATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, PAVING, STRUCTURES, ETC. EXACT LOCATIONS TO BE FILED DIRECTED. CONTRACTOR TO VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO THE EXCAVATION OF TRENCHES. CONTRACTOR TO VERIFY LOCATION OF EXISTING TREES WHERE NEW IRRIGATION IS TO BE INSTALLED. ALL EXISTING TREES SHALL BE PROTECTED AGAINST EXCAVATION DAMAGE. CONTRACTOR TO REPAIR ANY DAMAGE CAUSED BY WORK AT NO ADDITIONAL COST TO THE OWNER.
* 5. DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC. WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL WORK AND PLAN WORK ACCORDINGLY, FURNISHING SUCH FITTINGS, ETC. AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. THE WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEMS, PLANTING AND ARCHITECTURAL FEATURES.
* 6. DO NOT PROCEED WITH THE INSTALLATION OF THE IRRIGATION SYSTEM WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS OR GRADE DIFFERENCES EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. IF DISCREPANCIES IN CONSTRUCTION DETAILS, LEGEND NOTES OR SPECIFICATIONS ARE DISCOVERED, BRING ALL SUCH OBSTRUCTIONS OR DISCREPANCIES TO THE ATTENTION OF THE OWNERS' REPRESENTATIVE.
* 7. IRRIGATION SYSTEM DESIGNED FOR A MINIMUM 70 PSI (STATIC PRESSURE) TO BE PROVIDED AT THE FARTHEST HEAD FROM POINT OF CONNECTION. THE IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNERS' AUTHORIZED REPRESENTATIVE. CONTRACTOR TO VERIFY PRESSURE ON SITE.
* 8. IRRIGATION POINT OF CONNECTIONS SHOWN ON PLAN MUST BE VERIFIED AT THE SITE. COORDINATE WITH EXISTING UTILITIES PLAN FOR RE-LOCATING POINT OF CONNECTION TO A LOCATION WHICH BEST SUITS SITE CONDITIONS AND IRRIGATION ZONE REQUIREMENTS.
* 9. SLEEVE MAINLINE AND LATERALS UNDER ALL PAVING AND WALLS. REFERENCE SCHEDULE FOR SIZE, TYPE AND QUANTITIES.
* 10. ALL IRRIGATION MAINLINES AND LATERALS TO BE TRENCHED AND BURIED SUB-SURFACE.
* 11. UN-SIZED LATERAL LINE PIPE DOWNSTREAM FROM SIZED PIPE SHALL BE 1-1/2" FOR VALVE LATERALS OR 1/2" FOR DRIP/EMITTER LATERALS.
* 12. SPLICING OF 24-VOLT WIRES WILL NOT BE PERMITTED EXCEPT IN VALVE BOXES. LEAVE A 24" COIL OF EXCESS WIRE AT EACH SPLICE AND 100 FEET ON CENTER ALONG WIRE RUN. TAPE WIRE IN BUNDLES 10 FEET ON CENTER. NO TAPING PERMITTED INSIDE SLEEVES.
* 13. ALL MAIN LINES SHALL BE FLUSHED PRIOR TO THE INSTALLATION OF IRRIGATION EQUIPMENT. AT 30 DAYS AFTER INSTALLATION EACH SYSTEM SHALL BE FLUSHED TO ELIMINATE GLUE AND DIRT PARTICLES FROM THE LINES.
* 14. NOTIFY OWNER'S REPRESENTATIVE OF ANY ASPECTS OF LAYOUT THAT WILL PROVIDE INCOMPLETE OR INSUFFICIENT WATER COVERAGE OF PLANT MATERIAL AND DO NOT PROCEED UNTIL THE INSTRUCTIONS ARE OBTAINED.
* 15. ALL EXCAVATIONS ARE TO BE FILLED WITH COMPACTED BACKFILL. BACKFILL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED 8" LOOSE DEPTH, AND COMPACTED TO A MINIMUM OF 95 PERCENT OF STANDARD MAXIMUM DENSITY (ASTM D 698). CONTRACTOR TO REPAIR ALL SETTLED TRENCHES PROMPTLY.
16. OPERATE IRRIGATION BETWEEN THE HOURS OF 10:00 PM AND 8:00 AM AND/OR PER AVAILABLE EXISTING SCHEDULE WITHIN THE HOURS SPECIFIED.
* 17. 2" RAINWATER LINE TO BE USED AS IRRIGATION POINT OF CONNECTION / MAIN LINE.
* 18. PROVIDE THE FOLLOWING COMPONENTS TO THE OWNER PRIOR TO THE COMPLETION OF THE PROJECT:
    I. OPERATING KEYS/CONTROL MEASURE FOR EACH OPERATED VALVE(S).
    II. SERVICING WRENCH OR TOOL NEEDED FOR COMPLETE ACCESS, ADJUSTMENT, AND REPAIR OF ALL VALVES/IRRIGATION EQUIPMENT.
* 19. TO BE NOTED: PRESSURE REGULATING DEVICES ARE REQUIRED IF WATER PRESSURE IS BELOW OR EXCEEDS THE RECOMMENDED PRESSURE OF THE SPECIFIED IRRIGATION DEVICES.
* 20. TO BE NOTED: DUE TO GRADE AND ELEVATION CONSTRAINTS, CHECK VALVES OR ANTI-DRAIN VALVES ARE REQUIRED ON ALL NODES WHERE LOW POINT DRAINAGE COULD OCCUR.
* 21. TO BE NOTED: REGARDING PIPE SIZING - IF A SECTION OF UN-SIZED PIPE IS LOCATED BETWEEN THE IDENTICALLY SIZED SECTIONS, THE UN-SIZED PIPE IS THE SAME NOMINAL SIZE AS THE TWO SIZED SECTIONS. THE UN-SIZED PIPE SHOULD SHOULD NOT BE CONFUSED WITH THE DEFAULT PIPE SIZE NOTED IN THE LEGEND.
22. TO BE NOTED: AREAS TO RECEIVE DRIP LINE/GRID SHALL HAVE DRIP TUBE FLUSH VALVES AT THE LOWEST ELEVATION RELATIVE TO THE IRRIGATION VALVE POINT OF CONNECTION AND DRIP TUBE AIR RELIEF VALVES AT THE HIGHEST POINT RELATIVE TO THE IRRIGATION VALVE POINT OF CONNECTION.
23. ALL POINT SOURCE EMITTER POLY LINES SHALL ALSO RECEIVE FLUSH VALVES AND AIR VALVES RELATIVE TO THE IRRIGATION VALVE POINT OF CONNECTION.
* 24. REFER TO PLANTING PLAN FOR PLANT MATERIAL NAMES, ABBREVIATIONS, SPECIFIC SIZES, ON-CENTER SPACING, AND ADDITIONAL INFORMATION.
* 25. DO NOT INSTALL DRIP LINE TUBING UNDER PAVED SURFACES. CONNECT DRIP LINE TUBING TO SCHEDULE 40 PVC LATERAL LINE PIPING FOR ROUTING UNDER PAVED SURFACES AND SCHEDULE 80 PVC PIPING FOR ROUTING THROUGH PLANTER WALLS. ADAPT DRIP LINE TUBING TO PVC PIPING AS REQUIRED WITH COMPRESSION ADAPTER FITTINGS.
26. REFERENCE PIPE TRANSITION POINTS FOR ADAPTING PVC TO DRIP TUBING AND POLY TUBING FOR EMITTERS.
* 27. MANUAL SHUT OFF VALVES SHALL BE REQUIRED AND INSTALLED AT EACH POINT OF CONNECTION PRIOR TO IRRIGATION VALVE MANIFOLD.

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Twain Harte Meadows Park
22945 Meadow Drive, Twain Harte, CA, 95383

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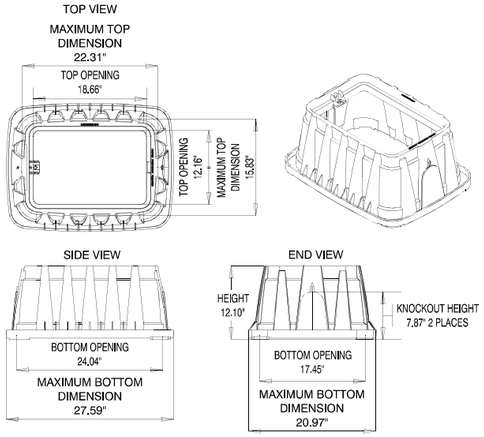
3 60% TO SWB	07.28.22
4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: MS
DRAWN BY: MS
REVIEW BY: JPB

IRRIGATION SCHEDULE NOTES

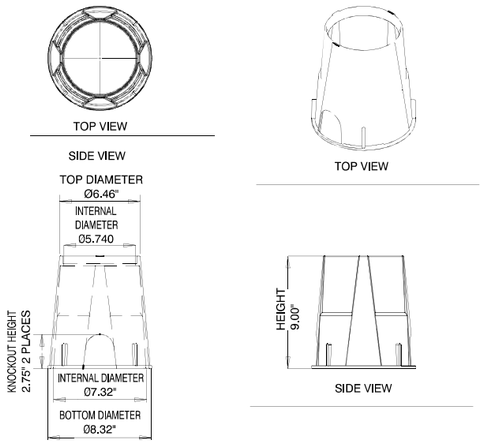
L4.2

100% CD



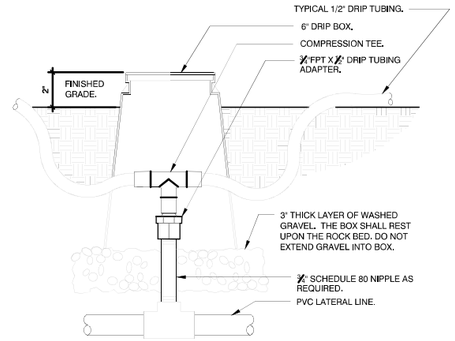
1 RAIN BIRD JUMBO VALVE BOX DIMENSIONS OR APPROVED EQUIVALENT

Not to Scale FX-IR-RB-VBOX-23



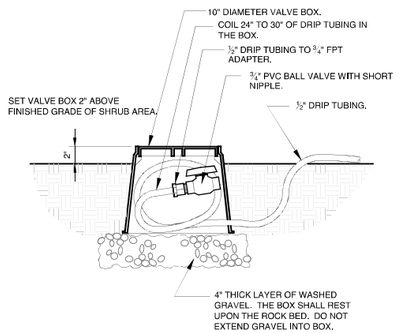
2 RAIN BIRD 6" ROUND VALVE BOX DIMENSIONS OR APPROVED EQUIVALENT

Not to Scale FX-IR-RB-VBOX-03



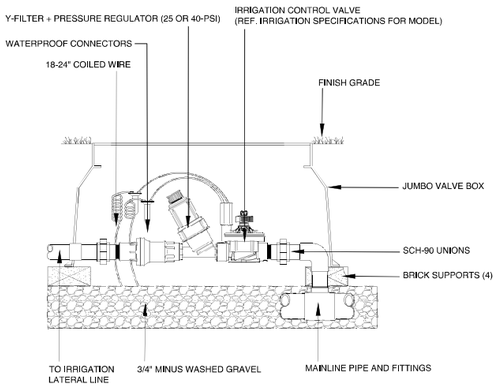
3 ZONE CONTROL

Not to Scale FX-IR-FX-DRIP-02



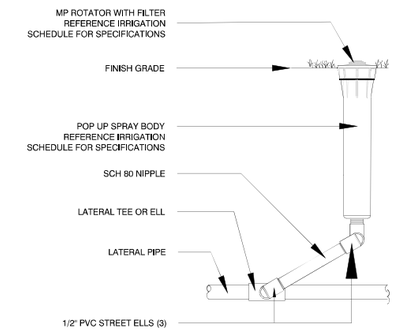
4 DRIP IRRIGATION-EMITTER FLUSH VALVE

Not to Scale



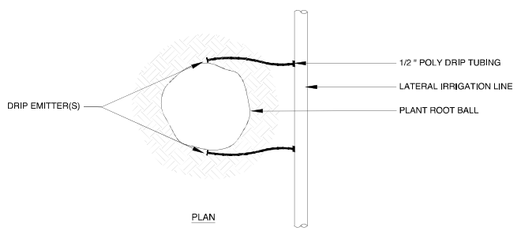
5 IRRIGATION CONTROL VALVE W/ FILTER + UNIONS

Not To Scale



6 MP ROTATOR WITH POP UP SPRAY BODY OR APPROVED EQUIVALENT

Not To Scale



7 DRIP EMITTER PLACEMENT (TREES, SHRUBS)

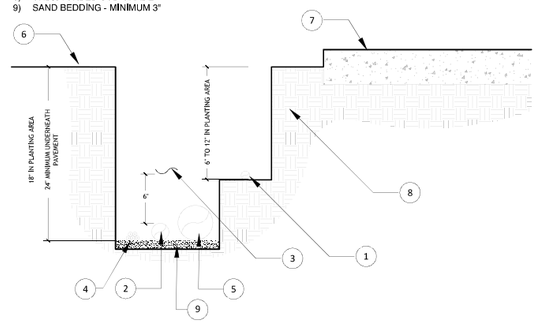
Not to Scale

8 MP ROTATOR - 3000 SERIES OR APPROVED EQUIVALENT

Not to Scale

DETAIL NOTES:

1) NON-PRESSURIZED LINE (IRRIGATION LATERAL LINE, WET CONVEYANCE LINE, OVERFLOW LINE)
2) PRESSURIZED LINE (MAIN LINE)
3) DETECTABLE LOCATOR TAPE
4) DIRECT BURIAL LOW VOLTAGE CONTROL WIRES
★ 5) PIPE SLEEVE - PVC CLASS 200 SDR 21
6) FINISHED GRADE
7) PAVEMENT
8) UNDISTURBED SUB-GRADE
9) SAND BEDDING - MINIMUM 3"



GENERAL NOTES:

A. SEE IRRIGATION LEGEND FOR MAINLINE, LATERAL LINE, AND PIPE SLEEVE SIZES AND TYPES.
B. DIRECT BURIAL CONTROL WIRES SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT IF REQUIRED.
C. 24-WIRE IRRIGATION WIRE SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT.
D. DETECTABLE LOCATOR TAPE SHALL BE LOCATED SIX INCHES (6") ABOVE THE ENTIRE MAINLINE RUN.
E. FOR UTILITY TRENCHES, COMPACT THE INITIAL BACKFILL USING NATIVE SOIL, TO A RELATIVE COMPACTION OF 95%
F. FOR UNPAVED AREAS, COMPACT NATIVE SOIL MATERIAL TO A RELATIVE COMPACTION OF 85%

9 TRENCHING(TYP.)

Not to Scale

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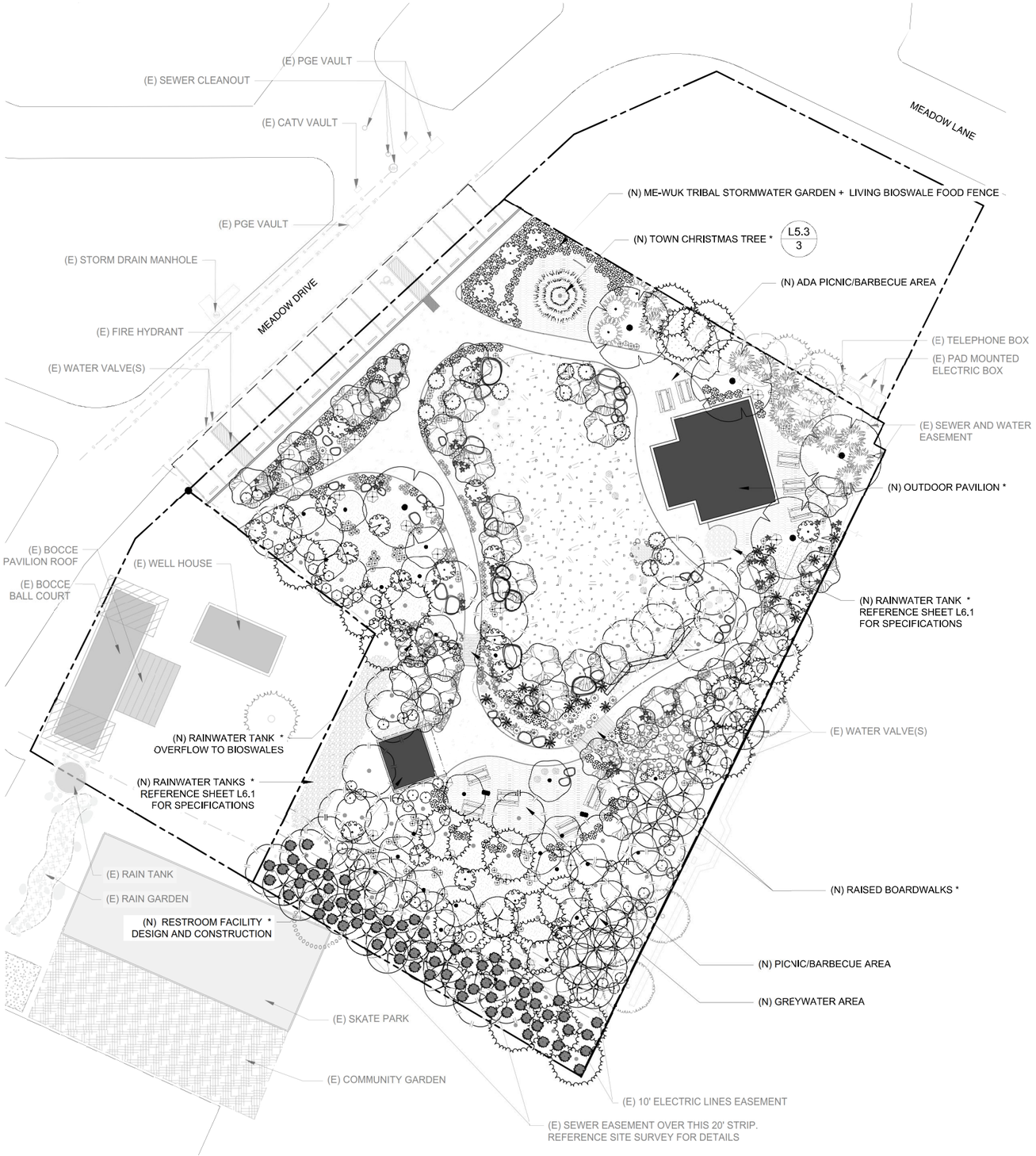
DESIGN BY: MS
DRAWN BY: MS
REVIEW BY: JPB

IRRIGATION DETAILS

L4.3

100% CD



1 **PLANTING PLAN**

SCALE: 1"=20'
0 20 40 60

N

PLANT LEGEND

TREES	BOTANICAL / COMMON NAME
EXISTING TREES	
	Calocedrus decurrens Incense Cedar
	Pinus ponderosa Ponderosa Pine
	Quercus agrifolia Coast Live Oak
	Quercus kelloggii California Black Oak
	Salix spp. Salix spp.
PROPOSED TREES	
*	*Abies concolor* White Fir
	Calocedrus decurrens Incense Cedar
	Pinus lambertiana Sugar Pine
	Pinus ponderosa Ponderosa Pine
	Populus tremuloides Quaking Aspen

SHRUBS	BOTANICAL / COMMON NAME
	Existing Willow and Blackberry Thicket
	Acer macrophyllum Big Leaf Maple
	Berberis aquifolium 'Compacta' Oregon Grape
	Cornus nuttallii Pacific Dogwood
	Corylus cornuta californica Western Hazelnut
	Rhododendron occidentale Western Azalea
	Ribes nevadense Sierra Currant
	Rubus parviflorus Thimbleberry
	Sambucus nigra Black Elderberry
	Symphoricarpos albus Common White Snowberry

PERENNIALS	BOTANICAL / COMMON NAME
	Achillea millefolium Common Yarrow
	Artemisia vulgaris Mugwort
	Asclepias speciosa Showy Milkweed
	Darmera peltata Indian Rhubarb
	Erythranthe cardinalis Scarlet Monkeyflower
	Lepechinia calycina White Pitcher Sage
	Lilium columbianum Tiger Lily

GROUNDCOVERS	BOTANICAL / COMMON NAME
	Ceanothus prostratus Pine Mat
	Sisyrinchium angustifolium Narrowleaf Blue-eyed Grass

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

D. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.

PLANT MIXES

Meadow Plant Mix
(Refer to Table Below)

MEADOW PLANT MIX	
GRASS/RUSH/SEDGE	
Carex praegracilis	Clustered Field Sedge
Melica californica	California Melicgrass
Muhlenbergia rigens	Deer Grass
WILDFLOWER SEED MIX (Possible Species)	
PERENNIALS	
Achillea millefolium	Common Yarrow
Asclepias speciosa	Showy Milkweed
Corethrogyne filaginifolia	California Aster
Erysimum capitatum	Sanddune Wallflower
Helenium bigelovii	Bigelow's Sneezeweed
Lepechinia calycina	White Pitcher Sage
Lilium columbianum	Tiger Lily
Mimulus bifidus	Monkey Flower
Monardella villosa	Coyote Mint
Penstemon azureus	Azure Penstemon
Penstemon heterophyllus	Foothill Penstemon
Rudbeckia californica	California Cone Flower
GROUNDCOVERS	
Arctostaphylos Uva ursi	Kinnikinnick
Castilleja exserta	Purple Owl's Clover
Collinsia tinctoria	Sticky Chinese Houses
Helenium bigelovii	Bigelow's Sneezeweed
Heuchra spp.	Coral Bells
Prunella vulagris	Self Heal
Sisyrinchium angustifolium	Baby Blue Eyes

LEGEND

- PROPERTY BOUNDARY
- SS — SANITARY SEWER
- W — WATER
- FENCE
- 1795 — PROPOSED CONTOUR
- EDUCATIONAL SIGNAGE
- V — WATER VALVE
- MH — MANHOLE
- FIRE HYDRANT
- SEWER CLEAN-OUT
- (E) — EXISTING
- (N) — NEW
- MULCH
- GRAVEL PAD
- BOULDERS
- MODULAR TANK STORAGE
- RAIN TANK

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DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

PLANTING PLAN

L5.1

100% CD

PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	SIZE	WATER NEEDS	QTY
EXISTING TREES				
	Calocedrus decurrens Incense Cedar			
	Pinus Ponderosa Ponderosa Pine			
	Quercus agrifolia Coast Live Oak			
	Quercus kelloggii California Black Oak			
	Salix spp. Salix spp.			
PROPOSED TREES				
★	*Abies concolor* White Fir	15 gal.	Medium	1
	Calocedrus decurrens Incense Cedar	15 gal.	Low	30
	Pinus lambertiana Sugar Pine	15 gal.	Low	33
	Pinus ponderosa Ponderosa Pine	15 gal.	Low	26
	Populus tremuloides Quaking Aspen	15 gal.	Medium	36

SHRUBS	BOTANICAL / COMMON NAME	SIZE	WATER NEEDS	QTY
	Existing Willow and Blackberry Thicket			
	Acer macrophyllum Big Leaf Maple	5 gal.	Medium	29
	Berberis aquifolium 'Compacta' Oregon Grape	5 gal.	Low	59
	Cornus nuttallii Pacific Dogwood	5 gal.	Low	6
	Corylus cornuta californica Western Hazelnut	5 gal.	Low	19
	Rhododendron occidentale Western Azalea	5 gal.	Medium	11
	Ribes nevadense Sierra Currant	5 gal.	Medium	117
	Rubus parviflorus Thimbleberry	5 gal.	Medium	25
	Sambucus nigra Black Elderberry	5 gal.	Low	20
	Symphoricarpos albus Common White Snowberry	5 gal.	Medium	18

PERENNIALS	BOTANICAL / COMMON NAME	SIZE	WATER NEEDS	QTY
	Achillea millefolium Common Yarrow	1 gal.	Low	124
	Artemisia vulgaris Mugwort	1 gal.	Medium	16
	Asclepias speciosa Showy Milkweed	1 gal.	Low	20
	Darmera peltata Indian Rhubarb	1 gal.	Medium	7
	Erythranthe cardinalis Scarlet Monkeyflower	1 gal.	Medium	19
	Lepechinia calycina White Pitcher Sage	1 gal.	Very Low	39
	Lilium columbianum Tiger Lily	1 gal.	Very Low	70

GROUNDCOVERS	BOTANICAL / COMMON NAME	SIZE	WATER NEEDS	QTY
	Ceanothus prostratus Pine Mat	1 gal.	Very Low	72
	Sisyrinchium angustifolium Narrowleaf Blue-eyed Grass	1 gal.	Low	80

PLANT MIXES

GROUNDCOVERS	BOTANICAL / COMMON NAME	SIZE	WATER NEEDS	QTY
	Meadow Plant Mix (Refer to Plant Mix Table Below)	Seed	Low	7,658 sf

MEADOW PLANT MIX	
GRASS/RUSH/SEDGE	
Carex praegracilis	Clustered Field Sedge
Melica californica	California Melicgrass
Muhlenbergia rigens	Deer Grass
WILDFLOWER SEED MIX (Possible Species)	
PERENNIALS	
Achillea millefolium	Common Yarrow
Asclepias speciosa	Showy Milkweed
Corethrogyne filaginifolia	California Aster
Erysimum capitatum	Sanddune Wallflower
Helenium bigelovii	Bigelow's Sneezeweed
Lepechinia calycina	White Pitcher Sage
Lilium columbianum	Tiger Lily
Mimulus bifidus	Monkey Flower
Monardella villosa	Coyote Mint
Penstemon azureus	Azure Penstemon
Penstemon heterophyllus	Foothill Penstemon
Rudbeckia californica	California Cone Flower
GROUNDCOVERS	
Arctostaphylos Uva ursi	Kinnikinnick
Castilleja exserta	Purple Owl's Clover
Collinsia tinctoria	Sticky Chinese Houses
Helenium bigelovii	Bigelow's Sneezeweed
Heuchra spp.	Coral Bells
Prunella vulagris	Self Heal
Sisyrinchium angustifolium	Baby Blue Eyes

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4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

PLANT SCHEDULE

L5.2

100% CD

NOTES:

SITE PREPARATION

* 1. CONTRACTOR SHALL BE AWARE OF ALL UNDERGROUND UTILITIES, PIPES AND STRUCTURES. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES FOR FIELD LOCATION OF UNDERGROUND UTILITY LINES PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY OF ANY COST.

* 2. DO NOT PROCEED WITH CONSTRUCTION AS DESIGNED IF OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNERS REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

* 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH PLANTING OPERATIONS.

SOIL PREPARATION

4. PRIOR TO STARTING CONSTRUCTION WORK, CONTRACTOR SHALL TAKE SOIL SAMPLES WHERE DIFFERENT SOIL TYPES ARE ENCOUNTERED ON THE PROJECT SITE. SOIL SHALL BE ANALYZED BY AN APPROVED COMMERCIAL SOIL TESTING LABORATORY (TRI-C ENTERPRISES, 1-800-392-3311, OR FRUIT GROWERS LABORATORY, 805-392-2000), OR EQUAL, FOR SUITABILITY FOR ORNAMENTAL PLANTING. A COPY OF THE RESULTS OF THIS ANALYSIS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL FOLLOW THE RECOMMENDATIONS OF THE SOILS LAB AS TO THE RATE AND ANALYSIS OF FERTILIZER & AMENDMENTS TO PROVIDE A SUITABLE MEDIUM FOR PLANTING. THE CONTRACTOR SHALL NOTIFY THE OWNERS REPRESENTATIVE OF ANY POTENTIAL PROBLEMS WHICH MAY RESULT DUE TO HARMFUL SUBSTANCES FOUND IN THE SOIL. FAILURE TO ACT AS SPECIFIED MAY RESULT IN THE CONTRACTOR ASSUMING FINANCIAL RESPONSIBILITY FOR ANY DAMAGE TO PLANTS.

* 5. REMOVE ROCKS LARGER THAN 3" FROM PLANTING AREAS.

* 6. FOR SOILS LESS THAN 6% ORGANIC MATTER IN THE TOP 6 INCHES OF SOIL, COMPOST AT A RATE OF A MINIMUM OF FOUR CUBIC YARDS PER 1,000 SQUARE FEET OF PERMEABLE AREA SHALL BE INCORPORATED TO A DEPTH OF SIX INCHES INTO THE SOIL.

* 7. ON-SITE SOILS WITH AN ORGANIC CONTENT OF AT LEAST 5 PERCENT CAN BE PROPERLY STOCKPILED (TO MAINTAIN ORGANIC CONTENT) AND REUSED.

* 8. CONTRACTOR TO LOOSEN COMPACTED SOILS AND MIX SOIL AMENDMENTS AND CONDITIONERS TO A MINIMUM DEPTH OF 12 INCHES IN PLANTING AREAS.

FINISHED GRADES IN PLANTING AREAS

* 9. THE CONTRACTOR SHALL ALLOW FOR THE ADDITION OF SPECIFIED QUANTITIES OF SOIL AMENDMENTS AND CONDITIONERS IN SOIL PREPARATION AND FINISH GRADING.

10. THE OWNERS REPRESENTATIVE WILL APPROVE FINISH GRADES AT ALL LANDSCAPE AREAS PRIOR TO PLANTING.

* 11. THE CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH THE SPECIFIED FINISHED ELEVATION, INCLUDING IMPORTING SOIL OR EXCAVATION, REMOVAL AND DISPOSAL AT AN APPROVED LOCATION. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTARY AMENDED IMPORT SOIL IN ANY PLANTING AREAS AS NECESSARY TO ACHIEVE THE SPECIFIED FINISH PLANTING GRADES. IMPORTED SOIL SHALL BE FREE OF UNWANTED SEEDS.

PLANTING

* 12. COORDINATE INSTALLATION OF LARGE PLANT MATERIAL WITH INSTALLATION OF STRUCTURES SUCH AS WALL FOOTINGS, PAVEMENTS, AND CURB AND GUTTER. ANY DAMAGE TO IMPROVEMENTS BY OTHERS IS THE RESPONSIBILITY OF THE CONTRACTOR.

* 13. CONTRACTOR SHALL FURNISH PLANT MATERIAL FREE OF PESTS OR PLANT DISEASES. CONTRACTOR SHALL WARRANTY ALL PLANT MATERIALS PER THE SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE HEALTHY, VIGOROUS PLANT STOCK GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THE CONDITIONS IN THE LOCALITY OF THE PROJECT.

14. SPECIMEN TREES WILL BE SELECTED AND TAGGED BY THE OWNERS REPRESENTATIVE PRIOR TO PLANT INSTALLATION.

* 15. ALL SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY THE OWNERS REPRESENTATIVE.

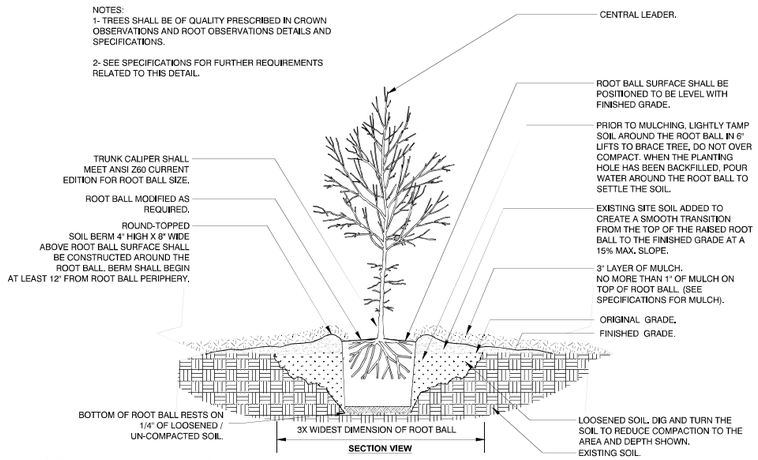
* 16. SEE DETAILS AND SPECIFICATIONS FOR STAKING METHOD, PLANT PIT DIMENSIONS AND BACKFILL REQUIREMENTS.

* 17. PLANT CROWN ELEVATIONS RELATIVE TO FINISH GRADE ARE SHOWN ON PLANTING DETAILS AND SHALL BE STRICTLY ADHERED TO. PROPER COMPACTION OF BACKFILL TO PREVENT SETTLEMENT SHALL BE REQUIRED.

* 18. TREES AND SHRUBS SHALL BE INSTALLED PRIOR TO PLANTING GROUNDCOVER. ALL TREE LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE OWNERS REPRESENTATIVE.

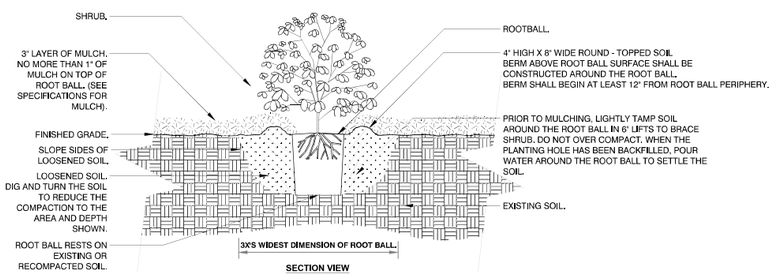
19. THE OWNERS REPRESENTATIVE RESERVES THE RIGHT TO ADJUST THE LOCATION OF PLANT MATERIAL DURING INSTALLATION AS APPROPRIATE TO THE PROJECT.

* 20. A MINIMUM 3-INCH LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT TURF AREAS, CREEPING OR ROOTING GROUND COVERS, OR DIRECT SEEDING APPLICATIONS WHERE MULCH IS CONTRA-INDICATED. MULCH MUST BE APPROVED BY THE OWNERS REPRESENTATIVE.



1 TREE PLANTING

Not to Scale

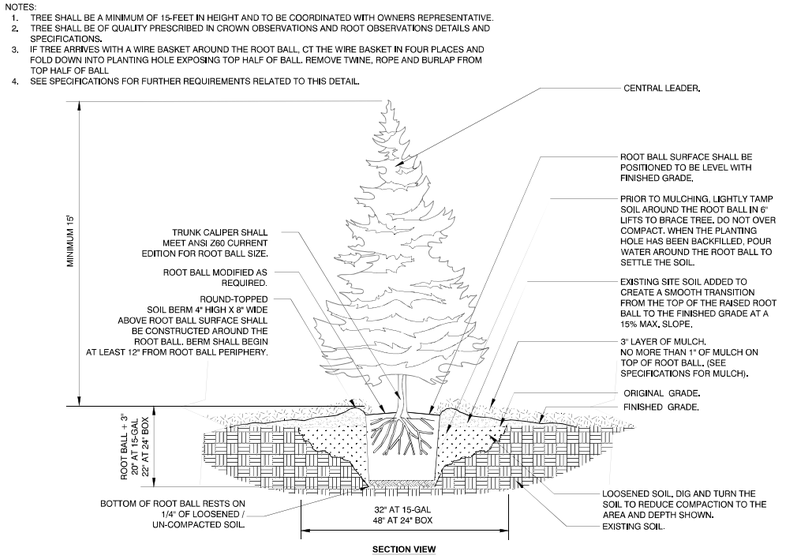


NOTES:
1- SHRUBS SHALL BE OF QUALITY PRESCRIBED IN THE ROOT OBSERVATIONS DETAIL AND SPECIFICATIONS.

2- SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL.

2 SHRUB PLANTING

Not to Scale



3 * TOWN CHRISTMAS TREE PLANTING

Not to Scale

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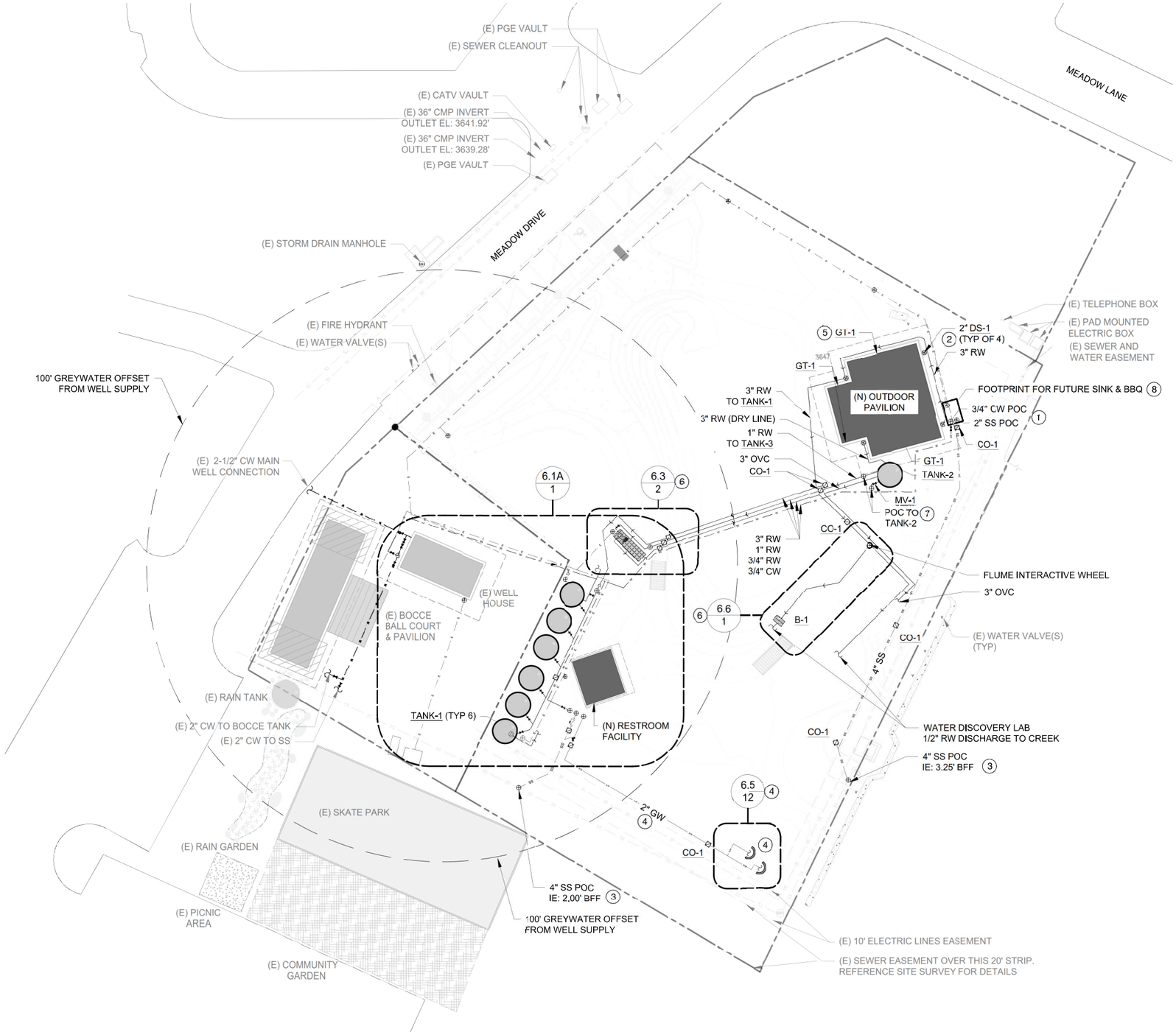
DESIGN BY: ABR
DRAWN BY: MS, JS, DR
REVIEW BY: RH, NS, JPB

PLANTING DETAILS

L5.3

100% CD



1 WATER REUSE AND UTILITIES PLAN

SCALE: 1"=20'
0 20 40 60
N

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.
B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG
C. TOPOGRAPHIC DATA SHOWN IS BASED ON A SURVEY CONDUCTED BY DAVID H. RAGLAND ENGINEERING AND LAND SURVEYING IN MAY 2022. THE ELEVATIONS SHOWN ON THIS SHEET ARE REFERENCED TO AN ELLIPSOID GPS OBSERVATION. THE CONVERSION FROM THIS DATUM TO NAVD88 IS -4 FT AT TWAIN HARTE MEADOWS PARK.
D. NEW COLD WATER, SEWER AND ELECTRICAL UTILITY PIPING TO MEADOWS FACILITIES SHALL BE ROUTED WITHIN TRENCH. ALL TRENCH WORK SHALL BE COORDINATED BY THE GENERAL CONTRACTOR WITH EXCAVATION, GRADING AND SITE DESIGN.

LEGEND

- PROPERTY BOUNDARY
- 1795 EXISTING CONTOURS
- EXISTING BUILDING
- PROPOSED BUILDING
- BUILDING OFFSET
- TRENCH
- RAINWATER CONVEYANCE
- DOWNSPOUT
- OVERFLOW CONVEYANCE
- W MUNICIPAL WATER LINE
- E UNDERGROUND ELECTRIC
- SS 6" SANITARY SEWER
- GREYWATER CONVEAYNCE
- RAIN TANK
- MODULAR TANK STORAGE
- BALL VALVE
- 3-WAY DIVERTER VALVE
- PIPE BREAK / CONTINUATION
- PUMP
- POINT OF CONNECTION
- CLEANOUT (CO-1)
- CHECK VALVE
- MULCH BASIN
- BACKFLOW PREVENTER
- INTERACTIVE WHEEL
- (E) EXISTING
- (N) NEW
- BFF BELOW FINISHED FLOOR (OR TOP OF SLAB ELEVATION)

SHEET NOTES

* 1. CONTRACTOR TO PROVIDE ABOVE GRADE CAPPED COLD WATER POINT OF CONNECTION WITH SHUT OFF VALVE AND CAPPED SANITARY SEWER POC WITH CLEAN OUT AT 6-FEET OUTSIDE THE BUILDING FOR FUTURE CONNECTION TO OUTDOOR SINK AND BBQ.
2. OTHERS TO PROVIDE FIRST FLUSH ASSEMBLY ON ALL DOWNSPOUTS. (TYP OF 4). COORDINATE WITH CONTRACTOR FOR LOCATIONS TO TIE IN AT UNDERGROUND PIPING. REFER TO SCHEDULES FOR CRITERIA. REFER TO DETAIL 1/L6.3.
* 3. CONTRACTOR TO PROVIDE NEW 4" SANITARY SEWER POINT OF CONNECTION TO EXISTING SEWER MAIN. EXACT TIE-IN LOCATION, SIZE AND INVERT TO BE FIELD VERIFIED. WHERE NEW PIPE SIZE EXCEEDS EXISTING PIPE SIZE, NOTIFY OWNER'S REPRESENTATIVE. CONFLICTS WITH EXISTING UG UTILITIES SHALL BE FIELD COORDINATED AND AVOIDED.
4. OTHERS TO INSTALL ENTIRETY OF GREYWATER SYSTEM FROM POINT OF CONNECTION AT RESTROOM TO MULCH BASINS. NO SCOPE OF WORK FOR CONTRACTOR INCLUDED. FOLLOW GREYWATER SPECIFICATIONS AND SYSTEM INSTALLATION NOTES ON SHEET L6.2. REFER TO DETAILS OF MULCH BASIN AND SYSTEM CONNECTIONS ON L6.5.
* 5. CONTRACTOR TO PROVIDE GUTTERS ALONG LOW POINT EDGES OF ROOF. CONTRACTOR TO PROVIDE HOLES FOR DOWNSPOUT CONNECTIONS AT LOCATIONS INDICATED ON PLANS. OTHERS TO CONNECT TO DOWNSPOUTS AND ASSOCIATED FIRST FLUSH ASSEMBLIES. CONTRACTOR TO PROVIDE UNDERGROUND RW PIPING TO SYSTEM. CONTRACTOR TO COORDINATE DOWNSPOUT LOCATION WITH UNDERGROUND PIPING CONSTRUCTION. REFER TO SCHEDULES.
6. OTHERS TO CONSTRUCT AND COORDINATE ENTIRETY OF UNDERGROUND TANK AND FLUME SYSTEM. CONTRACTOR SHALL PROVIDE CAPPED, LABELED STUB OUTS AT INDICATED POC LOCATIONS FOR OTHERS CONNECTION AND INSTALLATION TO SYSTEM.
7. SCOPE OF WORK FOR TANK-2 IS AS FOLLOWS:
* 7.1. CONTRACTOR SHALL PROVIDE POINTS OF CONNECTION AS INDICATED ON PLANS FOR 1" RW & 1/2" CW CONNECTIONS TO TANK.
7.2. CONTRACTOR TO PROVIDE TANK AND COORDINATE TANK INSTALLATION SCHEDULE WITH OWNER'S REPRESENTATIVE AND MANUFACTURER.
7.3. CONTRACTOR TO COORDINATE ALL TANK PORT LOCATIONS WITH OWNER'S REPRESENTATIVE, LANDSCAPE WATER REUSE CONTRACTOR AND MANUFACTURER PRIOR TO PURCHASE.
7.4. OTHERS TO INSTALL ALL FINAL PIPING TO TANK-2 INCLUDING ENTIRETY OF RW AND OVERFLOW CONVEYANCE PIPING.
8. OTHERS TO PROVIDE FINAL DESIGN AND SPECIFICATIONS FOR OUTDOOR SINK AND BBQ AS COORDINATED WITH CSD. THE BASIS OF DESIGN AND COST ESTIMATE INCLUDES:
8.1. (1) OUTDOOR-RATED STAINLESS STEEL SCULLERY SINK
8.2. (1) OUTDOOR PERMANENT CHARCOAL BBQ WITH COVER
8.3. (1) ABOVE GROUND 20GPM, 40LB CAP. HYDROMECHANICAL GREASE INTERCEPTOR. JAY R SMITH 8120 OR SIMILAR
8.4. FRAMING TO CONCEAL / PROTECT SINK AND INTERCEPTOR
8.5. UTILITY TIE IN'S FOR SEWER/VENT, CW AND ELECTRICAL.

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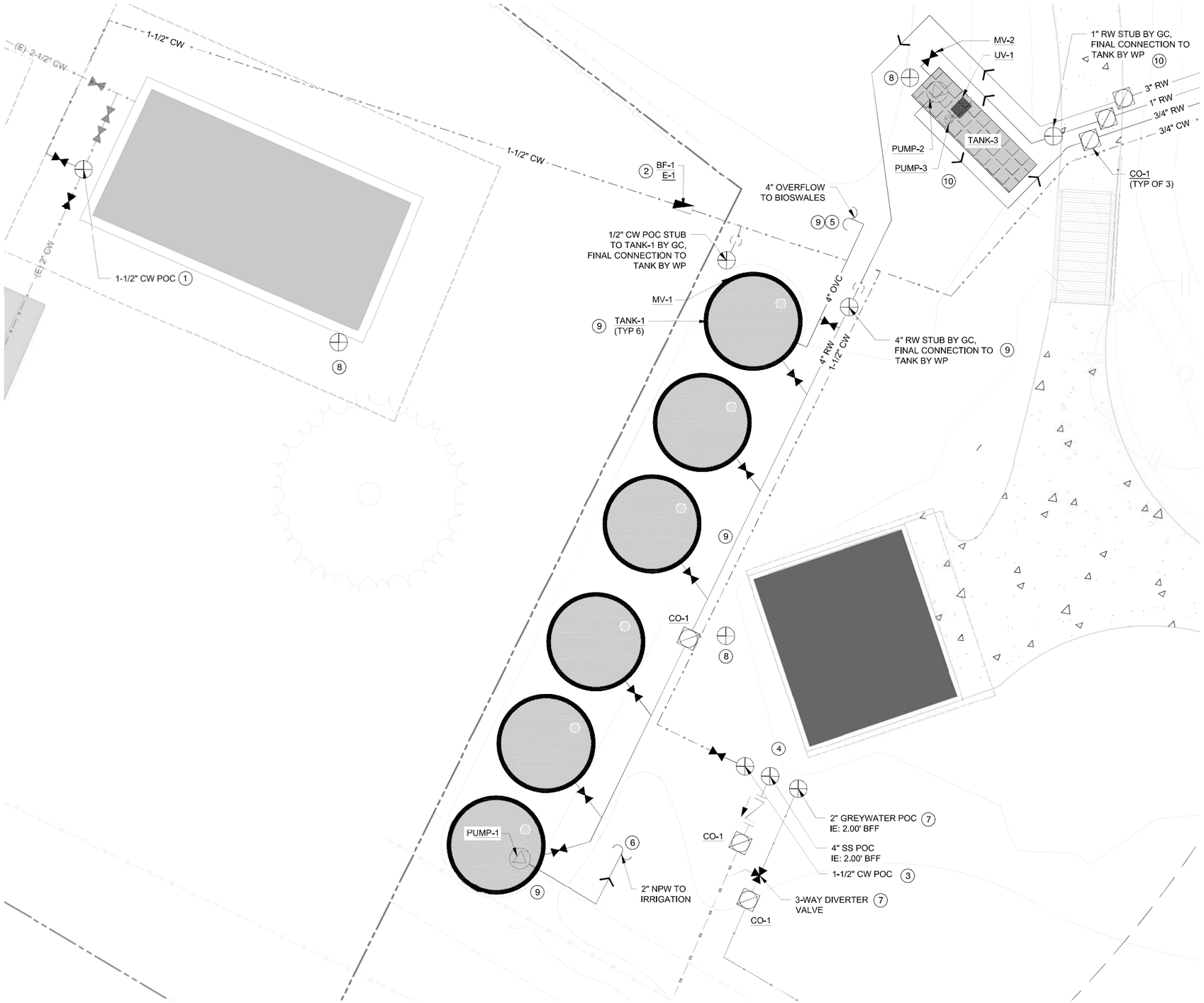
DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY: JPB

WATER REUSE AND UTILITIES PLAN

L6.1

100% CD



1 WATER REUSE - ENLARGED PLAN

SCALE 1" = 5'
0 5 10 15

N

GENERAL NOTES

A. ALL EXISTING TANKS, PIPING, AND ELECTRICAL WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

B. DATUM: 3645.00" ESTIMATED FROM GOOGLE EARTH AND REFERENCED TO AN ELLIPSOID GPS OBSERVATION

C. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG

SHEET NOTES

* 1. CONTRACTOR TO PROVIDE NEW 1-1/2" COLD WATER POINT OF CONNECTION TO EXISTING WELL DISTRIBUTION PIPING EXACT TIE-IN LOCATION SHALL BE FIELD VERIFIED. WHERE TIE-IN REQUIRES SYSTEM SHUT-OFF, SHUT-OFF SHALL BE COORDINATED WITH FACILITY MANAGER. PROVIDE ISOLATION VALVES DOWNSTREAM OF NEW CONNECTION ON BOTH NEW AND EXISTING COLD WATER PIPE.

* 2. CONTRACTOR TO PROVIDE BACK-FLOW PREVENTER IN SECURE ENCLOSURE IMMEDIATELY DOWNSTREAM OF CONNECTION TO WELL, PRIOR TO AND UPSTREAM OF ANY NEW OR ADDED CONNECTIONS. REFER TO DETAIL.

* 3. CONTRACTOR TO PROVIDE ABOVE GRADE CAPPED COLD WATER POINT OF CONNECTION WITH SHUT OFF VALVE AT 6-FEET OUTSIDE THE BUILDING FOR CONNECTION TO RESTROOM BUILDING.

* 4. RESTROOM MANUFACTURER SHALL INSTALL ALL UTILITY CONNECTIONS (SS, GW, CW, ELEC) INSIDE THE BUILDING TO FIXTURES. CONTRACTOR SHALL PROVIDE STUB OUT POCS TO THE BUILDING FOR COORDINATION WITH THE RESTROOM MANUFACTURER AT 6-FEET OUTSIDE THE BUILDING. CONTRACTOR TO MAKE ALL FINAL CONNECTIONS FROM THE SITE TO THE BUILDING AND ENSURE PROPER OPERATION OF ALL UTILITIES WITHIN THE BUILDING PRIOR TO RESTROOM MANUFACTURER DEPARTURE.

5. OTHERS TO PROVIDE SCREENED RAINWATER TANK OUTLET TO BIOSWALE. TANK OUTLETS SHALL BE PROVIDED WITH BALL-TYPE SHUT OFF VALVE LOCATED WITHIN BIOSWALE DIRECTLY UPSTREAM OF SCREENED DISCHARGE. CONTRACTOR TO PROVIDE TRENCHING. OTHERS TO MAKE FINAL CONNECTIONS. REFER TO STORMWATER PLAN FOR CONTINUATION. TANK REFER TO DETAIL 9/L6.4.

6. OTHERS TO PROVIDE IRRIGATION PIPING, REFER TO IRRIGATION PLAN FOR CONTINUATION.

7. OTHERS TO PROVIDE ENTIRETY OF GREYWATER SYSTEM. GREYWATER 3-WAY DIVERTER VALVE SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 15 OF THE CALIFORNIA PLUMBING CODE. THE 3-WAY VALVE SHALL BE PROVIDED INSIDE THE RESTROOM UTILITY CLOSET BY THE RESTROOM MANUFACTURER. ONLY WHERE PIPING CONSTRAINTS PROHIBIT THE INSTALLATION, THE VALVE MAY BE INSTALLED AT GRADE WITH ACCESS COVER BY OTHERS (AS SHOWN ON THE DRAWINGS). COST OF 3-WAY VALVE SHALL BE INCLUDED BY OTHERS - WHERE THE VALVE IS PROVIDED BY THE RESTROOM MANUFACTURER, COST SHALL BE REFUNDED TO THE OWNER.

* 8. CONTRACTOR TO PROVIDE ELECTRICAL POINT OF CONNECTION - REFER TO L-7 SERIES.

9. SCOPE OF WORK FOR TANK-1 SYSTEM IS AS FOLLOWS:

* 9.1. CONTRACTOR SHALL PROVIDE POINTS OF CONNECTION AS INDICATED ON PLANS FOR 4" RW & 1/2" CW TO TANK.

* 9.2. CONTRACTOR TO PROVIDE ELECTRICAL POINT OF CONNECTION FOR PUMP.

* 9.3. CONTRACTOR TO PROVIDE TANKS AND COORDINATE TANK INSTALLATION SCHEDULE WITH OTHERS AND MANUFACTURER.

9.4. OTHERS TO INSTALL ALL DAISY-CHAIN PIPING, PIPING TO TANK PORTS, OVERFLOW CONVEYANCE AND PUMPED NPW PIPING.

9.5. OTHERS TO INSTALL PUMP SYSTEM.

9.6. OTHERS TO ENSURE FUNCTIONALITY OF A COMPLETE SYSTEM.

10. SCOPE OF WORK FOR TANK-3 SYSTEM IS AS FOLLOWS:

* 10.1. CONTRACTOR SHALL PROVIDE POINTS OF CONNECTION AS INDICATED ON PLANS FOR BELOW GRADE 3" RW TO TANK.

* 10.2. CONTRACTOR TO PROVIDE ELECTRICAL POINT OF CONNECTION FOR PUMP

10.3. OTHERS TO PROVIDE TANK AND COORDINATE TANK INSTALLATION SCHEDULE WITH CONTRACTOR AND MANUFACTURER.

10.4. OTHERS TO INSTALL ALL PIPING TO TANK-3 AND PIPING FROM TANK-3 TO FLUME STRUCTURE.

10.5. OTHERS TO INSTALL PUMP AND TREATMENT SYSTEM.

10.6. OTHERS TO ENSURE FUNCTIONALITY OF A COMPLETE SYSTEM.

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DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY:JPB

WATER REUSE AND UTILITIES ENLARGED PLAN

L6.1A

100% CD

RAINWATER GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE CREATED TO REPRESENT THE CONCEPTS AS ASSOCIATED WITH ON-SITE WATER REUSE AND STORM WATER MANAGEMENT / BASIN INSTALLATIONS.

B. DATUM ASSUMPTION: 3645.00' FROM GOOGLE EARTH AND REFERENCED TO AN ELLIPSOID GPS OBSERVATION

* C. ABOVE GROUND RAINWATER TANKS:

1. EACH OUTLET SHALL BE MARKED 'CAUTION NON-POTABLE RAIN WATER, DO NOT DRINK' IN BLACK, CAPITAL LETTERING.
2. RAINWATER PIPING SHALL BE MARKED 'CAUTION NON-POTABLE RAIN WATER, DO NOT DRINK' WITH THE INTERNATIONAL DO NOT DRINK SYMBOL OF A CIRCLED WATER GLASS WITH A DIAGONAL SLASH THROUGH IT
3. TANKS INSTALLED ABOVEGROUND SHALL BE OF AN OPAQUE MATERIAL OR SHIELDED FROM SUNLIGHT
4. RAINWATER TANKS MUST BE INSTALLED WITH A MEANS OF SUFFICIENT VENTING, DRAINING AND CLEANING, INCLUDING ACCESS FOR CLEANING/INSPECTION
5. OVERFLOW SIZING SHALL MATCH OR EXCEED THE AREA OF ALL THE INFLOW PIPING.
6. ALL TANK INLETS, VENTS AND OVERFLOWS SHALL BE PROTECTED WITH A 1/16" OR SMALLER SCREEN
7. TANK MARKING: TANKS SHALL BE PERMANENTLY MARKED WITH 'NON-POTABLE RAINWATER', PERSONNEL TANK ENTRANCES SHALL BE MARKED 'DANGER-CONFINED SPACE'
8. ALL GUTTERS, ROOF DRAINS AND ASSOCIATED PIPING MUST COMPLY WITH RELEVANT CALIFORNIA BUILDING CODES
9. RAINWATER TREATMENT LEVELS SHALL BE TESTED FOR COMPLIANCE WITH TUOLUMNE COUNTY'S RECYCLED WATER QUALITY STANDARDS.
10. ALL EQUIPMENT AND PUMPS USED FOR RAINWATER QUALITY TREATMENT SHALL BE LISTED OR LABELED BY AN ACCREDITED LISTING AGENCY AND HAVE APPROVAL FOR THE INTENDED PURPOSE
11. FREEZE PROTECTION FOR TANKS AND PIPING INCLUDE DRAINING OF THE TANKS AND PROVIDING INSULATION ON THE PIPES AS OUTLINED IN THE EQUIPMENT SCHEDULES.
12. RAINWATER CATCHMENT INFLOW PIPING OR CONVEYANCE PIPING MUST HAVE A 'FIRST FLUSH' INSTALLED TO PREVENT LEAVES, NEEDLES AND SEDIMENT FROM ENTERING THE TANK
13. BACKFLOW PREVENTION DEVICE MUST BE ACCESSIBLE, AND INSTALLED ACCORDING TO THE MANUFACTURER'S GUIDELINES. REFERENCE EQUIPMENT SCHEDULE FOR SIZING DETAILS.
14. RAINWATER SIGNS IN BUILDINGS MUST FOLLOW THE GUIDELINES OF SECTIONS CPC 1602.10.1 AND 1602.10.2 AND OTHER REQUIREMENTS IN THE CALIFORNIA BUILDING CODE
15. INPECTION: RAINWATER CATCHMENT SYSTEMS SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH CALIFORNIA PLUMBING CODE SECTIONS 1602.11.1 AND 1602.11.2.
16. INSPECTION INCLUSIONS: RAINWATER CATCHMENT SYSTEMS SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH CODE PROVISIONS FOR TESTING OF POTABLE WATER SYSTEMS AND STORM DRAINAGE SYSTEMS. STORAGE TANKS SHALL BE FILLED WITH WATER TO THE OVERFLOW LINE FOR A PERIOD OF 24 HOURS AND DURING INSPECTION. SEAMS AND JOINTS SHALL BE EXPOSED DURING INSPECTION AND CHECKED FOR WATERTIGHT-NESS.

C. TRENCHES WILL BE COVERED DURING END OF WORK DAY AND CROSSING BOARDS LAID EVERY 4 FEET DURING WORK DAY. TRENCHES TO BE FILLED IN AND SET PROPERLY.

D. ALL ABOVE GROUND PIPES SHALL BE PROTECTED FROM HUMAN/ANIMAL TRAFFIC BEFORE, DURING AND AFTER INSTALLATION.

E. RAINWATER EQUIPMENT INSTALLED SHALL BE ANSI/NSF APPROVED AND BE ACCOMPANIED WITH REFERENCE AND MAINTENANCE INSTRUCTIONS AS LISTED IN MAINTENANCE CONTRACT.

F. REFER TO FIRST FLUSH CALCULATIONS FOR SIZING.

G. ALL PIPES SHALL BE INSTALLED A MINIMUM OF 18" FROM TOP OF PIPE TO FINAL GRADE.

H. ALL NON -POTABLE WATER SUPPLY PIPES FROM RAINWATER TANKS AND PUMPS SHALL BE LABELED PER CALIFORNIA PLUMBING CODE CHAPTER 16.

I. ALL GRAVITY PIPES SHALL BE INSTALLED AT $\frac{1}{4}$" PER 1' SLOPE UNLESS OTHERWISE INDICATED.

J. ALL BURIED PIPES SHALL HAVE A MINIMUM OF 3" SAND OR PEA GRAVEL AS THEIR BASE.

K. ALL GRAVITY CONVEYANCE PIPES SHALL ENSURE WATER-TIGHT FITTINGS BY FOLLOWING MANUFACTURER'S INSTRUCTIONS.

L. CONTRACTOR SHALL VERIFY ALL EXISTING UNDERGROUND UTILITY LOCATIONS PRIOR TO EXCAVATION.

GREYWATER GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE CREATED TO REPRESENT THE CONCEPTS AS ASSOCIATED WITH THE GREYWATER SYSTEM INSTALLATIONS.

B. GREYWATER SYSTEM INSTALLATION, AS DEFINED IN SECTION 1502.1.2 OF THE CALIFORNIA PLUMBING CODE, CHAPTER 15 AND SHALL COMPLY WITH THE ENTIRETY OF THE CHAPTER. SECTIONS RELEVANT TO THE DESIGN, AS OUTLINED BELOW, SHALL BE VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION (AHJ).

B.1. 1501.4: ALL SYSTEM COMPONENTS SHALL BE PROPERLY IDENTIFIED PER MANUFACTURER'S INSTRUCTIONS.

B.2. 1501.5: ALL SYSTEMS AND COMPONENTS SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. WHERE NO RECOMMENDATIONS EXIST, REFER TO TABLE 1501.5, BELOW.

B.3. 1501.6: AN OPERATION MANUAL FOR THE SYSTEM AND COMPONENTS SHALL BE PROVIDED TO INCLUDE THE FOLLOWING TO THE SYSTEM OWNER. THE MANUAL SHALL REMAIN WITH THE BUILDING THROUGHOUT THE LIFE OF THE STRUCTURE.

B.4. A DIAGRAM OF THE SYSTEM, INSTRUCTIONS FOR OPERATING, MAINTAINING, TESTING, START UP, SHUTDOWN AND DEACTIVATING THE SYSTEM.

B.5. A METHOD OF CONTACT FOR THE MANUFACTURER.

B.6. 1501.14: ALL GREYWATER PIPING SHALL BE SIZED IN ACCORDANCE WITH CALIFORNIA PLUMBING CODE FOR SANITARY DRAINAGE AND VENTING.

B.7. 1502.1: HEALTH AND SAFETY CODE SECTION 1891.7 SHALL BE FOLLOWED UNLESS AN OTHERWISE MORE RESTRICTIVE STANDARD IS DETERMINED BY AHJ.

B.8. THREE-WAY DIVERTER VALVE SHALL BE PROVIDED WITH CLEAR LABEL INDICATING DIRECTION OF FLOW. DIVERTER VALVE SHALL BE READILY ACCESSIBLE.

B.9. 1502.2: GREYWATER DRAINS SHALL BE PROVIDED WITH A BACKWATER VALVE AT THE POINT OF CONNECTION TO THE BUILDING SEWER SYSTEM AND BE ACCESSIBLE FOR INSPECTION AND MAINTENANCE.

B.10. 1502.4: THE LOCATION OF THE GREYWATER SYSTEM SHALL FOLLOW TABLE 1503.4 AS OUTLINED.

B.11. 1502.8: GREYWATER SYSTEMS SHALL BE DESIGNED TO DISTRIBUTE THE TOTAL AMOUNT OF GREYWATER ON A DAILY BASIS PER SECTION 1502.8.1 FOR RESIDENTIAL PROJECTS AND 1502.8.2 FOR COMMERCIAL PROJECTS.

B.12. 1503.7: ALL MECHANICAL EQUIPMENT, INCLUDING CONTROL VALVES, APPURTENANT TO RECYCLED WATER SUPPLY SYSTEMS SHALL BE PAINTED PURPLE OR COMPOSED OF PURPLE MATERIAL MATCHING PANTONE COLOR NO. 512, 522C OR EQUIVALENT. RECYCLED WATER SUPPLY SYSTEMS SHALL BE IDENTIFIED AND PERMANENTLY MARKED WITH CLEARLY VISIBLE BLACK UPPERCASE LETTERING ON PURPLE BACKGROUND. FOR EITHER MATERIAL, THE TAPE OR PIPE SHALL BE INSTALLED SO THE WORDING IS CLEARLY VISIBLE AND SHALL BE FIELD OR FACTORY MARKED AS FOLLOWS, EVERY 5-FEET: "CAUTION: NON-POTABLE RECYCLED WATER, DO NOT DRINK".

C. ALL VALVES AND DEVICES SHALL BE ANSI/NSF APPROVED, ACCOMPANIED WITH REFERENCE AND MAINTENANCE INSTRUCTIONS AS LISTED IN THE PROVIDED MAINTENANCE CONTRACT.

D. ALL IRRIGATION POINTS TO BE 2 INCHES BELOW THE SURFACE IN MULCH BASINS.

E. GREYWATER SYSTEM MUST BE EQUIPPED WITH ACCESSIBLE THREE WAY DIVERTER VALVE WITH SIGN THAT INDICATES OPERATION, SO DISCHARGE WATER CAN BE DIVERTED TO SEPTIC/SEWER DURING RAIN EVENTS OR IF SOIL REACHES A HIGH LEVEL OF SATURATION.

F. PRODUCTS WITH BLEACH, SALT, ALCOHOL OR OTHER INDUSTRIAL CHEMICALS ARE NOT RECOMMENDED FOR USE IN THESE GREYWATER SYSTEMS.

G. GREYWATER PIPES SHALL SLOPE DOWNWARD AT 2 DEGREES OR 1/4" PER FOOT.

H. ALL GREYWATER CONVEYANCE LINES SHALL BE MARKED "NON POTABLE, DO NOT DRINK".

I. ALL EQUIPMENT SHALL BE ASNI/NSF APPROVED AND BE ACCOMPANIED WITH REFERENCE AND MAINTENANCE INSTRUCTIONS PER MAINTENANCE AND MONITORING PLAN. PROVIDED TO OWNER.

J. ALL SYSTEM P.O.Cs TO BE VERIFIED AND FINALIZED IN FIELD.

K. ALL EXISTING TANKS, PIPING, AND ELECTRICAL WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.

DESIGN CRITERIA

TABLE 1502.4: LOCATION OF GRAY WATER SYSTEM

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	SURFACE AND SUBSOIL IRRIGATION FIELD AND MULCH BASIN
BUILDING STRUCTURES	2
PROPERTY LINE ADJOINING PRIVATE PROPERTY	58
WATER SUPPLY WELLS	100
STREAMS AND LAKES	100
SEWAGE PITS OR CESSPOOLS	5
SEWAGE DISPOSAL FIELDS	46
SEPTIC TANKS	5
ON-SITE DOMESTIC WATER SERVICE LINE	0
PRESSURIZED PUBLIC WATER MAINS	10

PIPE SIZING

PRESSURIZED WATER PIPING:
BASIS OF DESIGN: 2016 CALIFORNIA PLUMBING CODE, APPENDIX A 'RECOMMENDED RULES FOR SIZING THE WATER SUPPLY SYSTEM'. PIPING SIZED ON 3 PSI/100 FT. DROP, VELOCITIES NOT TO EXCEED 8 FT./SEC.
ROOF DRAIN/STORM DRAIN PIPING SYSTEM:
BASIS OF DESIGN: 2016 CALIFORNIA PLUMBING CODE, CHAPTER 11, 'STORM DRAINAGE'. STORM DRAIN PIPING SIZED AT 1/8"/FT. SLOPE UNLESS OTHERWISE NOTED AND A RAINFALL RATE OF 1.5"/HR TRADITIONAL SYSTEM, 3"/HR FOR A COMBINED PRIMARY AND OVERFLOW SYSTEM.
GREYWATER/WASTE/VENT PIPING SYSTEM:
BASIS OF DESIGN: 2016 CALIFORNIA PLUMBING CODE, CHAPTER 7, 'SANITARY DRAINAGE'. ALL WASTE PIPING SIZED AT 1/4"/FT. SLOPE UNLESS OTHERWISE NOTED.

FIRST FLUSH CALCULATIONS

ROOF DRAINAGE CHARACTERISTICS		
ROOF CAPTURE AREA	1400	FT^2
1-INCH STORM VOLUME	117	FT^3
	873	GAL
FIRST FLUSH DESIGN		
PIPE SIZE	3	IN
PIPE LENGTH	3	FT
WATER VOLUME WITHIN PIPE	1.10	GAL
% VOLUME OF 1-INCH STORM	0.13%	GALLONS
TOTAL WATER WEIGHT	9.19	LB

TABLE 1501.5: RECOMMENDED MINIMUM ALTERNATE WATER SOURCE TESTING, INSPECTION, AND MAINTENANCE FREQUENCY

DESCRIPTION	MINIMUM FREQUENCY
INSPECT AND CLEAN FILTERS SCREENS AND REPLACE WHERE NECESSARY	PER AHJ REQUIREMENTS OR EVERY 3 MONTHS
INSPECT AND VERIFY THAT DISINFECTION, FILTERS AND WATER QUALITY TREATMENT DEVICES AND SYSTEMS ARE OPERATIONAL AND MAINTAINING MIN. WATER QUALITY REQUIREMENTS	PER AHJ AND MANUFACTURER'S INSTRUCTIONS.
INSPECT PUMPS, VALVES, TANKS AND VERIFY OPERATION	PER AHJ OR AFTER INSTALLATION AND EVERY 12 MONTHS THEREAFTER.
CLEAR DEBRIS FROM AND INSPECT STORAGE TANKS, VERIFY OPERATION	
INSPECT CAUTION LABELS AND MARKINGS	
INSPECT AND MAINTAIN MULCH BASINS FOR GREYWATER IRRIGATION SYSTEMS	AS NEEDED TO MAINTAIN MULCH DEPTH AND PREVENT PONDING AND RUNOFF.

TABLE 1101.8
SIZING OF HORIZONTAL RAINWATER PIPING
(COMBINED SYSTEM)

DESIGN RAINFALL RATE = 3 INCHES/HR

SIZE OF PIPE	DESIGN SLOPE = 1/8-INCH/FOOT		DESIGN SLOPE = 1/4-INCH/FOOT	
INCHES	FLOW	MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREAS	FLOW	MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREAS
	GPM	SQ. FT.	GPM	SQ. FT
3	34	1,096	48	1,546
4	78	2,506	110	3,533
6	222	7,133	314	10,066
8	478	15,330	677	21,733
10	860	27,600	1,214	38,950
12	1,384	44,400	1,953	62,600
15	2,473	79,333	3,491	112,000

WATER REUSE EQUIPMENT SCHEDULES

RAINWATER TANK SCHEDULE

	TAG NUMBER	LOCATION	VOLUME (GROSS GAL.)	DIMENSIONS (DIA. X H)	MAKE, MODEL	QTY
*	TANK-1	MEADOWS	5,000	10'-9" x 8'	BUSHMAN POLY 5050, CWTX5-132 OR APPROVED EQUAL	6
*	TANK-2	PAVILION	5,000	9'-11" x 7'-6"	BH CLASSIC CORRUGATED, BH09X07 OR APPROVED EQUAL	1
	TANK-3	BOARDWALK	1,152	9'-11" x 7'-6"	AQUASCAPE MODULAR SYSTEM: LARGE CRATES OR APPROVED EQUAL	36

PUMP SCHEDULE

TAG NUMBER	DESCRIPTION	LOCATION	PERFORMANCE			MAKE, MODEL	QTY
			FLOW (nominal/max)	TOTAL DEVELOPED HEAD	POWER		
			(GPM)	(FT)	(HP/W TOTAL)		
PUMP-1	SUBMERSIBLE RW PUMP	TANK-1	13 / 25	147	1.43 HP	GRUNDFOS, SBA 3-45-AW OR APPROVED EQUAL	1
PUMP-2	AQUASCAPE 9PL	BOARDWALK	24 / 50	35	1000 W	AQUASCAPE 9PL 7,000GPH PUMP OR APPROVED EQUAL	1
PUMP-3	OASE POND PUMP	BOARDWALK	31	9.5	70 W	OASE AQUAMAX ECO CLASSIC 1900 PUMP OR APPROVED EQUAL	1

PIPE SCHEDULE

	SERVICE	PIPE TAG	SIZE	MATERIAL	INSULATION
*	NON-POTABLE WATER SUPPLY	NPW	2" OR SMALLER	SCHEDULE 40 / 80 PVC: ASTM D1785	PROVIDE INSULATION ON ABOVE GROUND PIPES. 1-1/2" FIBERGLASS, ALL-PURPOSE JACKET. COVER WITH METAL PIPE JACKET WHERE EXPOSED TO WEATHER. FIBERGLASS SHALL BE SPLIT SECTIONAL OR SNAP ON TYPE WITH 0.23 PER INCH MAX. THERMAL CONDUCTIVITY (K-FACTOR) AT 75F MEAN TEMP. PROVIDE VAPOR BARRIER JACKET WITH PRESSURE SENSITIVE CLOSURE SYSTEM. JOHNS MANSVILLE MICROLOK HP OR APPROVED EQUAL METAL PIPE JACKET SHALL BE 0.016-INCH THICK ALUMINUM WITH FORMED FITTING COVERS, ALUMINUM SNAP STRAPS AND SEALANT
*	DOMESTIC WATER	CW			
*	RAINWATER/ RW OVERFLOW CONVEYANCE	RW	6" OR SMALLER	SCHEDULE 40 PVC: ASTM D1785.	FOR FREEZE PROTECTION, SYSTEM SHALL BE DRAINED.
		OVC			
*	SANITARY WASTE & VENT	SS	6" OR SMALLER	CAST IRON SOIL PIPE, SERVICE WEIGHT (NO HUB): NO HUB PIPE AND FITTINGS ASTM A74, CISPI, WITH 28 GAUGE 304 STAINLESS STEEL CLAMP AND CORRUGATED SHIELD ASSEMBLIES HAVING NEOPRENE GASKETS ASTM C564, CISPI 310-90. SCHEDULE 40 PVC OR ABS DWV: ASTM D2665-85a, ASTM D3311-82.	N/A
		V			

EQUIPMENT SCHEDULE

	TAG NUMBER	LOCATION	DESCRIPTION	QTY
*	GT-1	GUTTER	RECTANGULAR STEEL GUTTER. REFER TO PLANS FOR LENGTH, 5-INCH DIA.	REFER TO PLANS
	CO-1	GRAVITY PIPING SYSTEMS	2-WAY CLEAN OUT COMBO TEE WITH THREAD ADAPTER AND PLUG SIMILAR TO: 2", ABS, CANPLAS	13
	DS-1	PAVILION	DOWNSPOUT FILTER: RAINHARVEST LEAF EATER ADVANCED DOWNSPOUT FILTER OR APPROVED EQUAL	4
			DOWNSPOUT PIPE FIRST FLUSH ASSEMBLY: RAIN HARVESTING PTY 3 WITH ADVANCED RELIEF VALVE OR APPROVED EQUAL	4
	MV-1	TANK-1	MAKE UP WATER VALVE: 3/4" RAINAID OR APPROVED EQUAL	2
	MV-2	BOARDWALK	MAKE UP WATER VALVE: 1" HUDSON ON-DEMAND FILL VALVE & MOUNTING KIT OR APPROVED EQUAL	1
*	BF-1	TANK-1	BACKFLOW PREVENTER: 1" ZURN 375-XL REDUCED PRESSURE BACKFLOW ASSEMBLY OR APPROVED EQUAL	1
*	E-1	TANK-1	ENCLOSURE: BACKFLOW ARMOR EKONO303013 ENCLOSURE OR APPROVED EQUAL	1
	B-1	FLUME	BASIN: AQUASCAPE AQUABASIN-45 / 98-GALLON CAPACITY OR APPROVED EQUAL	1
	UV-1	BOARDWALK	ULTRAVIOLET TREATMENT: OASE BIO-SMART 5000 POND FILTER W/ VITRONIC 18 UV CLARIFIER OR APPROVED EQUAL	1

APPLICABLE CODES AND REGULATIONS

1. CALIFORNIA PLUMBING CODE
2. CALIFORNIA BUILDING CODE
3. CALIFORNIA ELECTRICAL CODE

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DATE:
PROJECT NO.

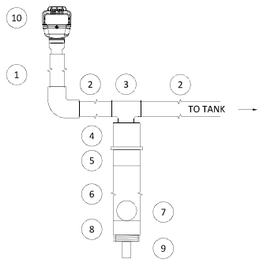
REVISION	DATE
1 60% DRAFT TO CSD	05.31.22
2 80% TO CSD	06.15.22
3 60% TO SWB	07.28.22
4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY: JPB

WATER REUSE AND UTILITIES SCHEDULE

L6.2

100% CD



DETAIL NOTES:

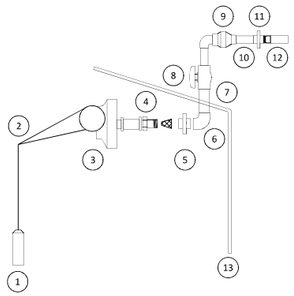
1) PVC LEADER PIPE
2) PVC PIPE
3) PVC TEE
4) BUSHING
5) PVC COUPLER
6) PVC W/ STOPPER BALL DIAMETER >2", <2.75"
7) PVC FTA
8) BUSHING MPT X FPT
9) RAINAID ADVANCED RELIEF VALVE
10) LEAF GUARD (AT DOWNSPOUT LOCATION)

GENERAL NOTES:

A. MATERIALS FASTENED WITH TWO WALL STRAPS.
B. ASSEMBLY IS OF TYP. FIRST FLUSH UNIT.
C. ALTERNATE: USE APPROVED MONOLITHIC ASSEMBLY.
D. ALTERNATE: USE APPROVED MOZZIE STOPPA OVERFLOW SCREEN.

1 FIRST FLUSH ASSEMBLY DETAIL (TYP.)

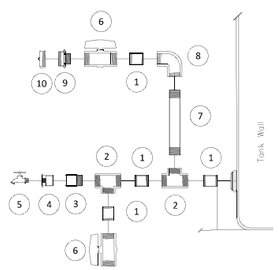
(N.T.S)



1) ACTIVATOR FLOAT - ADJUST LINE LENGTH FOR DESIRED FILL HEIGHT
2) SWING ARM ACTIVATOR
3) MAKE-UP WATER FILL OPENING
4) SCREEN FILTER
5) 3/4" PVC SCH. 40 UNION FPT
6) 3/4" PVC SCH. 40 90 ELBOW MPT X FPS
7) 3/4" PVC SCH. 40 PIPE
8) 3/4" PVC SCH. 40 BALL BALVE FPS INSTALL W/ BALL VALVE HOUSING TOUCHING CISTERN HANDLE TO FACE DOWNHILL SLOPE OF CISTERN ROOF.
9) 3/4" PVC SCH. 40 SPRING CHECK VALVE FPT 3/4"
10) 3/4" X 2" LONG PVC SCH. 80 NIPPLE MPT
11) 3/4" PVC SCH. 40 UNION FPT
12) 3/4" PVC SCH. 40 MALE THREAD ADAPTER
13) CISTERN WALL

3 RAINWATER MUNICIPAL MAKEUP WATER ASSEMBLY

(N.T.S)



DETAIL NOTES:

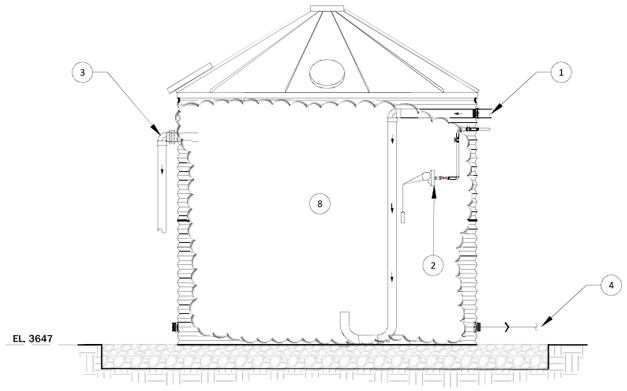
1) 2", 2.5" LONG PVC THREADED NIPPLE
2) 2" PVC SCH 40 TEE, FPT X FPT X FPT
3) 2" PVC SCH 40 MALE THREAD ADAPTER
4) 2" -> 3/4" ADAPTER BUSHING, 2" MPS X 3/4" FPT
5) ¾" BRASS HOSE BIB, MPT
6) 2" PVC SCH. 40 BALL VALVE FPT X FPT
7) 2", 12"L PVC SCH. 40 THREADED NIPPLE
8) 2" PVC SCH. 40 90 ELBOW, FPT X FPT
9) 2.5" NHT -> 2" MPT BRASS THREADED ADAPTER
10) 2.5" BRASS FIRE CAP, FHT

GENERAL NOTES:

A. SUPPORTING BLOCK SHALL BE PLACED BELOW OUTFLOW TO PROVIDE PIPE SUPPORT.

4 RAINWATER CISTERN MANIFOLD

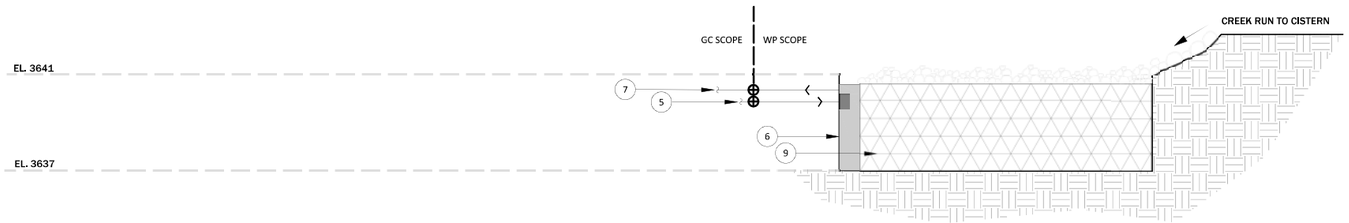
(N.T.S)



RAINWATER TANK-2 AT PAVILION

DETAIL NOTES:

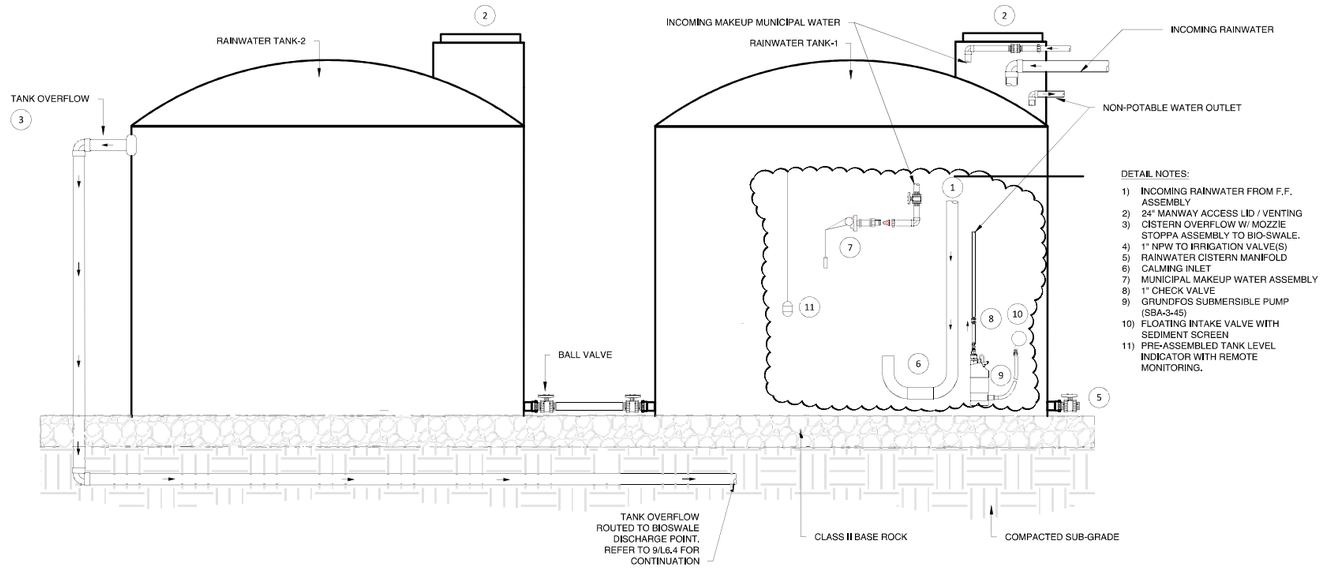
1. 3" RAINWATER FROM PAVILION
2. MV-1: RAINAID MAKEUP WATER VALVE
3. 3" RAINWATER OVERFLOW TO CREEK
4. 1" PVC RAINWATER (RW) TO UNDERGROUND CISTERN'S ON-DEMAND VALVE MV-2
5. MV-2: 1" HUDSON ON-DEMAND WATER FILL VALVE
6. PUMP-2 & PUMP-3: PUMP(S) AND HOUSING
7. 3/4" PVC PUMPED RAINWATER (NPW) TO FLUME WATER FEATURE
* 8. TANK-2: CORRUGATED STEEL RAINWATER TANK, PORTS AND EQUIPMENT INSTALLED BY WP. ALL WORK RELATED TO TANK-2 SHALL BE COORDINATED WITH TANK MANUFACTURER. (REF. EQUIPMENT SCHEDULE)
9. TANK-3: AQUASCAPE MODULAR UNDERGROUND TANK (REF. EQUIPMENT SCHEDULE)



MODULAR TANK-3 UNDERGROUND

2 RAINWATER TANK-2 MAKEUP WATER AND FEED LINE TO WATER DISCOVERY LAB UNDERGROUND TANK-3 - ELEVATION VIEW

(N.T.S)



DETAIL NOTES:

1) INCOMING RAINWATER FROM F.F. ASSEMBLY
2) 24" MANWAY ACCESS LID / VENTING
3) CISTERN OVERFLOW W/ MOZZIE STOPPA ASSEMBLY TO BIO-SWALE.
4) 1" NPW TO IRRIGATION VALVE(S)
5) RAINWATER CISTERN MANIFOLD
6) CALMING INLET
7) MUNICIPAL MAKEUP WATER ASSEMBLY
8) 1" CHECK VALVE
9) GRUNDFOS SUBMERSIBLE PUMP (SBA-3-45)
10) FLOATING INTAKE VALVE WITH SEDIMENT SCREEN
11) PRE-ASSEMBLED TANK LEVEL INDICATOR WITH REMOTE MONITORING.

5 * POLY TANK IN SERIES AT MEADOW (TYP.)

(N.T.S)

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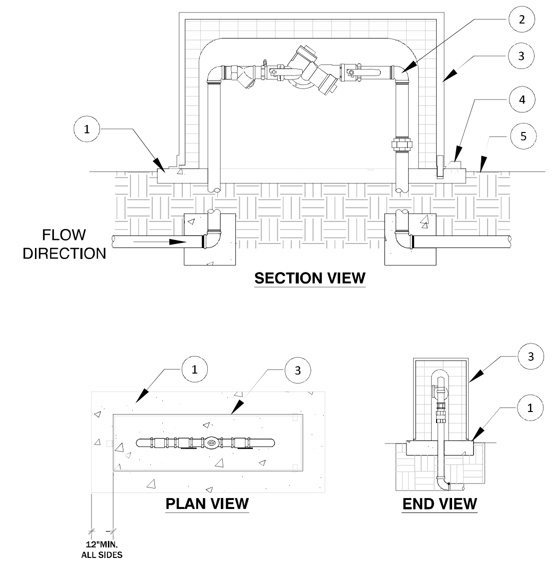
DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY: JPB

WATER REUSE AND UTILITIES DETAILS

L6.3

100% CD



DETAIL NOTES:

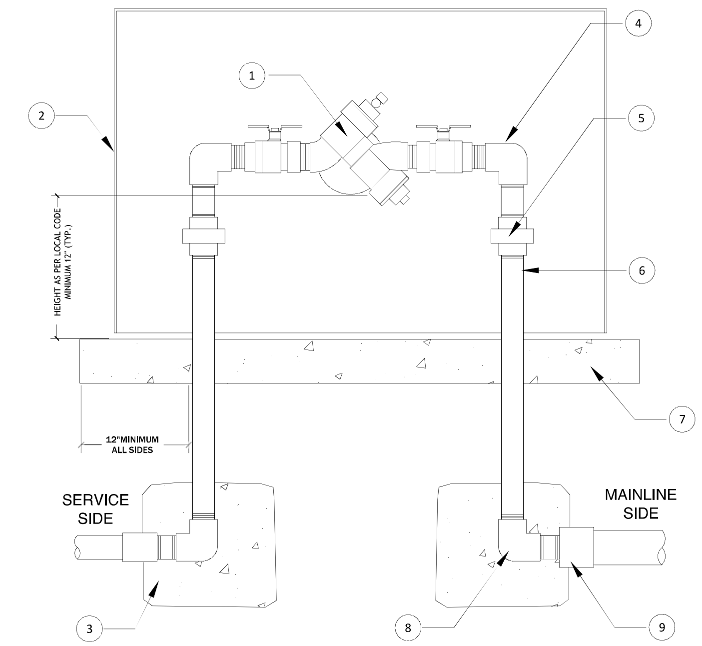
1) 4" THICK CONCRETE FOOTING 1" ABOVE FINISHED GRADE
2) BACK FLOW PREVENTION DEVICE
3) BACK FLOW CAGE
4) LOCK BOX
5) FINISHED GRADE

GENERAL NOTES:

A. INSTALL BACK FLOW ENCLOSURE PER MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.
B. SEE BACK FLOW PREVENTION DEVICE DETAIL FOR REFERENCE.
C. LOCK BOX SHALL BE LOCATED ABOVE CONCRETE FOOTING.
D. LOCK TO BE PROVIDED BY CONTRACTOR OR AS APPROVED BY OWNER.

6 * BACKFLOW PREVENTER ENCLOSURE

(N.T.S)



DETAIL NOTES:

1) REDUCED PRESSURE BACK FLOW DEVICE AS SPECIFIED
2) BACK FLOW ENCLOSURE AS SPECIFIED
3) CONCRETE THRUST BLOCKS
4) GALVANIZED NIPPLES AND ELL AS REQUIRED
5) GALVANIZED UNIONS AT EACH SIDE
6) GALVANIZED RISERS
7) 4" THICK MINIMUM CONCRETE PAD
8) GALVANIZED ELL AND NIPPLE, TYPICAL
9) PVC COUPLER OR REDUCER AS REQUIRED, TYPICAL

GENERAL NOTES:

A. PROVIDE REDUCED PRESSURE BACK FLOW PREVENTER OF ANY EXISTING WELL WATER CONNECTION TO NEW OUTLET / FIXTURE.
B. IN ACCORDANCE WITH CALIFORNIA PLUMBING CODE 2022 CHAPTER 15 AND 16
C. UNIONS TO BE PLACED AS NEEDED (EASE OF MAINTENANCE + REPLACEMENT)
D. REDUCED PRESSURE BACK FLOW PREVETER TO BE TESTED BY QUALIFIED TECHNICIAN.

7 * REDUCED PRESSURE BACKFLOW DEVICE

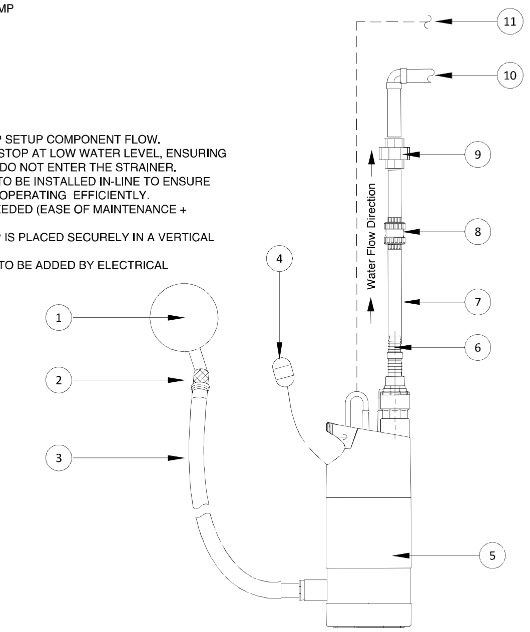
(N.T.S)

DETAIL NOTES:

1) FLOATING BALL
2) SUCTION STRAINER (1MM MESH)
3) FLEXIBLE TUBING
4) FLOAT SWITCH
5) SUBMERSIBLE PUMP
6) BARBED FITTING + HOSE CLAMP
7) SUPPLY LINE
8) NON-RETURN CHECK VALVE
9) UNION
10) PUMP LINE OUT
11) PUMP POWER LINE

GENERAL NOTES:

A. TYPICAL SUBMERSIBLE PUMP SETUP COMPONENT FLOW.
B. THE FLOAT SWITCH OFFERS STOP AT LOW WATER LEVEL, ENSURING THAT SURFACE FRAGMENTS DO NOT ENTER THE STRAINER.
C. NON-RETURN CHECK VALVE TO BE INSTALLED IN-LINE TO ENSURE PUMP REMAINS PRIMED AND OPERATING EFFICIENTLY.
D. UNIONS TO BE PLACED AS NEEDED (EASE OF MAINTENANCE + REPLACEMENT)
E. ENSURE SUBMERSIBLE PUMP IS PLACED SECURELY IN A VERTICAL POSITION INSIDE TANK.
F. ELECTRICAL POC FOR PUMP TO BE ADDED BY ELECTRICAL CONTRACTOR



8 *SUBMERSIBLE PUMP DETAIL (TYP)

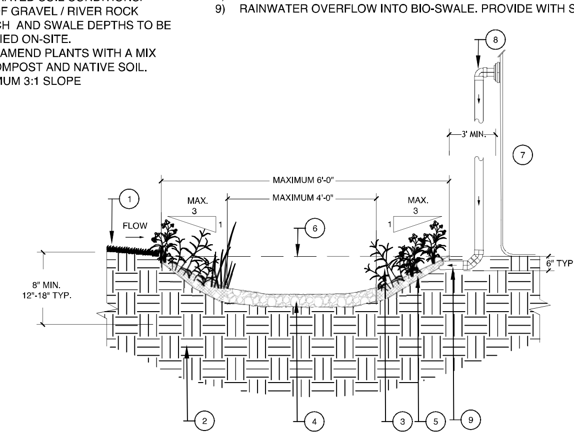
(N.T.S)

GENERAL NOTES:

A. BIO-SWALE ALIGNMENT MAY BE STRAIGHT OR MEANDERING, DEPENDING ON AVAILABLE SPACE.
B. TREES AND SHRUBS SHOULD BE LOCATED AN APPROPRIATE DISTANCE FROM THE SWALE BASED ON SPECIES' TOLERANCE OF SATURATED SOIL CONDITIONS.
C. USE OF GRAVEL / RIVER ROCK /MULCH AND SWALE DEPTHS TO BE VERIFIED ON-SITE.
D. SPOT AMEND PLANTS WITH A MIX OF COMPOST AND NATIVE SOIL.
E. MAXIMUM 3:1 SLOPE

DETAIL NOTES:

1) (E) GRADE - ADJACENT SURFACES MAY VARY
2) UN-COMPACTED SUB GRADE
3) NATIVE SWALE BASIN PLANTS - REFERENCE PLANTING PLAN
4) GRAVEL / RIVER ROCK , 3-4" DEPTH (MAXIMUM OF 6")
5) MULCH, 3-4" DEPTH (MAXIMUM OF 6")
6) FILL LINE
7) RAINWATER CISTERN SIDE WALL
8) RAINWATER OVERFLOW CONVEYANCE PIPE
9) RAINWATER OVERFLOW INTO BIO-SWALE. PROVIDE WITH SCREENED OUTLET.

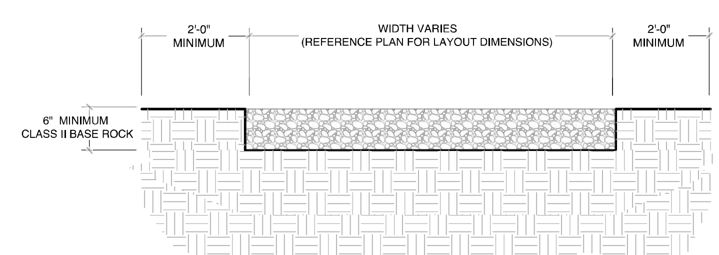


9 BIO-SWALE + RAINWATER TANK DISCHARGE (TYP.)

(N.T.S)

GENERAL NOTES:

A. ENSURE SUB-GRADE IS WELL COMPACTED AND LEVEL.
B. ENSURE CLASS II BASE ROCK - COMPACTED 95%
C. REFERENCE SITE PLAN FOR PAD DIMENSIONS & LAYOUT.
D. RAINWATER CISTERN PAD LAYOUT AND DIMENSIONS TO BE STAKED OUT AND VERIFIED PRIOR TO GRAVEL BASE FILL & COMPACTION.
E. REFERENCE TANK MANUFACTURER PAD SPECIFICATIONS AS NEEDED.

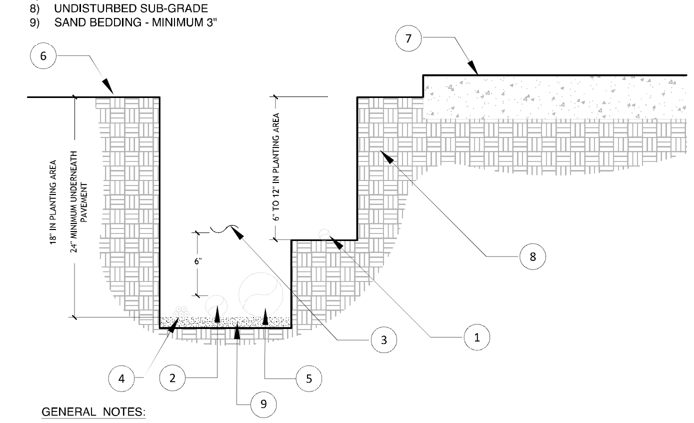


10 * RAINWATER CISTERN PAD DETAIL (TANK-1 AND TANK-2)

(N.T.S)

DETAIL NOTES:

1) NON-PRESSURIZED LINE (RW, OVERFLOW, SS)
2) PRESSURIZED LINE (W, CW, NPW, PUMPED RW)
3) DETECTABLE LOCATOR TAPE
4) DIRECT BURIAL LOW VOLTAGE CONTROL WIRES
* 5) PIPE SLEEVE - PVC CLASS 200 SDR 21
6) FINISHED GRADE
7) PAVEMENT
8) UNDISTURBED SUB-GRADE
9) SAND BEDDING - MINIMUM 3"



GENERAL NOTES:

A. SEE PIPE SCHEDULE FOR SIZES AND TYPES.
B. DIRECT BURIAL CONTROL WIRES SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT IF REQUIRED.
C. 2-WIRE IRRIGATION WIRE SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT.
D. DETECTABLE LOCATOR TAPE SHALL BE LOCATED SIX INCHES (6") ABOVE THE ENTIRE MAINLINE RUN.
E. FOR UTILITY TRENCHES, COMPACT THE INITIAL BACKFILL USING NATIVE SOIL, TO A RELATIVE COMPACTION OF 95%
F. FOR UNPAVED AREAS, COMPACT NATIVE SOIL MATERIAL TO A RELATIVE COMPACTION OF 85%

11 TRENCHING (TYP)

(N.T.S)

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OJAI OFFICE
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Twain Heart Meadows Park
22945 Meadow Drive,Twain Harte, CA, 95383

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PROJECT NO.

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2 60% TO CSD	06.15.22
3 60% TO SWB	07.28.22
4 100% TO CSD	12.14.22
5 100% TO CSD	04.28.23
6 100% TO CSD	06.07.23

DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY: JPB

WATER REUSE AND UTILITIES DETAILS

L6.4

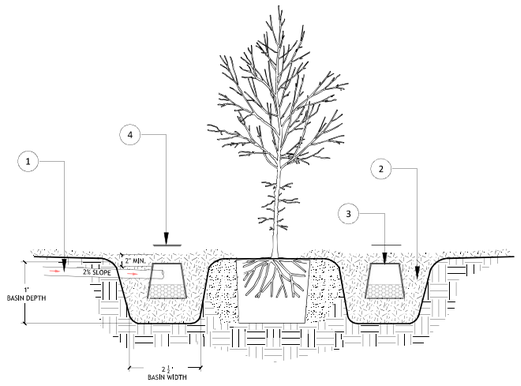
100% CD

DETAIL NOTES:

1) GREYWATER CONVEYANCE LINE TO MULCH BASIN
2) MULCH BASIN (3/4" WOOD CHIPS)
3) VALVE BOX
4) VALVE BOX LID (REMOVE FOR INSPECTION OR MAINTENANCE)

GENERAL NOTES:

A. ENSURE ROOT CROWN IS ABOVE SOIL LEVEL AND NO MULCH AROUND CROWN TO KEEP IT WELL VENTILATED AND DRAINED, REDUCING DISEASE.
B. ENSURE MULCH BASINS ARE FLAT FOR EVEN WATER INFILTRATION.
C. PLANTING HOLE TO BE EXCAVATED AND BACKFILLED WITH PLAIN NATIVE SOIL FOR NATIVE TREES.
D. MULCH: CLIPPINGS, WOOD CHIPS, LEAVES OR AS SPECIFIED IN PLANTING PLAN.
E. GREYWATER CONVEYANCE LINE AT A MINIMUM 2% SLOPE.
F. REFERENCE GREYWATER SYSTEM NOTES FOR MULCH BASIN SPECIFICATIONS.
G. ENSURE ALL GREYWATER EQUIPMENT IS LABELED "NON-POTABLE WATER"
H. ENSURE ALL LOCAL CITY AND COUNTY REGULATIONS ARE MET AND PER LATEST CPC REGULATIONS.



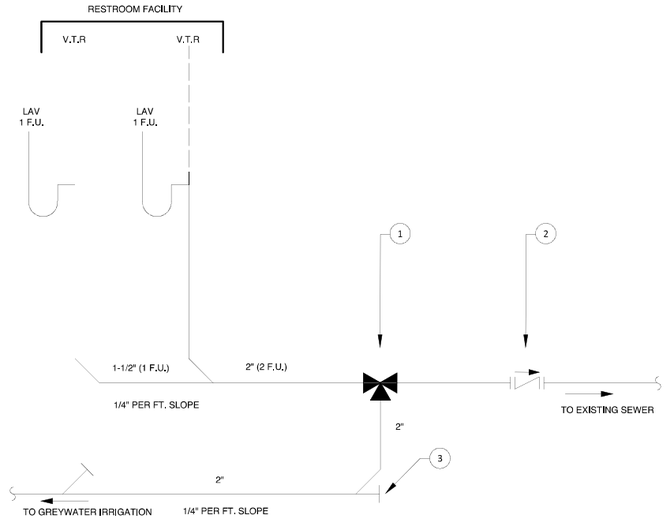
12 GREYWATER MULCH BASIN (TYP.)
(N.T.S)

DETAIL NOTES:

1) 3-WAY DIVERTER VALVE (MUST BE ACCESSIBLE)
2) BACKWATER VALVE (MUST BE ACCESSIBLE)
3) CLEANOUT

GENERAL NOTES:

A. LAV - RESTROOM LAVATORY (SINK)
B. F.U. - FIXTURE UNIT
C. V.T.R. - VENT THROUGH ROOF
D. 3-WAY DIVERTER VALVE AND BACKWATER VALVE FOR GREYWATER SYSTEM MUST BE ACCESSIBLE.
E. ALL GREYWATER PIPES MUST SLOPE 1/4" PER FOOT.



14 GREYWATER RISER DIAGRAM (TYP.)
(N.T.S)

GENERAL NOTES:

A. RAINWATER TANKS SHALL HAVE APPROPRIATE SIGNAGE NOTING "NON-POTABLE WATER" AND "DANGER CONFINED SPACE" ALL IN ACCORDANCE WITH CALIFORNIA PLUMBING CODE CHAPTER 16.
B. SIGNAGE SHALL BE UV, CHEMICAL, ABRASION AND FADE RESISTANT.

13 NON-POTABLE SIGNAGE: SYSTEM LOCATION AND TANKS (TYP.)
(N.T.S)

NON-POTABLE WATER

GENERAL NOTES:

A. RAINWATER CONVEYANCE LINES SHALL HAVE APPROPRIATE SIGNAGE NOTING "NON-POTABLE WATER" ALL IN ACCORDANCE WITH CALIFORNIA PLUMBING CODE CHAPTER 16.
B. ADHESIVE PIPE MARKERS SHALL BE UV, CHEMICAL, ABRASION AND FADE RESISTANT.

15 NON-POTABLE SIGNAGE - PIPE MARKER (TYP.)
(N.T.S)

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5 100% TO CSD	04.26.23
6 100% TO CSD	06.07.23

DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY: JPB

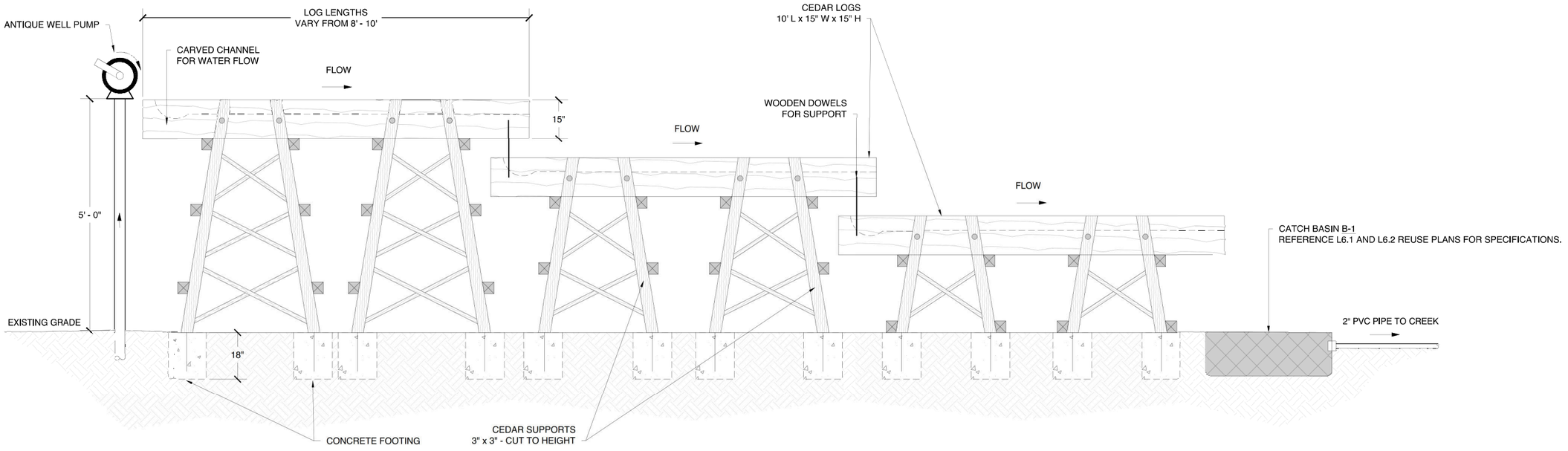
WATER REUSE AND UTILITIES DETAILS

L6.5

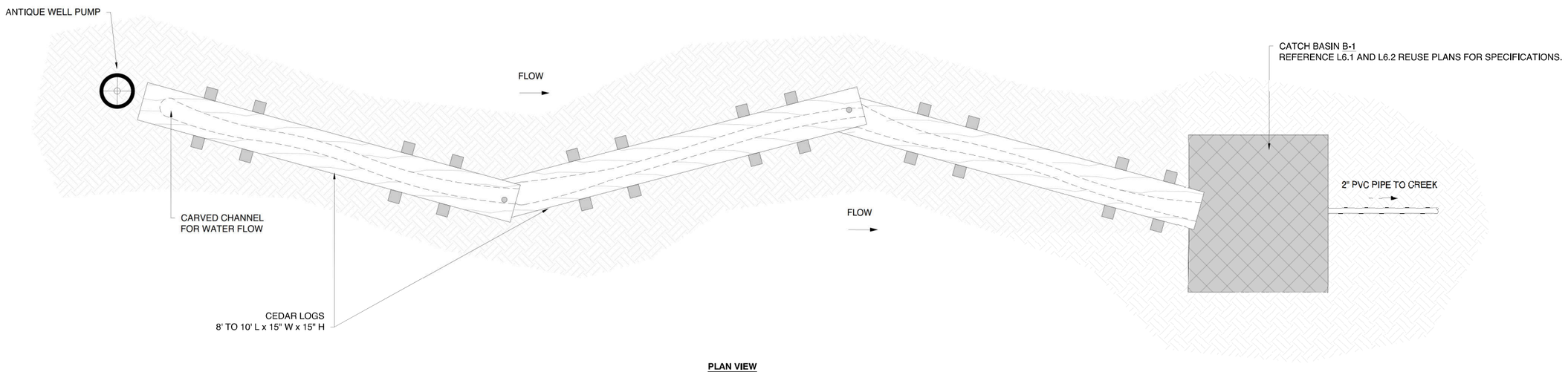
100% CD

GENERAL NOTES:

A. FLUME TO BE STAINED WITH WOOD PROTECTANT AND THEN WITH A 2-PART CLEAR COAT EPOXY FOR LINING. ALL SAMPLES OF WOOD PROTECTANT AND CLEAR COAT EPOXY TO BE PROVIDED BY WATERSHED PROGRESSIVE 2-WEEKS BEFORE BUILD.
B. RE-APPLICATION OF COATING BETWEEN 5-10 YEARS OR AS NEEDED.
C. USE OF METAL OR WOOD DOWELS WILL BE DETERMINED IN THE FIELD BY WATERSHED PROGRESSIVE.



ELEVATION VIEW



PLAN VIEW

1 WOODEN FLUME
NOT TO SCALE

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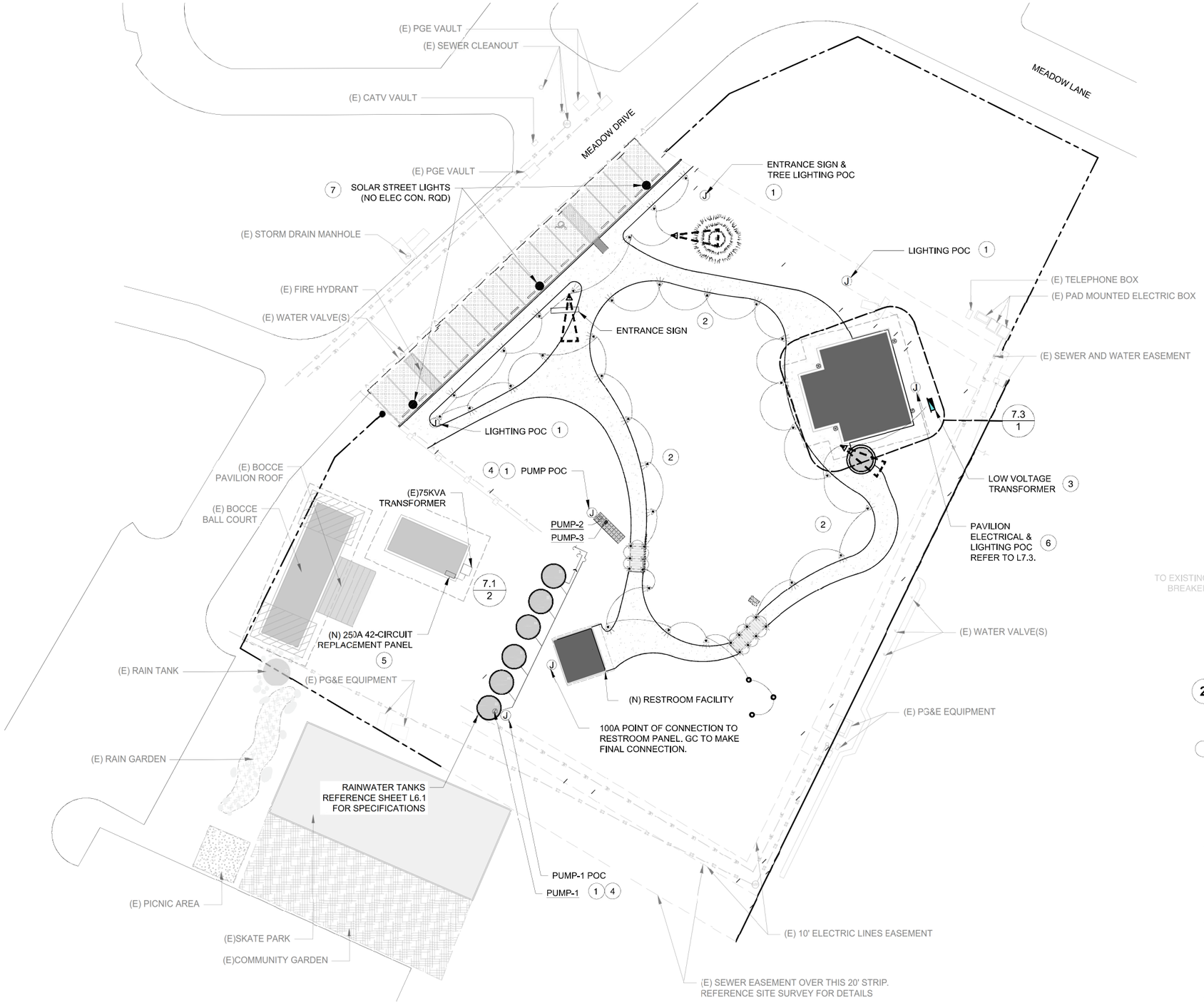
DESIGN BY: SS,MS
DRAWN BY: MS
REVIEW BY:JPB

WATER REUSE AND UTILITIES DETAILS

L6.6

100% CD



1 LIGHTING AND ELECTRICAL PLAN

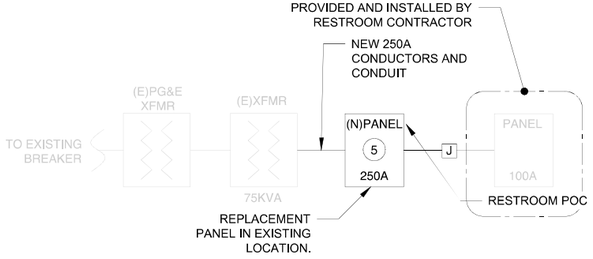
SCALE: 1"=20'
0 20 40 60
N

GENERAL NOTES

A. ALL EXISTING ACTIVE UTILITIES WORK SHALL BE AVOIDED AND PROTECTED WHEN NECESSARY THROUGHOUT CONSTRUCTION.
B. 811 - KNOW WHAT'S BELOW - CALL BEFORE YOU DIG
C. TRENCHING FOR ALL ELECTRICAL WORK SHALL BE COORDINATED WITH ALL DISCIPLINES INCLUDING BUT NOT LIMITED TO REUSE PLANS, PATHWAY AND MATERIALS PLANS.
D. CONTRACTOR SHALL COORDINATE ALL OUTAGES WITH PG&E AND TWAIN HARTE CSD.

LEGEND

- PROPERTY BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- BUILDING OFFSET
- UE — UNDERGROUND ELECTRIC
- LOW VOLTAGE WIRE
- PATHWAY LIGHT
- WELL LIGHT
- UPLIGHT
- BOARDWALK LED LIGHT STRIP
- NEW ELECTRICAL POINT OF CONNECTION
- LANDSCAPE LIGHTING TRANSFORMER
- (E) EXISTING
- (N) NEW



2 PARTIAL SINGLE LINE DIAGRAM

SHEET NOTES

1. GCFI RECEPTACLE. REFER TO DETAIL 2/L7.3. PROVIDE 3/4" CONDUIT AND CIRCUIT WITH (3)#12 WIRE.
2. PATHWAY LIGHTING PROVIDED, COORDINATED AND INSTALLED BY OTHERS. SPACING OF PATHWAY LIGHTS FOLLOW MANUFACTURER RECOMMENDATION AND OWNER INSTRUCTION. REFER TO L7.2 FOR SCHEDULE INFORMATION.
3. GC TO PROVIDE CONNECTION TO LOW VOLTAGE TRANSFORMER. ALL LOW VOLTAGE WIRING AND FIXTURES BY OTHERS. WIRE ROUTES ARE SHOWN FOR DESIGN INTENT.
4. GC TO PROVIDE ELECTRICAL POINT OF CONNECTION TO RECEPTACLES. ALL FINAL CONNECTIONS TO ELECTRICAL PUMP EQUIPMENT SHALL BE COMPLETED BY WP. REFER TO L6 SERIES FOR PUMP SCHEDULES.
5. GC TO REPLACE (E) 200A HIGH LEG B PANEL WITH NEW 250A 42-CIRCUIT PANEL. RECONNECT 11 EXISTING CIRCUITS. EXISTING CONDUIT AND WIRE TO REMAIN. CONNECT ALL NEW CIRCUITS TO NEW 250A PANEL. WHILE PG&E SHUT DOWNS ARE ACCEPTABLE, ANY WORK THAT REQUIRES INPUT OR CONSTRUCTION BY PG&E IS TO BE AVOIDED AND SHALL BE BROUGHT TO OWNER'S ATTENTION PRIOR TO MOVING FORWARD.
6. GC TO PROVIDE (3) DEDICATED 20A SINGLE-PHASE CIRCUITS.
7. GC TO PROVIDE, ASSEMBLE AND INSTALL SOLAR STREET LIGHTS. REFER TO LIGHTING SCHEDULE.

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DESIGN BY: ABR
DRAWN BY: DR, MS
REVIEW BY: NS

LIGHTING AND ELECTRICAL PLAN

L7.1

100% CD

LIGHTING SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
*	TRANSFORMER 24V - TRANSFORMER	1
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	PATHWAY LIGHTS FOCUS INDUSTRIES PL-23-DM-24-BAR	31
	WELL LIGHTS SPJ-MW1000-P-RB CAST BRASS, AGED BRASS (AG), GRADE LEVEL LAMP: FB-2W-TA16, 2WI2VA, 2200K	3
	LED LIGHT FOR BOARDWALK IP65-UB-AT1-30K97C OUTDOOR (IP65) ULTRABRIGHT™ ACCENT SERIES LED STRIP LIGHT - 3.5 WATTS/FT	60 lf
	UP-LIGHTS FOCUS INDUSTRIES RXD-01-BAR	3
*	SOLAR STREET LIGHTS HAPCO 12' SOLAR POLE, DIRECT BURY	3
*	PAVILION - PENDANT LIGHTS SPJ LIGHTING SPJ-49-05	10
*	PAVILION - WELL LIGHTS SPJ LIGHTING SPJ-CBWL-16	2

ELECTRICAL GENERAL NOTES

1. THIS PLAN IS INTENDED FOR LANDSCAPE LIGHTING PURPOSES ONLY. ALL LIGHTING FIXTURES AND TRANSFORMERS SHALL BE INSTALLED BY A LICENSED ELECTRICIAN PER MANUFACTURER'S SPECIFICATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN COMPLIANCE WITH ALL LOCAL BUILDING AND ELECTRICAL SAFETY CODES AND ORDINANCES.
2. FIXTURES ARE SHOW IN APPROXIMATE LOCATION. THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL PLACEMENT OF EACH FIXTURE UPON COMPLETION OF LANDSCAPE INSTALLATION.
3. ALL PATH LIGHTS ARE TO BE INSTALLED AT A MINIMUM OF 12-INCHES FROM ANY SIDEWALK OR VERTICAL STRUCTURE.
4. ALL LOW-VOLTAGE DIRECT BURIAL WIRE TO BE INSTALLED AT >/=6" BELOW FINISH GRADE PER ELECTRICAL CODE.
5. IN ORDER TO MINIMIZE FUTURE DISTURBANCE, ALL WIRE RUNS SHALL BE INSTALLED PARALLEL AND ADJACENT TO HARD SURFACES SUCH AS SIDEWALKS DRIVEWAYS AND WALLS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING SLEEVES UNDER ALL HARDSCAPE SURFACES USING A MINIMUM 1-INCH PVC PIPE.
7. ALL UNDERGROUND SPLICES SHALL BE UL-486RATED AND INSTALLED IN UNDERGROUND J-BOXES WITH WATER TIGHT CONNECTIONS LEAVING 12-INCHES OF EXCESS WIRE SLACK.
8. ALL EXTERIOR 120-VOLT ELECTRICAL OUTLETS SHALL BE GFI-PROTECTED AS PER NATIONAL ELECTRICAL CODE.
9. ALL TRANSFORMERS PLUGGED INTO AN OUTDOOR RECEPTACLE SHALL HAVE AN "IN USE" COVER. CONTRACTOR SHALL INSTALL TAYMAC TYPE COVERS AT ALL OUTLETS.
10. ALL PLUG-IN TRANSFORMERS SHALL HAVE A DRIP LOOP IN THE POWER CORD.
11. ALL EXPOSED CONDUITS SHALL BE PAINTED TO MATCH SURROUNDINGS.
12. THE INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE FIXTURES AT NIGHT TO HELP ELIMINATE GLARE AND TO ENSURE OPTIMUM LIGHTING EFFECT.
13. CONTRACTOR TO VERIFY A MINIMUM OF 10-VOLTS AT THE LAST FIXTURE FOR OPTIMAL OPERATION.
14. CONTRACTOR TO CENTER FEED THE SYSTEM WHEN AT ALL POSSIBLE AND VERIFY ALL WIRE CONNECTIONS ARE AT THE FIXTURES.
15. ALL WIRE CONNECTIONS AT FIXTURES SHALL BE MADE USING WATER TIGHT CONNECTIONS.

PANEL SCHEDULE

Branch Panel: NEW WELL HOUSE PANEL

Location:
Supply From:
Mounting: Surface
Enclosure: NEMA 3R

Volts: 240 DELTA HI LEG
Phases: 3
Wires: 4

A.I.C. Rating: 100 kAIC
Mains Type: MCB
Mains Rating: 250 A
MCB Rating: 250 A

Notes:
PROVIDE NEMA 3R FUSED DISCONNECT ON PRIMARY SIDE OF 75 kVA TRANSFORMER. PROVIDE BUSSMAN TYPE FRS-R, 125 A FUSES OR SIMILAR.

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	Gazebo Light (EX)	20 A	1	1000...	1500...		1	15 A	CL2 (EX)	2
3	Space - High Leg	--	1		--	--	1	--	Space - High Leg	4
5	Water Tank (EX)	20 A	1			1500... 500 VA	1	15 A	Interior Lights (EX)	6
7	Exterior Lights (EX)	20 A	1	1500...	1500...		1	20 A	Exhaust Fan (EX)	8
9	Space - High Leg	--	1		--	--	1	--	Space - High Leg	10
11	Pavilion Lighting - New	20 A	1			0 VA 720 VA	1	20 A	Wall Receptacle (EX)	12
13	Pavilion Receptacles Rear - New	20 A	1	360 VA	3333...		3	70 A	Well Pump (EX)	14
15	Space - High Leg	--	1		--	3333...	--	--	--	16
17	Pavilion Receptacles Front - New	20 A	1			540 VA 3333...	--	--	--	18
19	Water Pump 2 - New	20 A	1	1000...	1000...		1	20 A	Water Pump 1 - NEW	20
21	Space - High Leg	--	1		--	--	1	--	Space - High Leg	22
23	Water Pump 3 - New	20 A	1			1000... 500 VA	1	15 A	Generator Batter (EX)	24
25	Restroom Building Connection - New	100 A	3	6933...	360 VA		1	20 A	Park Receptacles (2) - New	26
27	--	--	--		6933...	--	1	--	Space - High Leg	28
29	--	--	--			6933... 540 VA	1	20 A	Park Receptacles (2) - New	30
31	Spare	20 A	1	0 VA	540 VA		1	30 A	Quad Outlet Connection - New	32
33	Space - High Leg	--	1		--	--	1	--	Space - High Leg	34
35	Spare	20 A	1			0 VA 0 VA	1	20 A	Spare	36
37	Spare	20 A	1	0 VA	0 VA		1	20 A	Spare	38
39	Space - High Leg	--	1		--	--	1	--	Space - High Leg	40
41	Spare	20 A	1			0 VA 0 VA	1	20 A	Spare	42
		Total Load:		19027 VA	10267 VA	15567 VA				
		Total Amps:		159 A	86 A	130 A				

Legend:

Notes:
Note - Panel has a high leg - Verify high leg in panel prior to connection - do not circuit single phase connections to high leg

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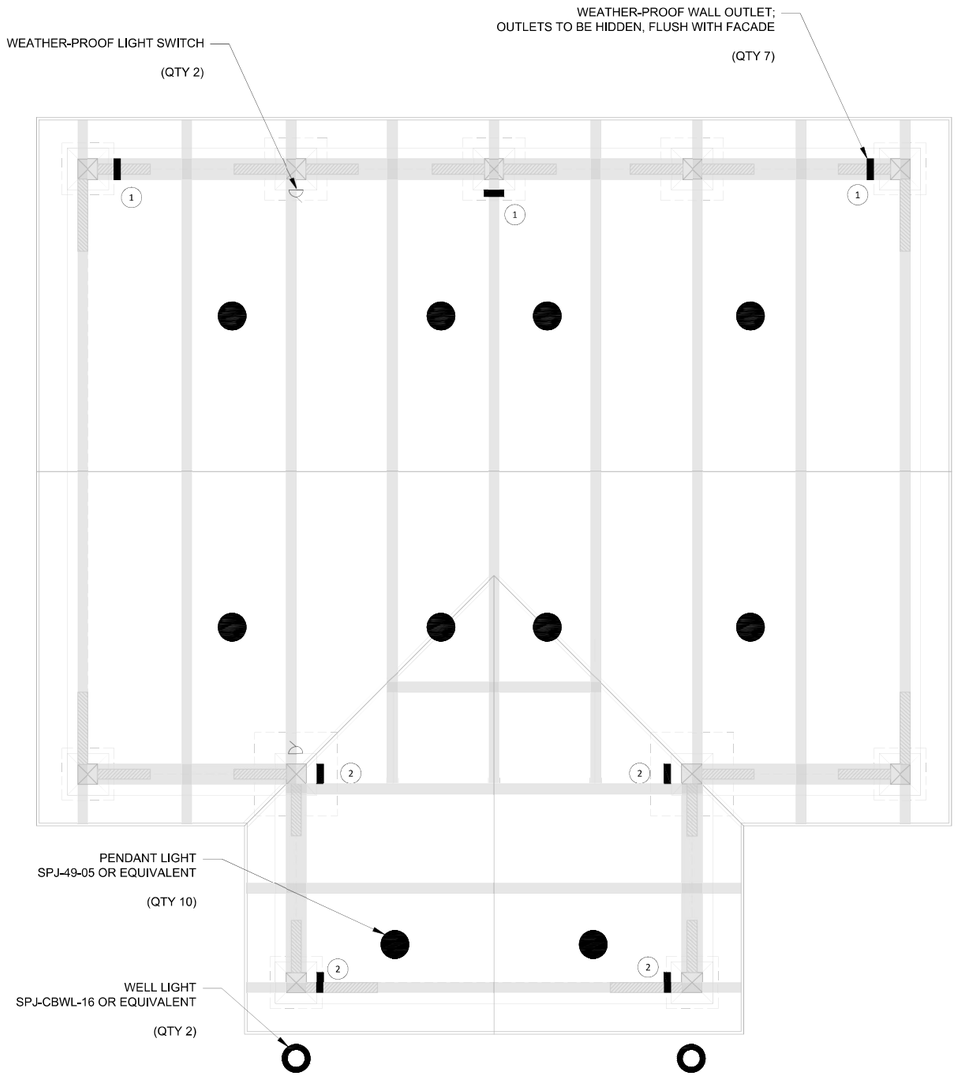
DESIGN BY: ABR
DRAWN BY: DR, MS
REVIEW BY: NS

LIGHTING AND ELECTRICAL NOTES

L7.2

100% CD



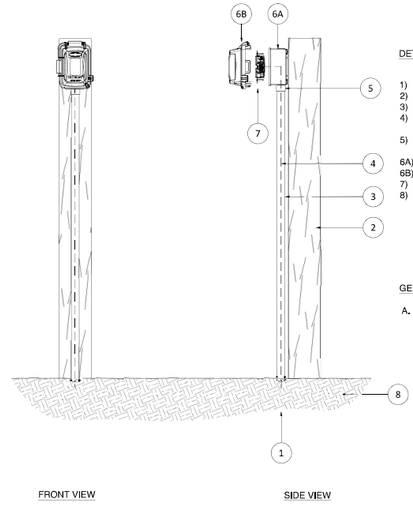
GENERAL NOTES:

A. GC TO PROVIDE FULL LIGHTING AND ELECTRCIAL SCOPE WITHIN PAVILION.
B. EXACT FIXTURE LOCATION TO BE COORDINATED WITH OWNER'S REPRESENTATIVE AND CONSTRUCTION DISCIPLINES PRIOR TO INSTALLATION.
C. ALL ELECTRICAL FIXTURES SHALL BE WEATHERPROOF.
D. PROVIDE EXTERIOR-RATED, METAL CONDUIT TO ALL FIXTURES.
E. ALL OUTLETS SHALL BE MOUNTED FLUSH WITH FINISHED STONE FACADE ON POSTS.
F. PROVIDE LOCKING COVERS FOR ALL OUTLETS AND SWITCHES.
G. COORDINATE ALL SITE ELECTRICAL ROUTING WITH TRENCHING CONSTRUCTION.
H. CIRCUIT NUMBERING IS FOR REFERENCE.
I. CIRCUIT ALL ELECTRICAL FIXTURES TO PANEL IN WELL HOUSE. ROUTE CONDUIT UNDERGROUND TO SERVE PAVILIION. COORDINATE WITH FOUNDATION AND CONCRETE VENDOR FOR EXACT LOCATIONS PRIOR TO POUR.

DETAIL NOTES:

1) CONNECT TO CIRCUIT 1.
2) CONNECT TO CIRCUIT 2.

3 PAVILION LIGHTING & ELECTRICAL LAYOUT
NOT TO SCALE



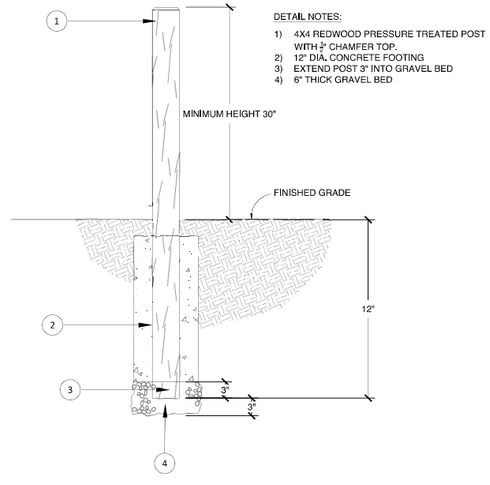
DETAIL NOTES:

1) TO PANEL IN PUMP HOUSE
2) WOODEN POST OR APPROVED EQUIVALENT
3) 3/4" SCHEDULE 40 CONDUIT
4) 120-VAC - 20 AMP LINE CABLE TO RECEPTACLE, REFER TO SCHEDULE SHEET FOR CIRCUIT INFORMATION.
5) CONDUIT MALE TERMINAL ADAPTER (REF, ELECTRICAL SPECIFICATIONS FOR SIZE)
6A) OUTDOOR WEATHER PROOF RECEPTACLE BOX
6B) OUTDOOR WEATHER PROOF RECEPTACLE COVER
7) 20 AMP GFCI WEATHER PROOF, NEMA 3R RECEPTACLE
8) EXISTING GRADE

GENERAL NOTES:

A. INSTALL A MINIMUM OF 18-24" ABOVE FINISHED GRADE AND IN ACCORDANCE WITH ALL APPLICABLE ELECTRICAL CODE(S)

2 OUTDOOR WEATHER PROOF (GFCI) RECEPTACLE ASSEMBLY (TYP)
NOT TO SCALE



DETAIL NOTES:

1) 4X4 REDWOOD PRESSURE TREATED POST WITH 3" CHAMFER TOP.
2) 12" DIA. CONCRETE FOOTING
3) EXTEND POST 3" INTO GRAVEL BED
4) 6" THICK GRAVEL BED

1 OUTDOOR WEATHER PROOF (GFCI) RECEPTACLE ASSEMBLY (TYP)
NOT TO SCALE

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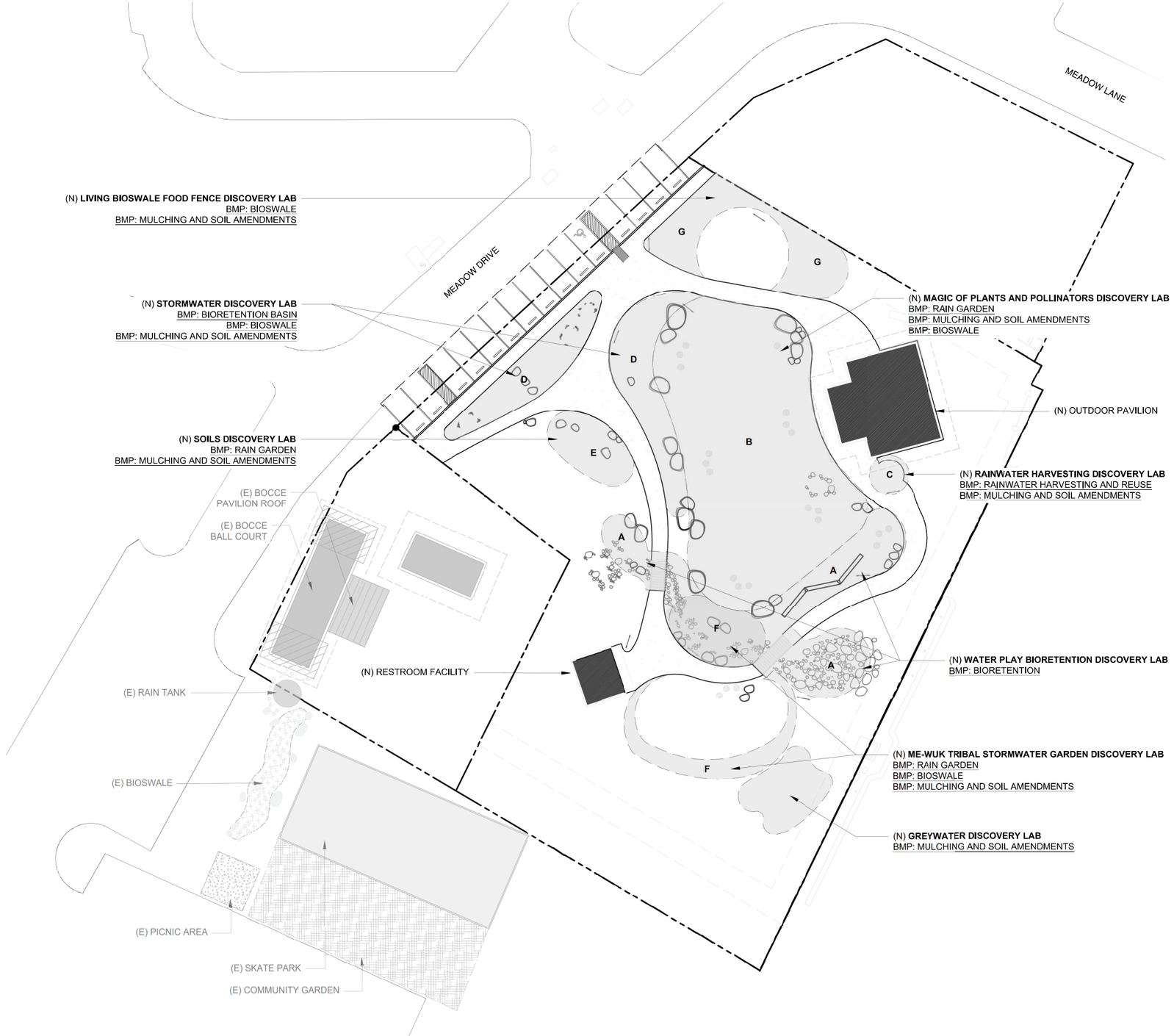
DESIGN BY: ABR
DRAWN BY: DR, MS
REVIEW BY: NS

LIGHTING AND ELECTRICAL DETAILS

L7.3

100% CD



1 **DISCOVERY LABS KEY PLAN**

DISCOVERY LAB NOTES

A. WATER PLAY BIORETENTION DISCOVERY LAB:

LEARNING THROUGH PLAY ABOUT THE VALUE OF CLEAN ABUNDANT WATER FOR RECREATION, AND THE DELICATE BALANCE OF HUMAN NEEDS, AND ECOSYSTEM HEALTH.

THE WATER PLAY BIORETENTION DISCOVERY LAB MIMICS NATURAL SPRINGS AND RIVERS. THIS FEATURE PROVIDES THE COMMUNITY RELIEF FROM HOT WHETHER WHILE DEMONSTRATING THE IMPORTANCE OF CLEAN WATER FOR RECREATION AND ECOSYSTEM NEEDS. THE LINK TO THE STORM WATER RAINGARDEN DISCOVERY LAB PROVIDES AN INTERACTIVE UNDERSTANDING OF HOW HUMANS AND THE REST OF THE ECOSYSTEM RELY ON THE SAME WATER SOURCES. THE PATH ALONG THIS DISCOVERY LAB INCLUDES STEPPING STONE PAVERS WITH PRINTS OF IMPORTANT PLANTS FOR THE WATERSHED AND ANIMAL TRACKS OF LOCAL SPECIES WITH THEIR NAMES IN ENGLISH AND ME-WUK. NATIVE PLANTINGS AROUND THE PLAY AREA GIVE VISITORS AND OPPORTUNITY TO BECOME MORE FAMILIAR WITH THE IMPORTANCE OF THE LOCAL ECOSYSTEM WHILE ENJOYING THE PARK. SIGNAGE WITH QR CODES WILL LINK VISITORS TO MORE INFORMATION FROM SITES LIKE THESE:
HTTPS://MEWUK.COM/CULTURAL/TRADITIONAL/

BENEFITS INCLUDE:
- STORMWATER QUALITY IMPROVEMENT
- HABITAT ENHANCEMENT
- REDUCED FLOOD RISK

B. MAGIC OF PLANTS AND POLLINATORS DISCOVERY LAB:

HANDS-ON SCIENCE THROUGH OBSERVATION AND MONITORING.

PLANTS THAT PROVIDE FOOD AND HABITAT FOR IMPORTANT POLLINATORS ARE ALONG THE EDGE OF THE MEADOW NEAR BOULDERS WHERE VISITORS CAN SIT AND OBSERVE OR MONITOR POLLINATORS BY PARTICIPATING IN CITIZEN SCIENCE POLLINATOR COUNTS. THE USE OF STORMWATER BIOFILTRATION AND STORMWATER ABSORPTION TO SUPPORT HEALTH PLANT LIFE AS A BEDROCK OF A POLLINATOR ECOSYSTEM IS HIGHLIGHTED. POLLEN-PRODUCING PLANTS GIVE POLLINATORS EASY ACCESS TO NUTRIENT-RICH FOOD SOURCES. BETWEEN 75% AND 95% OF ALL FLOWERING PLANTS RELY ON POLLINATORS. POLLINATOR-FRIENDLY PLANTS TREAT STORMWATER RUNOFF BY ACTING AS A PHYSICAL FILTER FOR MACRO-POLLUTANTS, ABSORBING MICRO-POLLUTANTS, AND PROVIDING EROSION CONTROL AS THEIR COMPLEX ROOT SYSTEMS STABILIZE SOIL. FLOWERING PLANTS ALSO REDUCE SOIL EROSION BY DISSIPATING THE ENERGY FROM RAINDROP IMPACT WITH THEIR FOLIAGE. IN THIS WAY, THESE POLLINATOR-FRIENDLY PLANTS REDUCE THE AMOUNT OF SEDIMENT, WHICH IS THE MOST COMMON POLLUTANT IN STREAMS, THAT REACHES TWAIN HARTE CREEK.

BENEFITS INCLUDE:
- HABITAT ENHANCEMENT
- STORMWATER QUALITY IMPROVEMENT
- ENHANCED SOIL HEALTH

C. RAINWATER HARVESTING DISCOVERY LAB:

LEARNING THROUGH OBSERVATION OF DEMONSTRATED AND CONNECTIONS.

WATER USE AT THE PAVILION IS TIED TO HOW HUMANS PARTICIPATE IN THE WATER CYCLE AND CAN CREATE A MORE SUSTAINABLE SMALL WATER CYCLE AT HOME. WATER OFF THE PAVILION ROOF IS CAPTURED AND STORED IN RAIN TANKS. THIS WATER IS REUSED FOR IRRIGATION. THIS DEMONSTRATION SHOWS HOW RAINWATER HARVESTING CAN HELP REDUCE SOIL EROSION AND FLOODING WHILE PROVIDING WATER SECURITY.

BENEFITS INCLUDE:
- REDUCED FLOOD RISK
- STORMWATER QUALITY IMPROVEMENT
- ENHANCED WATER SECURITY
- REDUCED CONSUMPTIVE USE

D. STORMWATER DISCOVERY LAB:

HANDS-ON LEARNING THROUGH OBSERVATION AND PLAY COMBINED WITH CONCEPTUAL LEARNING FROM SIGNAGE.

PLANTS THAT CLEAN STORMWATER AND REMOVE HYDROCARBONS ARE FEATURED IN THIS AREA. BOULDERS TO SIT AND OBSERVE LOCAL FLORA AND FAUNA WILL BE PLACED IN KEY LOCATIONS. SIGNAGE WILL REVEAL THE MAGIC OF PLANTS AND INFILTRATION HAPPENING BELOW GROUND AS WELL AS QR CODES LINKED TO WATERTOOLKIT.COM TO LEARN MORE. ADDITIONALLY AN EXPERIENCE OF LOCAL WATER DISTRIBUTION IS INCORPORATED THROUGH A FLUME PLAY FEATURE. A HAND PUMP INVITES CHILDREN TO SEE HOW WATER IS PULLED OUT OF THE GROUND AND TRANSPORTED BY THE FLUME. WHEN THE PUMP IS IN USE THE WATER FLOWING THROUGH THE WATER PLAY BIORETENTION DISCOVERY LAB IS REDUCED, DEMONSTRATING THE DIRECT CONNECTION BETWEEN HUMAN USES AND ECOSYSTEM HEALTH.

BENEFITS INCLUDE:
- HABITAT ENHANCEMENT
- STORMWATER QUALITY IMPROVEMENT
- REDUCED FIRE RISK
- ENHANCED WATER SECURITY
- ENHANCED SOIL HEALTH

E. SOILS DISCOVERY LAB:

HANDS-ON LEARNING ABOUT THE ROLE OF SOIL HEALTH IN WATER QUALITY THROUGH OBSERVATION AND ACTIVITIES.

THIS DISCOVERY LAB HIGHLIGHTS THE IMPORTANCE OF SOIL HEALTH IN ECOLOGICAL RESILIENCE AND ESPECIALLY WATER QUALITY. METHODS OF IMPROVING SOIL HEALTH SUCH AS MULCHING ARE DEMONSTRATED ALONG WITH SOIL SAMPLES THAT GIVE VISITORS EXPERIENTIAL UNDERSTANDING OF WHAT HEALTHY LIVING SOIL LOOKS LIKE.THIS REVEALS THE POSITIVE EFFECTS OF STORMWATER BIOFILTRATION AND STORMWATER INFILTRATION ON THE SITE. THE SOILS DISCOVERY LAB PROVIDES A LEARNING EXPERIENCE THAT DEMONSTRATES THE IMPORTANT FUNCTIONS OF HEALTHY SOIL IN THE STORMWATER TREATMENT HAPPENING AT THE SITE [E.G., PROVIDING A MEDIA FOR VEGETATION, RETAINING POLLUTANTS THAT WOULD OTHERWISE END UP IN TWAIN HARTE CREEK, PROMOTES BIOLOGICAL ACTIVITY THAT BREAKS DOWN SOME POLLUTANTS, DESSICATION OF PATHOGENS ON THE SOIL SURFACE, CAPTURING AND RETAINING CARBON, HEALTHY SOILS MINIMIZE EROSION].

BENEFITS INCLUDE:
- HABITAT ENHANCEMENT
- STORMWATER QUALITY IMPROVEMENT
- REDUCED FIRE RISK
- REDUCED FLOOD RISK
- ENHANCED WATER SECURITY
- ENHANCED SOIL HEALTH

F. ME-WUK TRIBAL STORMWATER GARDEN DISCOVERY LAB:

HANDS-ON EXPERIENCES OF ME-WUK ECOLOGICAL KNOWLEDGE AND SUSTAINABLE TECHNOLOGIES INCLUDING PASSIVE IRRIGATION THROUGH STORMWATER HARVESTING.

THIS STORMWATER GARDEN COLLECTS RUNOFF TO PASSIVELY IRRIGATE IMPORTANT PLANTS TO THE ME-WUK TRIBE. THESE PLANTS ARE ALSO INCLUDED THROUGHOUT THE SITE AND WOVEN INTO INTERPRETIVE AND EXPERIENTIAL LEARNING OPPORTUNITIES. TRIBAL CONSULTANTS WILL ADVISE ON FURTHER EFFORTS TO BRING IMPORTANT TRIBAL KNOWLEDGE AND FORMS OF KNOWING TO THE SITE EXPERIENCE.

BENEFITS INCLUDE:
- ME-WUK TRIBAL PLANT KNOWLEDGE
- ENHANCED FOOD SECURITY
- STORMWATER QUALITY IMPROVEMENT
- ENHANCED SOIL HEALTH

G. LIVING BIOSWALE FOOD FENCE DISCOVERY LAB:

HANDS-ON LEARNING THROUGH FORAGING, OBSERVATION AND PLANT USE ACTIVITIES.

PLANTS THAT PROVIDE FOOD TO BOTH ANIMALS AND HUMANS ARE INCLUDED IN THIS AREA WHILE DEMONSTRATING VERTICLE GARDENING AND THE IMPORTANCE OF LOCAL FOOD SECURITY. CONNECTION IS MADE BETWEEN THE BIOFILTRATION OF STORMWATER THROUGH ME-WUK STORMWATER GARDEN DISCOVERY LAB AND THE LOCAL AND HISTORICAL USES OF BIOFILTERED STORMWATER. THIS IS MADE EXPLICIT THROUGH THE FACT THAT THE FOOD FENCE IS IRRIGATED BY FILTERED STORMWATER AT THE ADJACENT ME-WUK TRIBAL STORMWATER GARDEN DISCOVERY LAB.

BENEFITS INCLUDE:
- WE-WUK TRIBAL PLANT KNOWLEDGE
- ENHANCED FOOD SECURITY
- STORMWATER QUALITY IMPROVEMENT
- ENHANCED SOIL HEALTH

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GROVELAND, CALIFORNIA 95321

OJAI OFFICE
206 N. SIGNAL ST., SUITE S
OJAI, CALIFORNIA 93023

Twain Harte Meadows Park
22945 Meadow Drive,Twain Harte, CA, 95383

DATE:
PROJECT NO.

REVISION	DATE
1 60% DRAFT TO CSD	05.31.22
2 60% TO CSD	06.15.22
3 60% TO SWB	07.28.22
4 60% TO SWRCB	08.19.22
5 100% TO CSD	12.14.22
6 100% TO CSD	04.28.23
7 100% TO CSD	06.07.23

DESIGN BY: ABR
DRAWN BY: DR, JS, MS
REVIEW BY: RH, NS, JPB

DISCOVERY LABS KEY PLAN

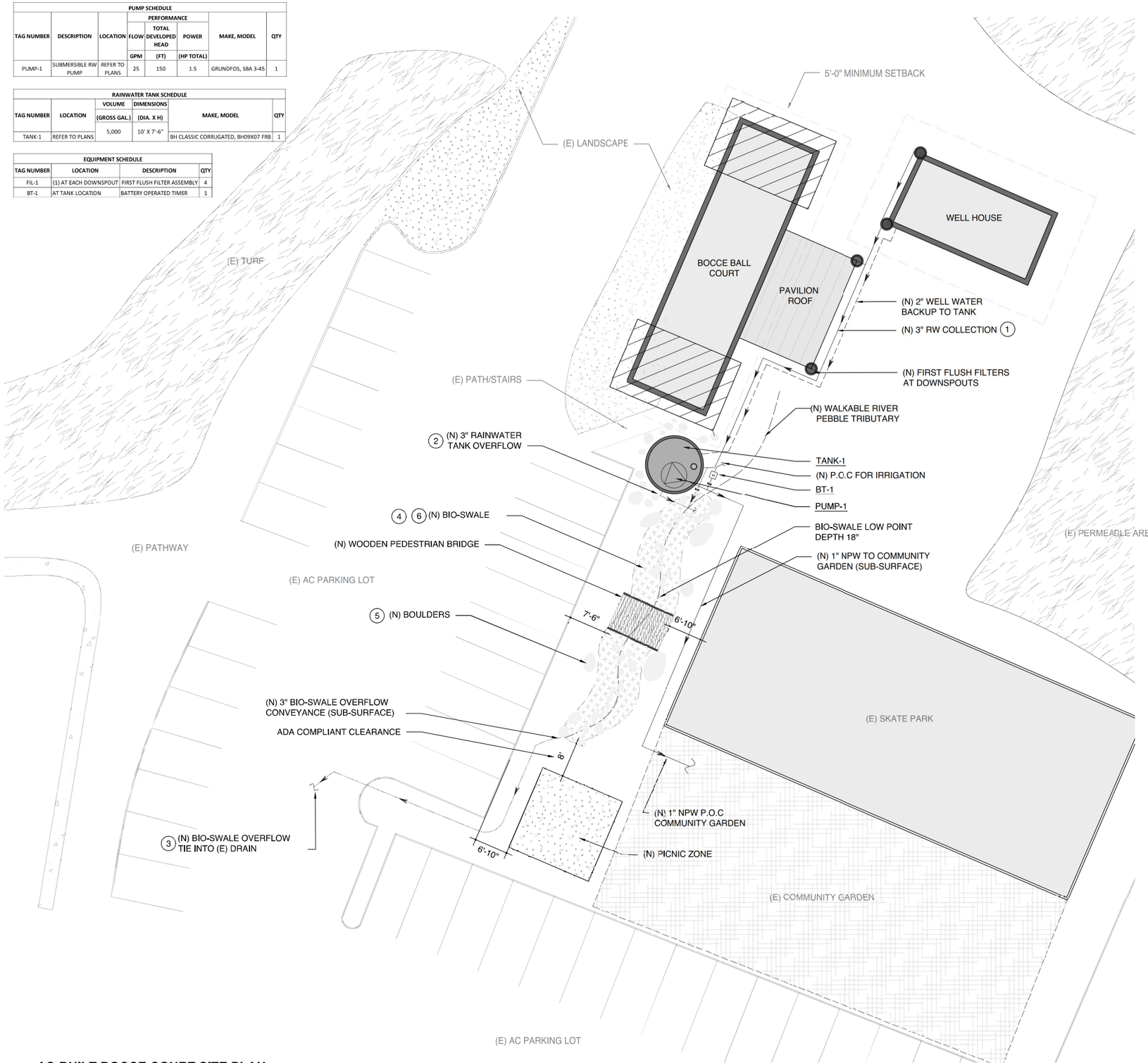
L8.1

100% CD

PUMP SCHEDULE							
TAG NUMBER	DESCRIPTION	LOCATION	PERFORMANCE			MAKE, MODEL	QTY
			FLOW	TOTAL DEVELOPED HEAD	POWER		
			GPM	(FT)	(HP TOTAL)		
PUMP-1	SUBMERSIBLE RW PUMP	REFER TO PLANS	25	150	1.5	GRUNDFOS, SBA 3-45	1

RAINWATER TANK SCHEDULE					
TAG NUMBER	LOCATION	VOLUME	DIMENSIONS	MAKE, MODEL	QTY
		(GROSS GAL.)	(DIA. X H)		
TANK-1	REFER TO PLANS	5,000	10' X 7'-6"	BH CLASSIC CORRUGATED, BH09X07 FRB	1

EQUIPMENT SCHEDULE			
TAG NUMBER	LOCATION	DESCRIPTION	QTY
FIL-1	(1) AT EACH DOWNSPOUT	FIRST FLUSH FILTER ASSEMBLY	4
BT-1	AT TANK LOCATION	BATTERY OPERATED TIMER	1



1 **AS-BUILT BOCCE COURT SITE PLAN**

SCALE: 1"=10'
0 10 20 30

N

PROJECT SUMMARY

AS ONE OF THE FIRST PARTS OF A MULTI PHASED COMMUNITY ENHANCEMENT PROJECT FOR THE TOWN OF TWAIN HARTE, A BOCCE BALL COURT WAS RECENTLY BUILT NEAR THE EXISTING THCSD WELLHOUSE AND COMMUNITY SKATEPARK WITH A NEW SHADE PAVILION AND SEATING AREA. TO DEMONSTRATE RESPONSIBLE STORMWATER MANAGEMENT PRACTICES, IT WAS DECIDED THAT THE RAINWATER FROM THE 360SQFT SHADE PAVILION AND 400SQFT WELLHOUSE WOULD BOTH BE DIRECTED INTO A 4,333 GALLON CORRUGATED STEEL RAINWATER CISTERN BY ATTACHING CONVEYANCE PIPES TO THE DOWNSPOUTS OF EACH ROOF. FIRST FLUSH DEVICES WERE INSTALLED AT EACH DOWNSPOUT TO PREFILTER THE WATER BEFORE IT ENTERS THE CISTERN. THE RAINWATER CISTERN CONTAINS A SUBMERSIBLE PUMP WHICH PRESSURIZES THE WATER FOR USE IN THE NEARBY COMMUNITY GARDEN AND SURROUNDING DRIP IRRIGATION. A BIO-SWALE WAS BUILT BELOW THE CISTERN TO CONTROL AND INFILTRATE THE OVERFLOW OF RAINWATER WHEN THE TANK BECOMES FULL. AT THE END OF THE BIO-SWALE, WHICH EMULATES A SMALL CREEK BED, THERE IS A DRAIN INLET LEADING TO THE EXISTING UNDERGROUND STORM DRAIN TO PREVENT THE BIO-SWALE FROM OVERFLOWING AND CAUSING FLOODING ISSUES. DURING A COMMUNITY VOLUNTEER DAY, THE BIO-SWALE AND AREAS SURROUNDING THE SHADE PAVILION AND CISTERN WERE PLANTED WITH CALIFORNIA NATIVE PLANTS AND TREES TO CREATE MORE SHADE, ENHANCE AESTHETICS, AND BUILD SOIL HEALTH. COMPOST AND WOOD CHIP MULCH WERE ALSO ADDED TO FURTHER ENHANCE SOIL HEALTH AND MOISTURE RETENTION. AN EDUCATIONAL WORKSHOP WAS CONDUCTED AND AN INTERPRETIVE SIGN WAS INSTALLED TO EXPLAIN THE BENEFITS OF RAINWATER HARVESTING AND PROPER STORMWATER MANAGEMENT. A UNIQUE ADDITION TO THIS RAINWATER COLLECTION SYSTEM IS THE ADDITION OF BACKFLUSH WATER FROM THE WELLHOUSE. AS ROUTINE MAINTENANCE, THE THCSD BACKFLUSHES THE WELL LINES TO REMOVE SEDIMENT, THIS WATER IS RELATIVELY CLEAN, CONTAINING A SMALL AMOUNT OF SEDIMENT BUT COMPARABLE IN QUALITY TO THE RAINWATER COLLECTED FROM THE ROOF AND WAS PREVIOUSLY BEING FLUSHED DOWN THE DRAIN IN THE PROCESS. IT NOW ACTS AS ADDITIONAL INPUT INTO THE CISTERN AND IS USED AS NON-POTABLE IRRIGATION DURING TIMES WHEN THE RAINWATER SUPPLY IN THE TANK IS EXHAUSTED.

SHEET NOTES

1. RAINWATER COLLECTED FROM BOCCE BALL PAVILION STRUCTURE, WELL HOUSE AND CONVEYED TO RAINWATER TANK.
2. RAINWATER TANK OVERFLOW TO BE DIVERTED SUBSURFACE INTO PROPOSED BIO-SWALE.
3. BIO-SWALE OVERFLOW TO BE CONVEYED SUBSURFACE AND TIE INTO EXISTING DRAIN.
4. BIO-SWALE WILL BE PROVIDED WITH NATIVE, CLIMATE APPROPRIATE PLANTINGS.
5. ALL BOULDER PLACEMENT SHALL BE COORDINATED AND DETERMINED IN THE FIELD BY PROJECT LEAD.
6. ALL GRADING FOR BIO-SWALE SHALL BE COORDINATED AND DETERMINED IN THE FIELD BY PROJECT LEAD.

LEGEND

- PARCEL BOUNDARY
- MINIMUM SETBACK LINE
- CONTOURS
- RAINWATER (RW) CONVEYANCE
- PUMPED CONVEYANCE WATER
- PUMP
- DIRECTION OF FLOW
- PIPE CONTINUATION
- EXISTING BUILDING
- RAINWATER TANK
- BIO-SWALE
- FILTRATION EQUIPMENT
- BATTERY OPERATED CONTROLLER
- BOULDERS
- P.O.C POINT OF CONNECTION
- E EXISTING
- N NEW

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OJAI OFFICE
206 N. SIGNAL ST., SUITE S
OJAI, CALIFORNIA 93023

TWAIN HARTE BOCCE BALL COURT
STORMWATER ENHANCEMENT PROJECT

DATE:	05.24.21
PROJECT NO.	--

ISSUANCE	DATE
1 AS-BUILT	9.30.21
2	
3	
4	
5	
6	

DESIGN BY: JW, MS
DRAWN BY: MS
REVIEW BY: RH

AS-BUILT
BOCCE COURT
SITE PLAN

L9.1

AS-BUILT RECORD
NOT FOR CONSTRUCTION

PAVILION AND PERGOLA PLAN

TWAIN HARTE COMMUNITY SERVICE DISTRICT

MEADOW DRIVE

TWAIN HARTE CA

PROJECT SCOPE

CONSTRUCT A HEAVY TIMBER FRAMED PAVILION WITH A CONCRETE SLAB

SHEET INDEX

SITE INFORMATION

ADDRESS:	MEADOW DRIVE TWAIN HARTE CA 95383
A.P.N.:	049-132-019
POWER:	PG&E
LOT ELEVATION:	3650'±

BUILDING DIMENSIONS

BUILDING OCCUPANCY: U

PAVILION AREA = 1400 SQ FT

SPECIAL INSPECTIONS

-NONE REQUIRED

SITE WORK NOTES

1. LAND & STRUCTURE HAS NOT MADE A GEOTECHNICAL REVIEW OF THE BUILDING SITE AND IS NOT RESPONSIBLE FOR GENERAL SITE STABILITY OR SOIL SUITABILITY FOR THE PROPOSED PROJECT.
2. BUILDING SITES ARE ASSUMED TO BE DRAINED AND FREE OF CLAY OR EXPANSIVE SOILS.
3. ALL FOOTINGS SHALL BE LEVEL OR STEPPED AND BEAR ON FIRM, STABLE, NATURAL, UNDISTURBED SOIL OR AN APPROVED COMPACTED FILL.
4. ALL FINISH GRADES SHALL SLOPE 5% AWAY FROM THE FOUNDATION (FOR A MINIMUM OF 10') AND DRAIN AWAY FROM BUILDING FOOTINGS. ADEQUATE DRAINAGE AWAY FROM THE STRUCTURE SHALL BE PROVIDED BY CONTRACTOR OR OTHERS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT. ANY DAMAGE TO AN EXISTING STRUCTURE AS A RESULT OF ANY ACTION OF THE CONTRACTOR SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE.
6. ALL MATERIALS FROM DEMOLITION SHALL BE REMOVED FROM SITE AND DISPOSED OF BY THE CONTRACTOR, UNLESS OTHERWISE INSTRUCTED BY OWNER.
7. CONTRACTOR SHALL PROVIDE BARRICADES, WARNING SIGNS, ETC. AS REQUIRED BY LOCAL CODES.
8. CONTRACTOR SHALL LOCATE AND CLEARLY MARK THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL NEW STRUCTURES AND UTILITIES ON PROPERTY AND COMPLYING WITH ALL SETBACKS.

GENERAL NOTES

1. LAND & STRUCTURE RESERVES THE RIGHT TO PERFORM OBSERVATION VISITS TO THE SITE AT ANY TIME. OBSERVATIONS ARE PERFORMED SOLELY FOR THE PURPOSE OF DETERMINING IF THE CONTRACTOR UNDERSTANDS THE DESIGN INTENT CONVEYED IN THE PLANS. OBSERVATIONS DO NOT GUARANTEE CONTRACTORS PERFORMANCE AND ARE NOT TO BE CONSTRUED AS SUPERVISION OF THE PROJECT.
2. ALL WORK SHALL COMPLY WITH:
   -CALIFORNIA RESIDENTIAL CODE CRC 2022 EDITION
   -CALIFORNIA BUILDING CODE CBC 2022 EDITION
   -CALIFORNIA PLUMBING CODE CPC 2022 EDITION
   -CALIFORNIA MECHANICAL CODE CMC 2022 EDITION
   -CALIFORNIA ELECTRICAL CODE CEC 2022 EDITION
   -CALIFORNIA FIRE CODE 2022 EDITION
   -CALIFORNIA ENERGY CODE CEC 2022 EDITION
   -CALIFORNIA GREEN BUILDING CODE 2022 EDITION
   -AND ALL OTHER APPLICABLE STATE AND COUNTY CODES AND ORDINANCES.
3. ALL INSPECTIONS REQUIRED BY THE BUILDING CODE, LOCAL BUILDING DEPARTMENT, OR BY THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER OF RECORD (E.O.R.) DO NOT CONSTITUTE AN INSPECTION.
4. IN THE EVENT THAT CERTAIN EXISTING DIMENSIONS AND/OR CONDITIONS ARE FOUND TO BE DIFFERENT FROM THOSE SHOWN ON THE PLANS AND DETAILS, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED SO THAT THE PROPER REVISIONS CAN BE MADE IF NECESSARY. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY ERRORS, DISCREPANCIES, OR OMISSIONS WHICH THE CONTRACTOR FAILED TO NOTIFY LAND & STRUCTURE OF BEFORE CONSTRUCTION AND/OR FABRICATION OF THE WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH DRAWINGS PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS. ANY SUCH DISCREPANCY, OMISSION, OR VARIATION NOT REPORTED BEFORE THE START OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE DETAILS SHOWN ON THE DRAWINGS ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS. NO DEVIATIONS FROM STRUCTURAL DETAILS SHALL BE MADE WITHOUT THE PRIOR WRITTEN APPROVAL OF LAND & STRUCTURE.
7. THESE DRAWINGS REPRESENT THE FINAL STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DESIGN AND PROVIDE ADEQUATE SHORING, BRACING, FORM-WORK, ETC. AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT THE DESIGN LIVE LOAD PER SQUARE FOOT IS NOT EXCEEDED. SHOULD AN UNFINISHED STRUCTURE BE SUBJECTED TO EXCESSIVE LOADS, LAND & STRUCTURE SHOULD BE CONSULTED FOR AN INTERIM DESIGN, OR IF NOT, WILL ASSUME NO LIABILITY.
8. ALL HARDWARE AND FRAMING MEMBERS SPECIFIED IN THE PLANS ARE MINIMUMS AND LARGER MEMBERS OF EQUAL OR BETTER GRADE MAY BE SUBSTITUTED.
9. THESE PLANS HAVE BEEN PREPARED USING STANDARDS OF CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. THEY NECESSARILY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKMEN WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE PLANS, IT IS UNDERSTOOD THAT THE CONTRACTOR WILL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR ALL MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
10. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS, AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
11. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER OF RECORD.

WOOD FRAME NOTES

1. ALL FRAMING LUMBER SHALL BE DOUGLAS FIR-LARCH (DFL) AS FOLLOWS, UNLESS OTHERWISE NOTED.
2. 4x AND SMALLER FRAMING SHALL BE D.F. #2 U.N.O. 6x AND LARGER SHALL BE D.F. #2 U.N.O. INTERIOR NON-BEARING STUDS AND PLATES MAY BE CONSTRUCTION GRADE. PARALLEL STRAND LUMBER (PSL) SHALL BE 2.0E, Fb=2900 PSI LAMINATED VENEER LUMBER (LVL) SHALL BE 1.9E, Fb=2600 PSI GLUE LAMINATED BEAMS (GLULAMS) SHALL APA/EWS DOUGLAS FIR MARKED 24F-V4 FOR SIMPLE SPANS AND 24F-V8 FOR CANTILEVER OR MULTIPLE SPANS. GLULAMS TO BE 1.8E, Fb=2400 PSI GLULAMS EXPOSED TO WEATHER SHALL BE RATED FOR EXTERIOR USE BY THE MANUFACTURER OR AN APPROVED PROTECTION FROM THE EXPOSURE SHALL BE PROVIDED. GLULAMS SHALL BE ORDERED WITHOUT CAMBER UNLESS NOTED OTHERWISE. LOG COLUMNS AND BEAMS SHALL BE D.F. #2, 1.3E, Fb=875 PSI U.N.O.
3. ANY BOTTOM PLATE OR SOLE PLATE RESTING ON CONCRETE OR MASONRY SHALL BE PRESSURE TREATED DOUGLAS FIR.
4. ALL LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED LUMBER GRADING AGENCY.
5. SHEATHING: ALL PLYWOOD TO CONFORM TO APA STANDARDS. SHEETS USED IN THE CONSTRUCTION OF DIAPHRAGMS AND SHEAR WALLS SHALL BE NOT LESS THAN 4'x8'. MINIMUM SHEET SIZE AT BOUNDARIES AND CHANGES IN FRAMING SHALL BE 24", UNLESS BLOCKED. FRAMING MEMBERS SHALL HAVE BLOCKING AT ALL PANEL EDGES IN SHEAR WALLS.
6. GLUE FOR GLUED FLOOR CONSTRUCTION: APA PERFORMANCE SPECIFIC. AFG-01.
7. HANGERS AND CONNECTIONS: SIMPSON STRONG-TIE (AS NOTED ON DRAWINGS), UNITED STEEL PRODUCTS OF APPROVED EQUAL.
8. HANGERS AND ALL OTHER HARDWARE IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE COMPATIBLE WITH PRESSURE TREATING CHEMICAL. CONTRACTOR TO VERIFY COMPATIBILITY PRIOR TO CONSTRUCTION.
9. FASTENERS/NAILING: AS NOTED DRAWINGS. IF NOT SHOWN ON DRAWINGS, NAILING OF FRAMING COMPONENTS SHALL CONFORM TO CBC TABLE 2304.9.1 AS A MINIMUM.
10. ALL MULTIPLE TRIMMERS, MULTIPLE STUDS, OR POSTS SHALL BE STACKED IN ALL WALL FRAMING CONNECTED WITH POSITIVE CONNECTIONS. SOLID BLOCKING SIMILAR IN SIZE TO FRAMING ABOVE SHALL BE PROVIDED AT ALL FLOORS ALL THE WAY DOWN THE FOUNDATION.
11. DO NOT NOTCH BEAMS, JOISTS, OR TRUSSES WITHOUT FIRST CONTACTING ENGINEER OF RECORD. DRILLING AND NOTCHING SHALL BE IN ACCORDANCE WITH CALIFORNIA RESIDENTIAL CODE R602.6 (1):
    1. NOTCHING. ANY STUD IN AN EXTERIOR WALL OR BEARING PARTITION MAY BE CUT OR NOTCHED TO A DEPTH NOT EXCEEDING 25% OF ITS WIDTH. STUDS IN NONBEARING PARTITIONS MAY BE NOTCHED TO A DEPTH NOT TO EXCEED 40% OF A SINGLE STUD WIDTH.
    2. DRILLING. ANY STUD MAY BE BORED OR DRILLED, PROVIDED THAT THE DIAMETER OF THE RESULTING HOLE IS NO MORE THAN 60% OF THE STUD WIDTH, THE EDGE OF THE HOLE IS NO MORE THAN 5/8" TO THE EDGE OF THE STUD, AND THE HOLE IS NOT LOCATED IN THE SAME SECTION AS A CUT OR NOTCH. STUDS LOCATED IN EXTERIOR WALLS OR BEARING PARTITIONS DRILLED OVER 40% AND UP TO 60% SHALL ALSO BE DOUBLED WITH NO MORE THAN TWO SUCCESSIVE DOUBLED STUDS BORED.
12. CONNECT DOUBLE STUDS, DOUBLE JOISTS, OR ANY OTHER MULTIPLE PIECE MEMBER WITH MINIMUM (2) ROWS 16d AT 12" O.C. UNLESS OTHERWISE NOTED.
13. USE (2) CONTINUOUS KING STUDS EACH SIDE OF OPENINGS WHERE STUD HEIGHT EXCEEDS 10'.
14. DO NOT BREAK CONTINUOUS KING STUDS BY SPANNING HEADERS OVER MULTIPLE OPENINGS.
15. ALL EXTERIOR WALLS TO BE CONSIDERED SHEARWALLS AND SHALL BE NAILED WITH 8d AT 6 AND 12 UNLESS OTHERWISE NOTED.
16. FLOOR JOISTS SHALL BE BLOCKED SOLID AT ALL SUPPORT LINES (CONNECT BLOCKING TO WALL/BEAM BELOW WITH A34 AT 48" O.C. U.N.O.) BENEATH ALL INTERIOR BEARING WALLS.
17. ALL BEAMS AND HEADERS TO HAVE A SINGLE 2x TRIMMER AND KING STUD THE SAME WIDTH OF BEAM MINIMUM UNLESS NOTED OTHERWISE.
18. Fire blocking required for combustible construction in the following concealed spaces of stud walls and partitions spaces, including furred spaces as follows: [CRC R302.11]
    1. Vertically at the ceiling and floor levels.
    2. Horizontally at intervals not exceeding 10-ft.
    3. Interconnections between concealed vertical stud walls and concealed horizontal spaces created by floor systems, soffits, drop ceilings, cove ceilings, and similar locations.
    4. Between stair stringers at top and bottom of run.
    5. Around vent openings, pipes, ducts, chimneys, fireplaces, similar openings that afford passage for fire.

ROOF FRAMING NOTES

1. ROOF COVERING SHALL BE STANDING SEAM METAL ROOF PANELS OVER MIN 30# FELT AND 2x6 T&G SELECT DEX.
2. SELECT DEX SHALL BE ATTACHED TO TRUSSES WITH (2)-#10x3-1/2" WOOD SCREWS--TYP.

CONCRETE NOTES

1. REINFORCED CONCRETE WORK, MIXING, PLACEMENT AND QUALITY SHALL CONFORM TO APPLICABLE REQUIREMENTS OF THE CBC AND ACI STANDARD 318.
2. NO PIPES OR DUCTS SHALL BE PLACED IN CONCRETE WALLS OR SLABS UNLESS SPECIFICALLY DETAILED.
3. EXTERIOR SLABS ON GRADE SHALL CONTAIN NOT MORE THAN 6% ENTRAINED AIR.
4. FOLLOW RECOMMENDED PRACTICES FOR HOT AND COLD WEATHER CONCRETING BY OBSERVING ACI 305 AND ACI 306 GUIDELINES.
5. PROVIDE STANDARD CRACK CONTROL JOINTS IN ALL SLABS ON GRADE AT 2 TO 3 TIMES THE THE SLAB THICKNESS (in.) IN FEET O.C. EACH WAY (MAX), (ie: 4" SLAB =8 FEET TO 12 FEET JOINT SPACING) MAXIMUM CONTROL JOINT SPACING NOT TO EXCEED 15'-0". JOINTS SHALL BE SAW CUT SUCH THAT THE ENCLOSED AREA DOES NOT EXCEED 150 SQUARE FEET. JOINT DEPTH SHALL NOT EXCEED ONE FOURTH OF SLAB DEPTH.
6. TOP OF CONCRETE SLABS SHALL BE MINIMUM 6" ABOVE FINISHED GRADE.
7. MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE AS FOLLOWS:

-FOOTINGS, GRADE BEAMS, AND WALLS	f'c = 2,500psi
-STRUCTURAL BEAMS, COLUMNS, AND WALLS	f'c = 4,000psi
-STRUCTURAL SLABS ("PAN DECK")	f'c = 3,000psi
-SLAB-ON-GRADE	f'c = 2,500psi

CONCRETE MIXES SHALL BE DESIGNED BY AN APPROVED TESTING LABORATORY CONCRETE PROPORTION SHALL COMPLY WITH CHAPTER 5 OF THE ACI-318.

UNLESS OTHERWISE APPROVED CONCRETE SLUMP SHALL NOT EXCEED 4 INCHES.

FLYASH SHALL NOT BE USED

AGGREGATES: NATURAL SAND AND ROCK AGGREGATES SHALL CONFORM TO ASTM 33.

ALL REINFORCING STEEL SHALL HAVE A LAP SPLICE PER MINIMUM REQUIREMENT OF ACI 318, UNLESS OTHERWISE NOTED.

SPLICES OF HORIZONTAL REINFORCING IN WALLS SHALL BE STAGGERED.

8. MINIMUM CONCRETE COVERAGE: THE FOLLOWING MINIMUM CLEAR DISTANCES BETWEEN ANY REINFORCING STEEL AND THE FACE OF CONCRETE SHALL BE MAINTAINED UNLESS OTHERWISE INDICATED.

-SLAB ON EARTH	1 INCH FROM TOP OF SLAB
-CURBS OR STEM WALLS	CENTER OF WALL
-WALLS ABOVE GRADE-EXTERIOR FACE	1 INCHES FOR #5 & SMALLER 2 INCHES FOR #6 AND LARGER
-WALL-INTERIOR FACE	1 INCH
-COLUMNS, PILASTER	1 INCHES
-CONCRETE BELOW GRADE PLACED AGAINST EARTH	3 INCHES

9. REINFORCING STEEL IN STRUCTURAL SLABS, WALLS AND FOOTINGS SHALL CONFORM TO ASTM A-615, GRADE 60.
10. ANCHOR BOLTS, DOWELS, INSERTS, ETC. SHALL BE SECURELY TIED IN PLACE PRIOR TO THE PLACING OF CONCRETE OR GROUT.
11. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C-150
12. WELDING OF REINFORCING STEEL SHALL CONFORM TO AWS D1.4 USING HYDROGEN ELECTRODES, WELDED REINFORCING STEEL SHALL CONFORM TO ASTM 706, GRADE 60 WELDING SHALL BE E70XX UNLESS OTHERWISE NOTED.
13. WHERE DRILLED ANCHORS ARE USED, COORDINATE POSITIONING WITH REINFORCING STEEL.
14. ALL CONCRETE REINFORCEMENT MUST BE SECURED AND SUPPORTED PRIOR TO CONCRETE PLACEMENT.
15. MINIMUM SUPPORT WITH 2" x 2" x 2" CONCRETE "DOBIES" WITH WIRE, OR EQUAL (SUBJECT TO APPROVAL ENGINEER OF RECORD.) MINIMUM PLACEMENT AT EVERY OTHER REINFORCING STEEL CROSSING.

SOIL DESIGN PARAMETERS

1. SOIL DESIGN PARAMETERS BASED ON VALUES PROVIDED IN 2022 CALIFORNIA BUILDING CODE, CHAPTER 18, TABLE 1806.2 PRESUMPTIVE LOAD-BEARING VALUES, TYPE 5 SOIL.
2. ALLOWABLE END BEARING PRESSURE: 1500psf
3. ALLOWABLE LATERAL BEARING PRESSURE: 100psf
4. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE.
5. A GEOTECHNICAL ENGINEER OR FIRM REPRESENTATIVE IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE SOIL DESIGN PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.
6. ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A REGISTERED ENGINEER.
7. ALL EXCAVATIONS MUST BE FREE OF WATER, LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE PLACEMENT.

CONSTRUCTION WASTE MANAGEMENT PLAN

1. RECYCLE OR SALVAGE FOR FUTURE USE A MINIMUM OF 65% OF THE NON HAZARDOUS CONSTRUCTION AND DEMOLITION WASTE.
2. THE FOLLOWING WASTE MANAGEMENT PLAN SHALL BE FOLLOWED BY THE CONTRACTOR AND UPDATED BY THE CONTRACTOR AS REQUIRED:

WASTE MATERIAL	DISPOSAL METHOD	DISPOSAL LOCATION
CLEAN WOOD SCRAP (NO PT WOOD, NO GLUED WOOD)	SEPARATION AND RECYCLE	WASTE MANAGEMENT RECYCLE FACILITY
CARDBOARD (PACKAGING ETC.)	SEPARATION AND RECYCLE	WASTE MANAGEMENT RECYCLE FACILITY
PLASTICS (PACKAGING, PIPE OFFCUTS ETC.)	SEPARATION AND RECYCLE	WASTE MANAGEMENT RECYCLE FACILITY
METALS (PACKAGING, PIPE OFFCUTS ETC.)	SEPARATION AND RECYCLE	WASTE MANAGEMENT RECYCLE FACILITY
CONCRETE (CLEAN, NO REBAR)	SEPARATION AND RECYCLE	WASTE MANAGEMENT RECYCLE FACILITY

3. THE PERCENTAGE OF WASTE MATERIAL DIVERTED FROM LANDFILL SHALL BE CALCULATED BY VOLUME (CU FT).
4. THE CONTRACTOR SHALL EMPLOY COST EFFICIENT CONSTRUCTION PRACTICES TO REDUCE THE GENERATION OF WASTE DURING THE CONSTRUCTION PROCESS.
5. CONTRACTOR TO PROVIDE DOCUMENTATION OF WASTE DIVERSION WEIGHT TO ENFORCING AGENCY AT COMPLETION OF PROJECT.

WILDLAND/URBAN INTERFACE

CHAPTER 7A OF THE 2022 CBC - WILDLAND URBAN INTERFACE FIRE RESISTANCE APPLIES TO THIS PROJECT, SEE FIRE RESISTANCE AND FIRE SPRINKLER.

FIRE SPRINKLER NOTES

1. RESIDENTIAL FIRE SPRINKLERS ARE NOT REQUIRED FOR THIS PROJECT

FIRE RESISTANCE NOTES

1. EXTERIOR WINDOWS, WINDOW WALLS, GLAZED DOORS AND GLAZED OPENINGS WITHIN EXTERIOR DOORS SHALL BE INSULATING GLASS UNITS WITH A MINIMUM OF ONE TEMPERED PANE OR GLASS BLOCK UNITS OR HAVE A FIRE RESISTIVE RATING OF NOT LESS THAN 20 MINUTES OR BE TESTED TO MEET THE PERFORMANCE REQUIREMENTS OF SFM STANDARD 12-7A-2 PER CBC 708A.2.1
2. EXTERIOR DOOR ASSEMBLIES SHALL CONFORM TO THE PERFORMANCE REQUIREMENTS FOR STANDARD SFM 12-7A-1 OR THE EXTERIOR SURFACE OR CLADDING SHALL BE OF NONCOMBUSTIBLE OR IGNITION RESISTANT MATERIAL NOT LESS THAN 1 3/8" THICK WITH RAISED PANEL THICKNESS OF NOT LESS THAN 1 1/4" THICK EXCEPT FOR THE EXTERIOR PERIMETER OF THE RAISED PANEL THAT MAY TAPER TO A TONGUE NOT LESS THAN 3/8" THICK OR SHALL HAVE A FIRE RESISTANCE RATING OF NOT LESS THAN 20 MINUTES PER CBC 708A
3. ROOF CONSTRUCTION MUST COMPLY WITH CBC 705A VALLEY FLASHING MUST COMPLY WITH CRC SECTION R327.5.3. ROOF GUTTERS SHALL BE PROVIDED WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS IN THE GUTTER.
4. VENTILATION OPENING FOR ATTIC SPACES AND UNDER FLOOR AREAS SHALL BE COVERED BY A NON COMBUSTIBLE, CORROSION RESISTANT MESH MATERIAL WITH OPENING SIZES A MIN. OF 1/16" AND MAX. 1/8" PER CBC 706A. UNLESS THE ATTIC SPACE IS PROTECTED BY AN APPROVED FIRE SPRINKLER SYSTEM OR UNLESS THE ATTIC VENTS ARE LOCATED MORE THAN 12' FROM THE GROUND, WALKING SURFACE OR DECK OR SIMILAR SURFACE, EAVE VENTS SHALL BE APPROVED TO RESIST THE INTRUSION OF FLAME AND BURNING EMBERS INTO THE ATTIC SPACE.
5. EXTERIOR WALL COVERINGS SHALL BE AN APPROVED NON COMBUSTIBLE OR IGNITION RESISTANT MATERIAL PER CBC 707A. THE EXTEND ROOF DECK ON THE UNDERSIDE OF ROOF EAVES SOFFITS, EXTERIOR PORCH CEILINGS. THE UNDERSIDE OF FLOOR PROJECTIONS OVER EXTERIOR WALLS AND THE UNDERSIDE OF ELEVATED OR OVERHANGING FLOORS SHALL BE OF A NON COMBUSTIBLE MATERIAL OR AN IGNITION RESISTANT MATERIAL.
6. DECKING SURFACES OF DECKS, PORCHES, BALCONIES AND STAIRS LOCATED WITHIN 10' OF THE BUILDING SHALL COMPLY WITH CBC 709A AND BE OF AN IGNITION RESISTANT MATERIAL, EXTERIOR FIRE RETARDANT TREATED WOOD OR A NON COMBUSTIBLE MATERIAL.

PROJECT DESIGN DATA

GENERAL INFORMATION:	
RISK CATEGORY	=II
ROOF LIVE LOAD	=20 PSF
ALLOWABLE SOIL BEARING CAPACITY	=1500 PSF
SNOW LOAD:	
ELEVATION	± 3650'
GROUND SNOW LOAD	Pg =60 PSF
WIND DATA:	
BASIC WIND SPEED	V=95 MPH
EXPOSURE CATEGORY	B
SEISMIC DATA:	
SEISMIC IMPORTANCE FACTOR	I=1.0
SPECTRAL RESPONSE ACCELERATION (SHORT PERIOD)	S_s=0.385
SPECTRAL RESPONSE ACCELERATION (1S)	S_1=0.183
SPECTRAL RESPONSE COEFFICIENT (SHORT PERIOD)	S_{ds}=0.383
SPECTRAL RESPONSE COEFFICIENT (1S)	S_{d1}=0.273
ANALYSIS PROCEDURE	EQVLNT. LTRL. FORCE
SEISMIC DESIGN CATEGORY	D
SEISMIC FORCE RESISTING SYSTEM	CANTILEVERED COLUMN, TIMBER FRAME
SEISMIC RESPONSE COEFFICIENT	Cs=0.26
RESPONSE MODIFICATION FACTOR	R=1.5

Land & Structure
SURVEYING | ENGINEERING | DESIGN
105 SOUTH STEWART STREET, SONORA, CALIFORNIA, 95370 T: 209 532 5173 F: 209 532 5220

REVISIONS:

rev	date	description

OWNER INFORMATION:

T.H.C.S.D.
P.O.Box 649
Twain Harte CA 95383
Tom Trott G.M.
(209) 586-3172

SITE INFORMATION:

Meadow Drive
Twain Harte CA 95383
APN# 049-132-019

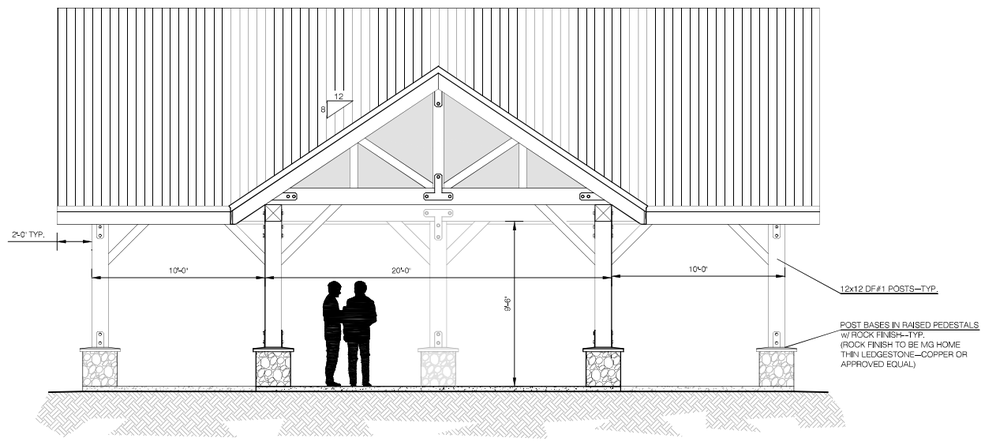
PROJECT INFORMATION:

A Pavilion Plan for:
Twain Harte Comm. Serv. Dist.
Meadow Drive
Twain Harte CA 95383

ENGINEER OF RECORD:

REGISTERED PROFESSIONAL ENGINEER No. 69043 EXP. 06/30/24 CIVIL STATE OF CALIFORNIA
06-06-23

ISSUE DATE:	6-6-23
DRAWN BY:	KTQ
CHECKED BY:	ZPG
SCALE:	1/4"=1'-0"
DRAWING:	pavilion
PROJECT NO:	22-07.11
SHEET: 1	OF: 5



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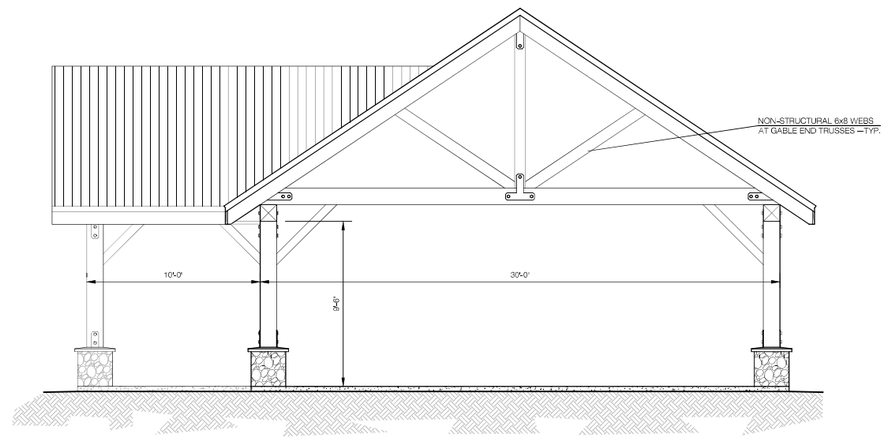
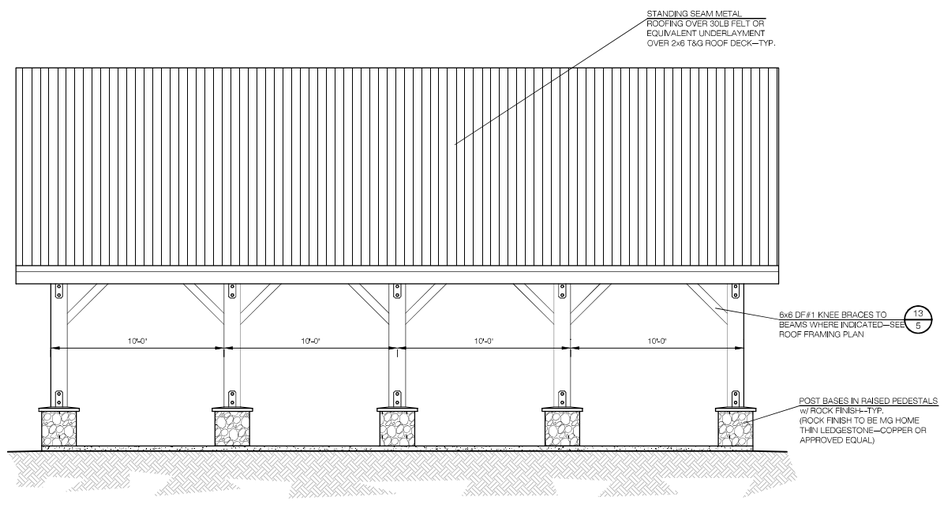
FRONT ELEVATION VIEW

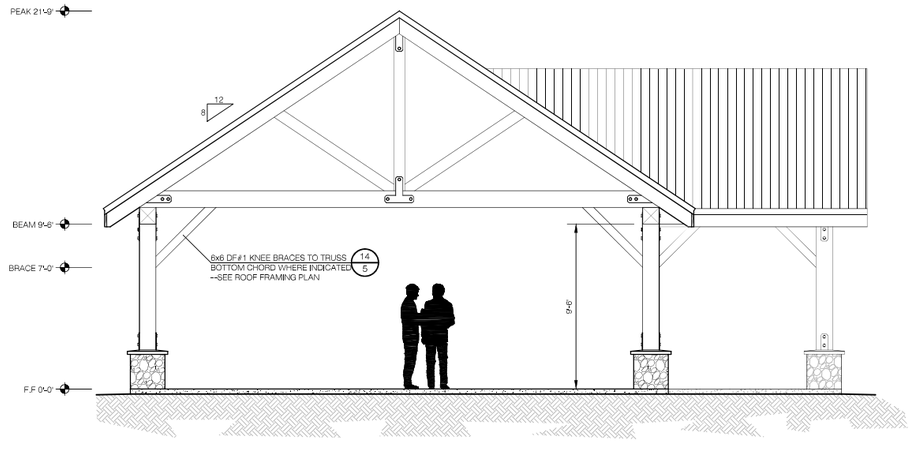


RIGHT ELEVATION VIEW



SCALE: 1/4"=1'-0"

REAR ELEVATION VIEW



LEFT ELEVATION VIEW

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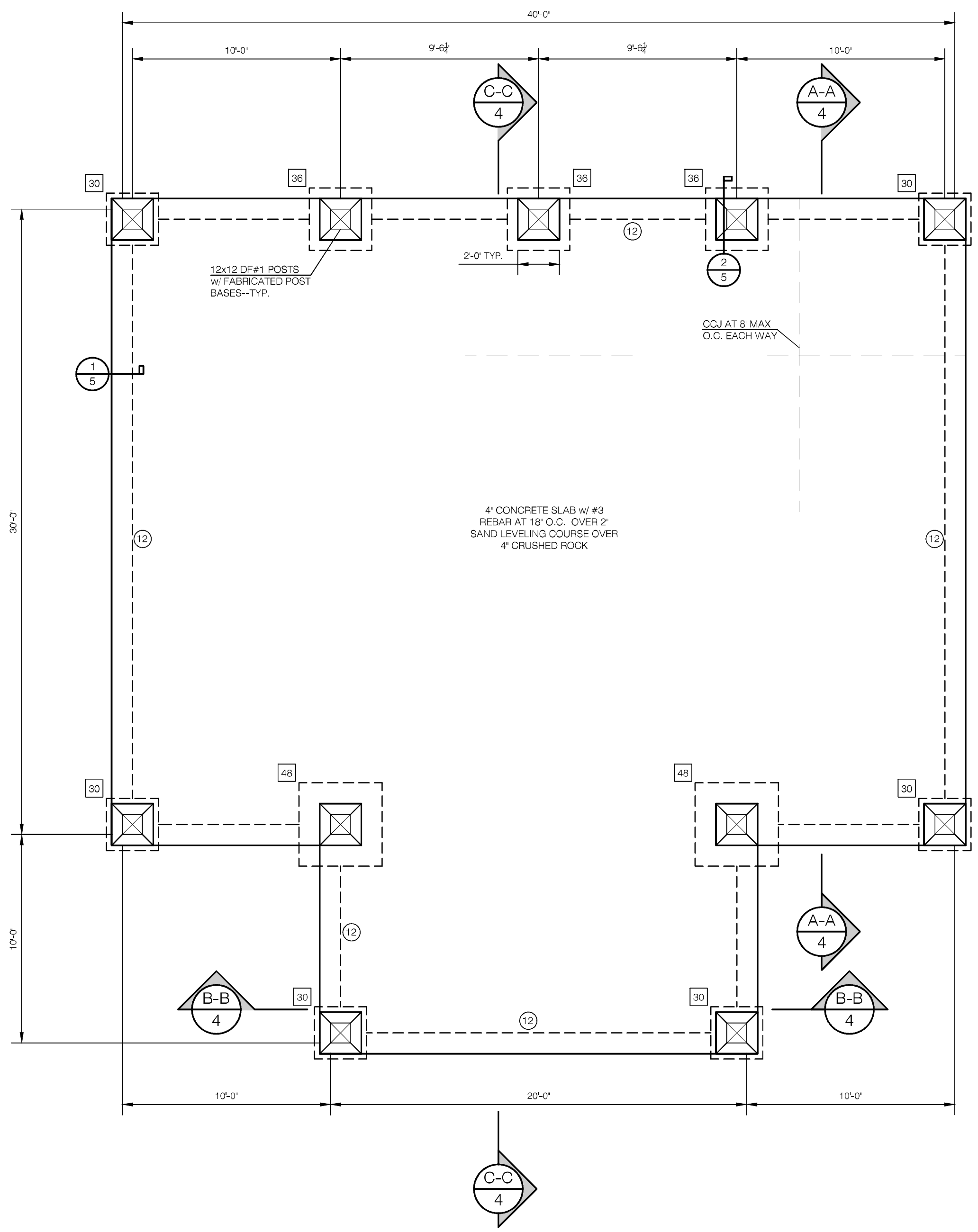

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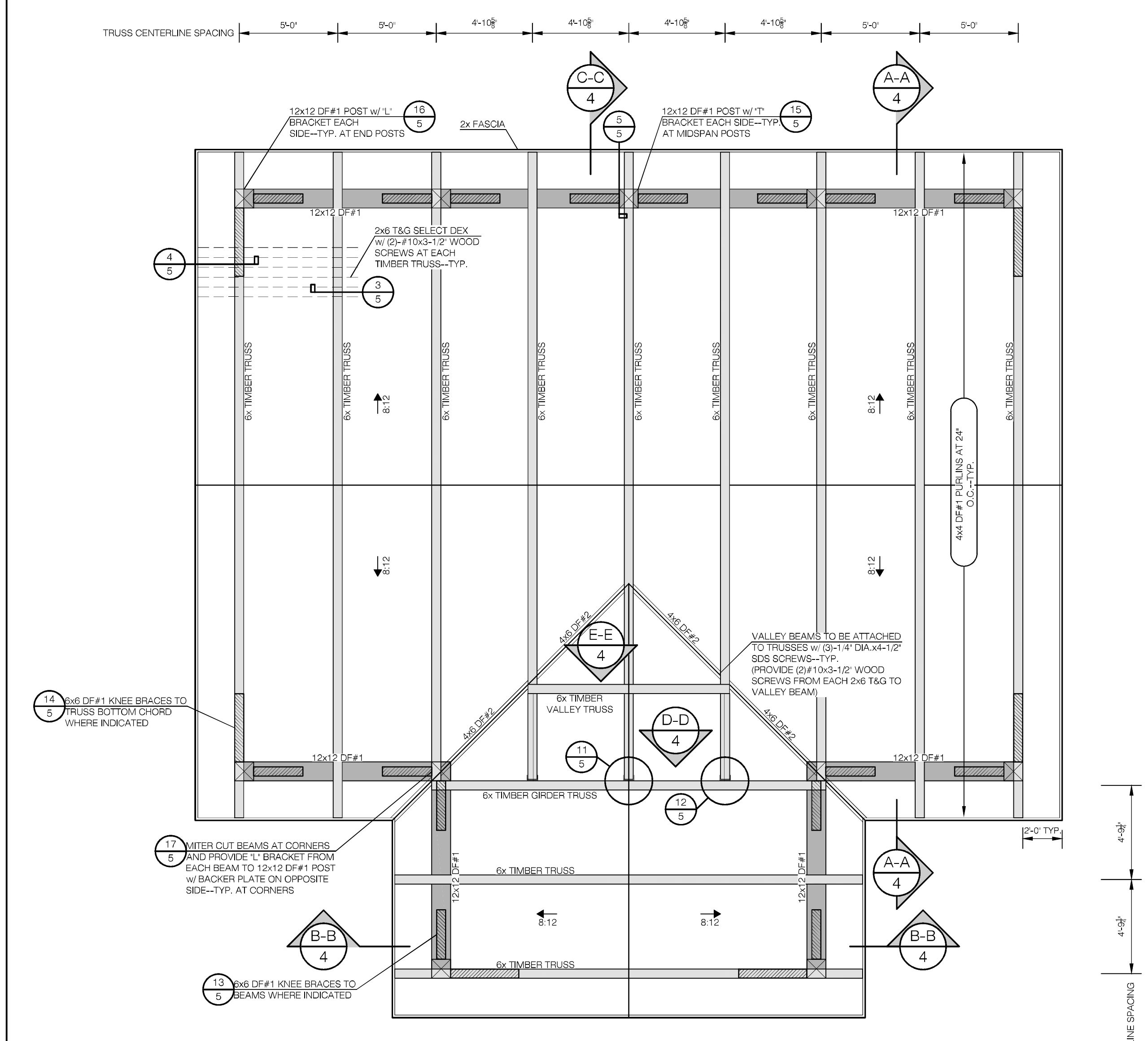

NOTE: ALL FABRICATED STEEL CONNECTORS AND BOLTS TO BE POWDER COATED BLACK

NOTE: ALL STEEL PLATES/BRACKETS TO BE A36

NOTE: ALL MILLED LUMBER SHALL BE GRADED

NOTE: ALL EXPOSED LUMBER SHALL BE STAINED w/ ARMSTRONG-CLARK DECK AND WOOD STAIN--ESPRESSO (OR APPROVED EQUAL)

SCALE: 1/4"=1'-0"

FOUNDATION PLAN

ROOF FRAMING PLAN

FOOTING SCHEDULE

(12) 1'-0" WIDE x 1'-0" DEEP THICKENED EDGE WITH #4 CONTINUOUS AT BOTTOM

PIER PAD SCHEDULE

[30] 2'-6" SQUARE x 1'-6" DEEP PIER PAD WITH (3)-#4 EACH WAY AT TOP AND BOTTOM

[36] 3'-0" SQUARE x 1'-6" DEEP PIER PAD WITH (4)-#4 EACH WAY AT TOP AND BOTTOM

[48] 4'-0" SQUARE x 1'-6" DEEP PIER PAD WITH (5)-#4 EACH WAY AT TOP AND BOTTOM

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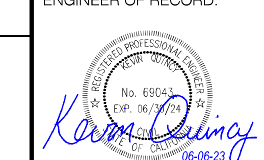

ISSUE DATE: *6-6-23*

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CHECKED BY: *ZPG*

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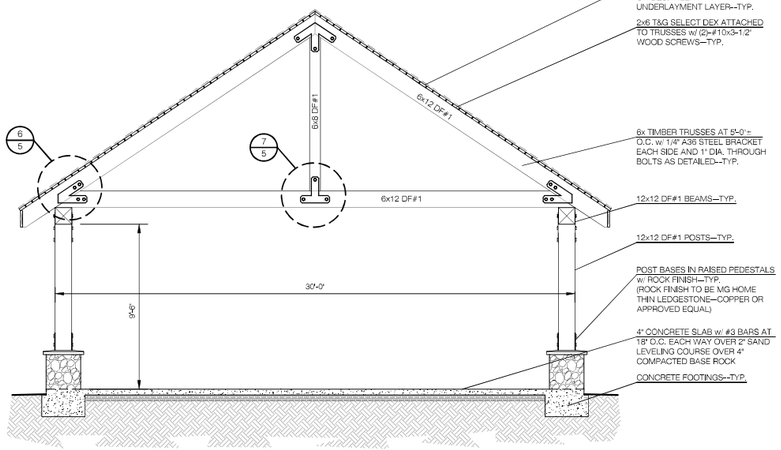
DRAWING: *pavilion*

PROJECT NO: *22-07.11*

SHEET: 3 OF: 5



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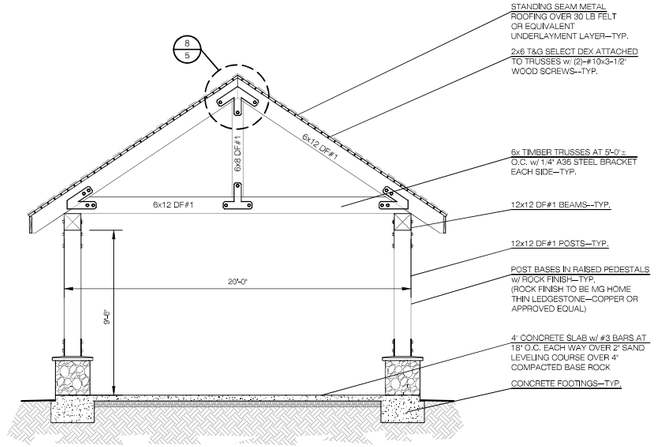
CROSS SECTION A-A



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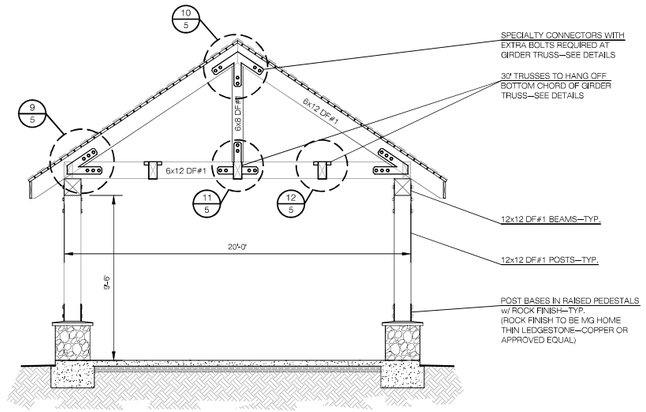
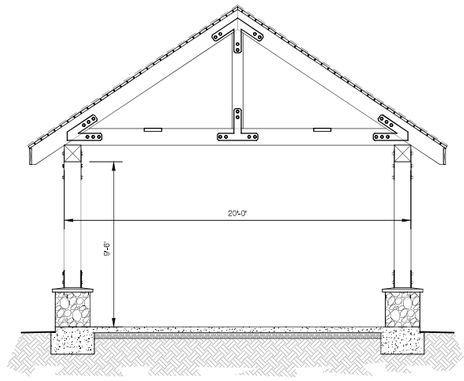
CROSS SECTION B-B



SIDE VIEW WITH TIMBER TRUSSES ATTACHMENT



SIDE VIEW OPPOSITE OF TIMBER TRUSSES ATTACHMENT

SCALE: 1/4"=1'-0"

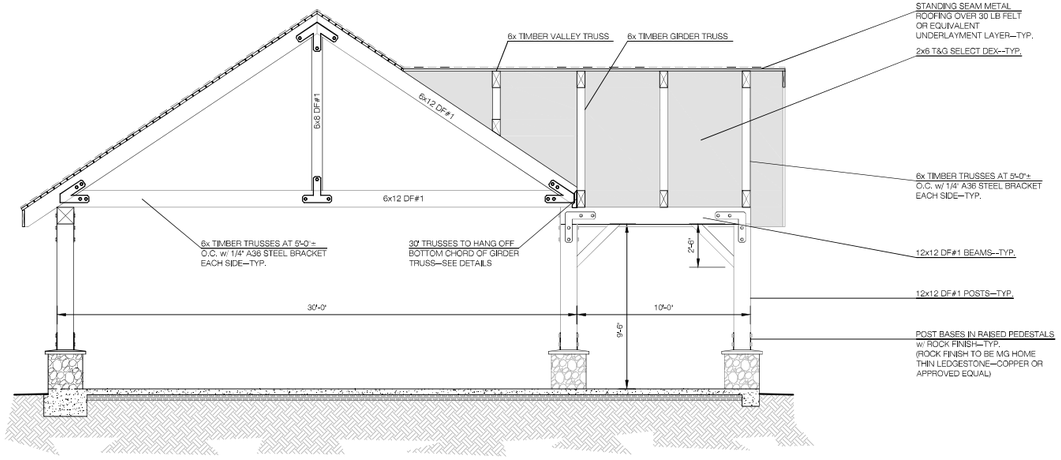
CROSS SECTION D-D (20' GIRDER TRUSS)

NOTE: ALL FABRICATED STEEL CONNECTORS AND BOLTS TO BE POWDER COATED BLACK

NOTE: ALL STEEL PLATES/BRACKETS TO BE A36

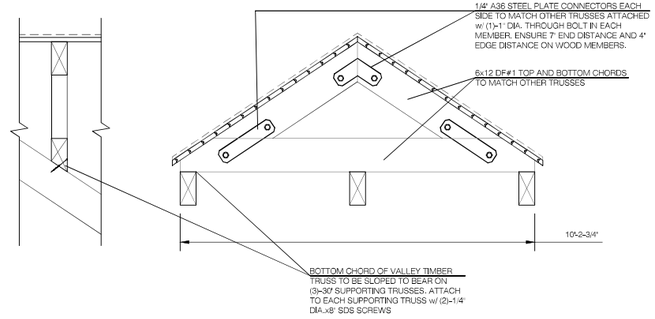
NOTE: ALL MILLED LUMBER SHALL BE GRADED

NOTE: ALL EXPOSED LUMBER SHALL BE STAINED w/ ARMSTRONG-CLARK DECK AND WOOD STAIN--ESPRESSO (OR APPROVED EQUAL)



SCALE: 1/4"=1'-0"

CROSS SECTION C-C



SCALE: 1/2"=1'-0"

CROSS SECTION E-E (VALLEY TRUSS)

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Meadow Drive
Twain Harte CA 95383

ENGINEER OF RECORD:

REGISTERED PROFESSIONAL ENGINEER
KEVIN C. QUINCY
No. 69045
EXP. 06/30/24
STATE OF CALIFORNIA
06-06-23

ISSUE DATE:	*6-6-23*
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DRAWING:	*pavilion*
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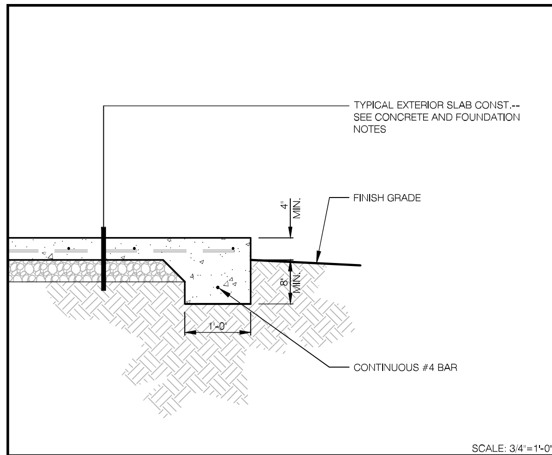
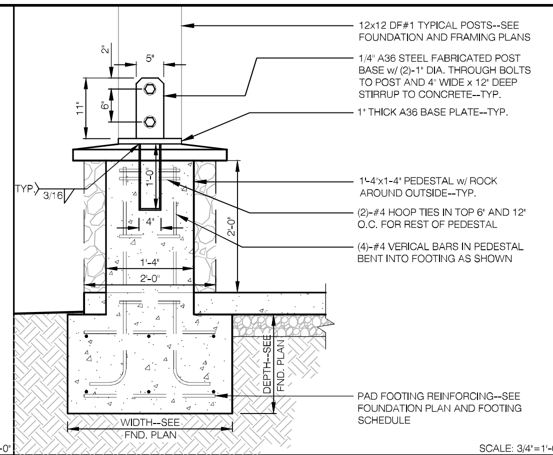
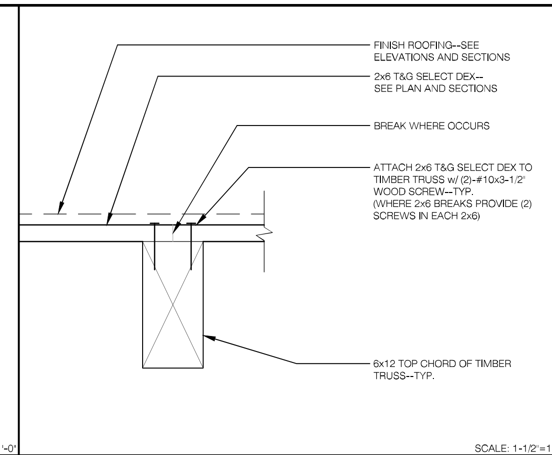


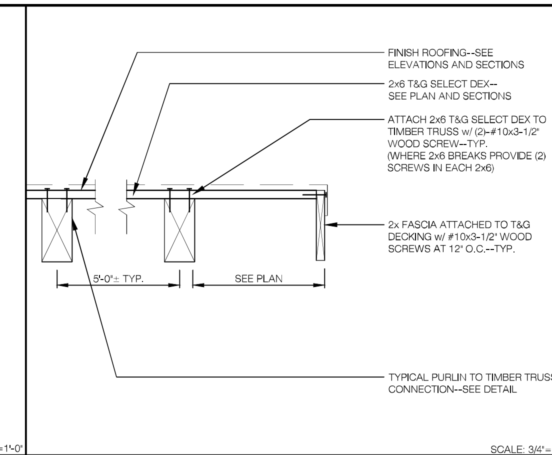
1 TYP. THICKENED SLAB EDGE



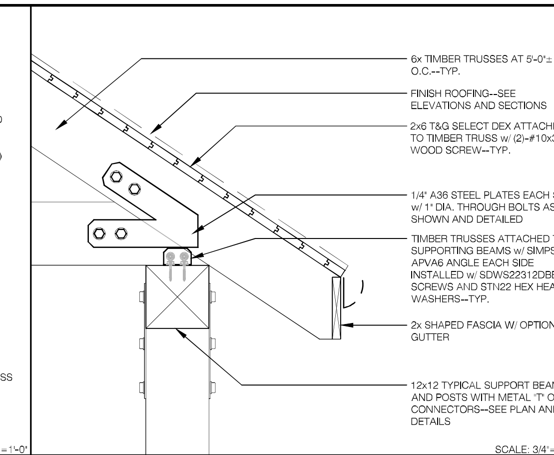
2 PAVILION FOOTING



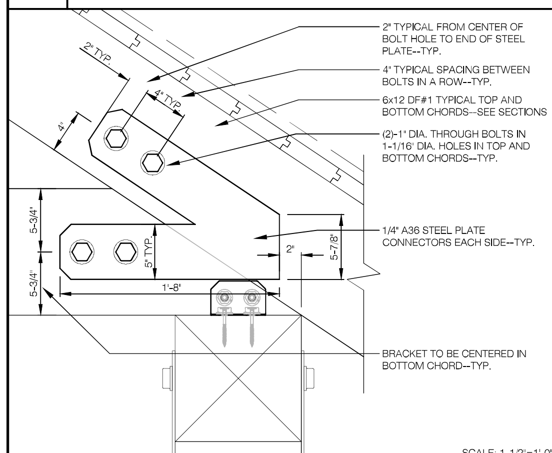
3 T&G ATTACHMENT TO TRUSS



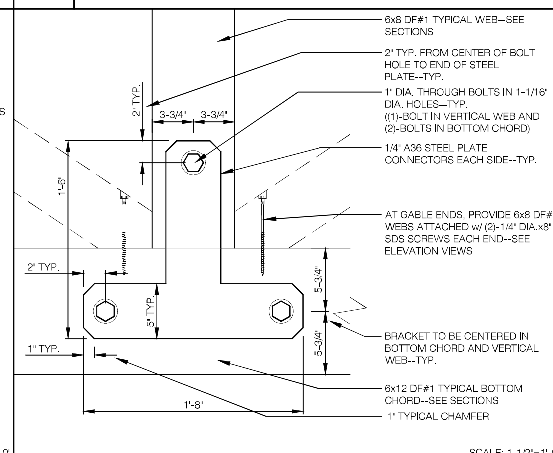
4 GABLE END OVERHANG



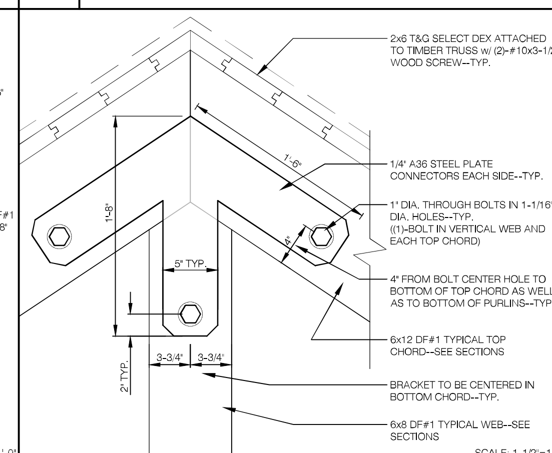
5 TYP. TIMBER TRUSS AT EAVE



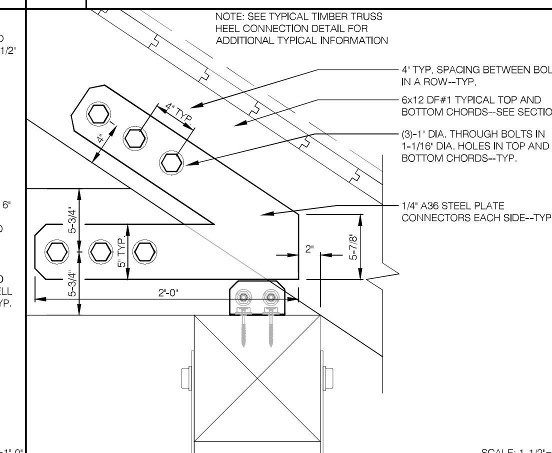
6 TYP. TIMBER TRUSS HEEL CONN.



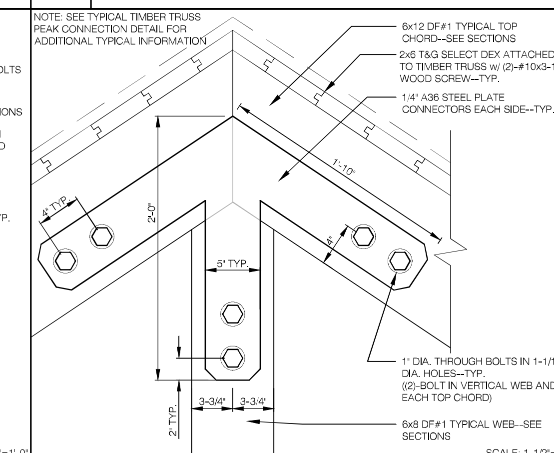
7 TYP. TIMBER TRUSS WEB CONN.



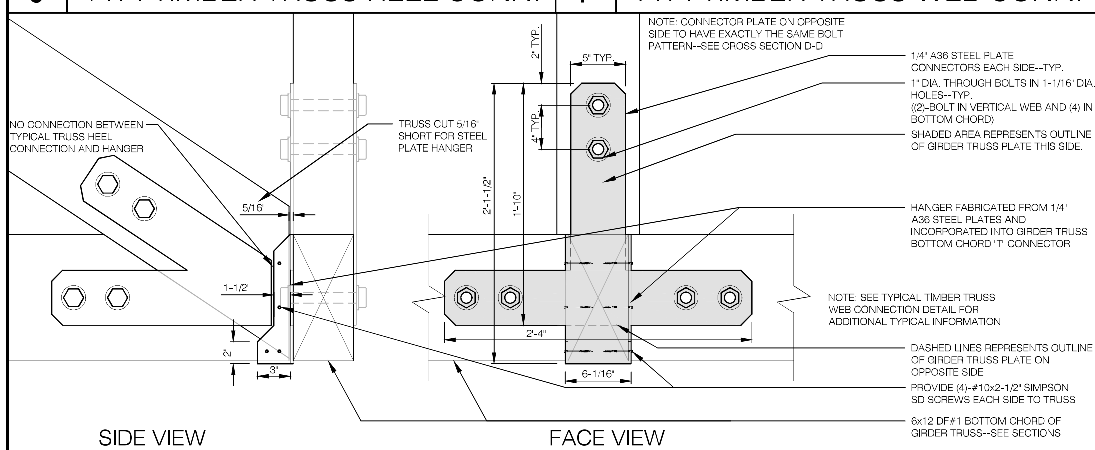
8 TYP. TIMBER TRUSS PEAK CONN.



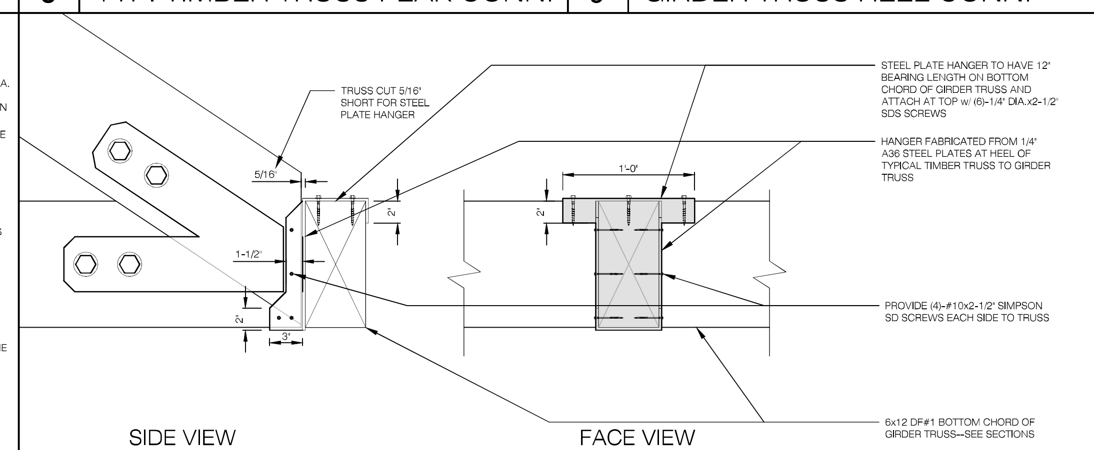
9 GIRDER TRUSS HEEL CONN.



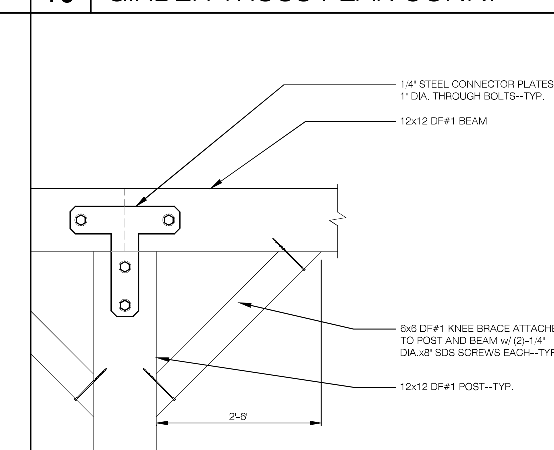
10 GIRDER TRUSS PEAK CONN.



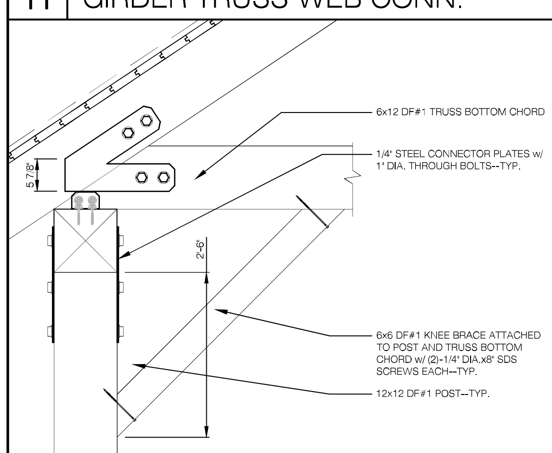
11 GIRDER TRUSS WEB CONN.



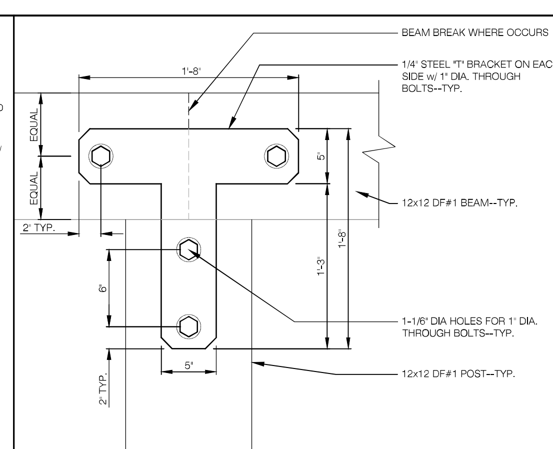
12 TYPICAL TRUSS TO GIRDER TRUSS



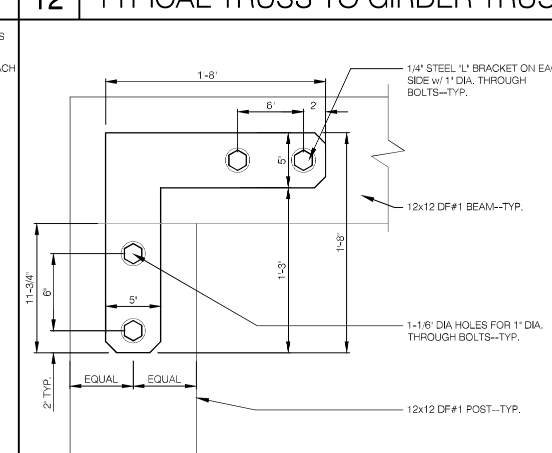
13 KNEE BRACE TO BEAM



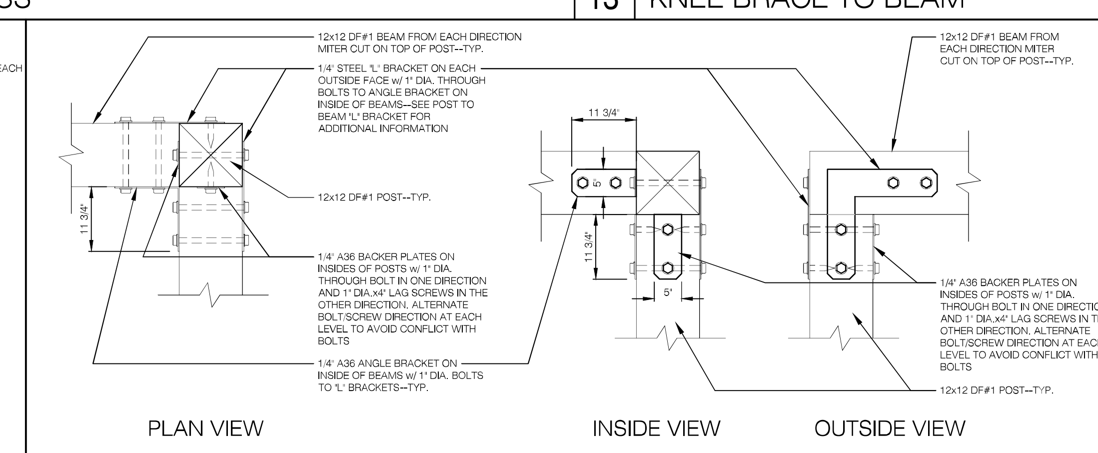
14 KNEE BRACE TO TRUSS



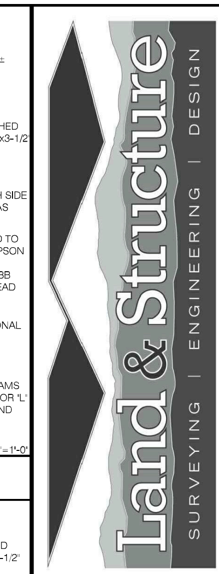
15 POST TO BEAM "T" CONNECTOR



16 POST TO BEAM "L" CONNECTOR



17 POST TO BEAM "L" CONNECTOR AT CORNER



105 SOUTH STEWART STREET, SONORA, CALIFORNIA, 95370 T: 209.532.5173 F: 209.532.5220

REVISIONS:

rev	date	description

OWNER INFORMATION:

T.H.C.S.D.
P.O.Box 649
Twain Harte CA 95383
Tom Trott G.M.
(209) 586-3172

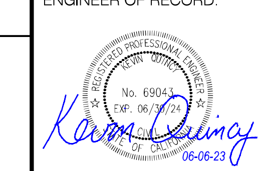
SITE INFORMATION:

Meadow Drive
Twain Harte CA 95383
APN# 049-132-019

PROJECT INFORMATION:

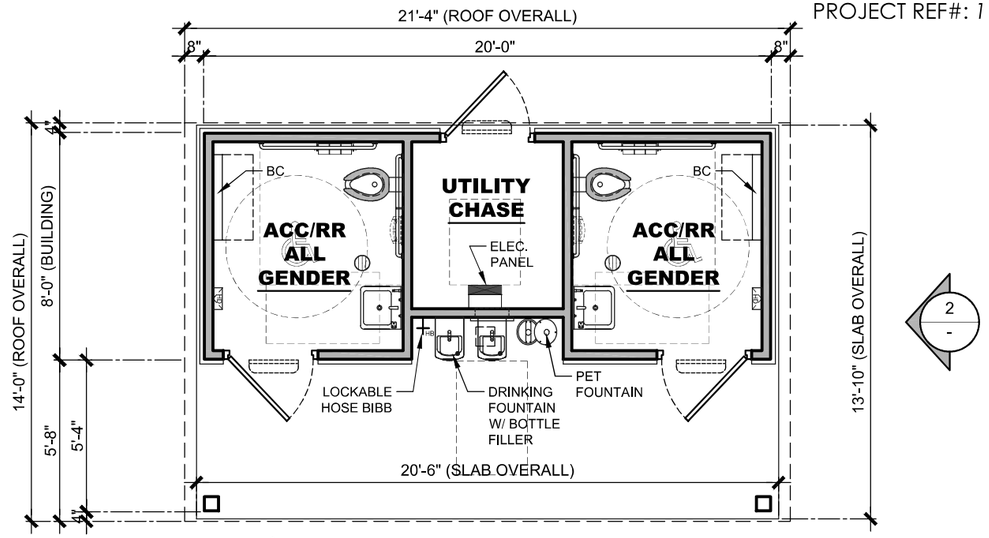
A Pavilion Plan for:
Twain Harte Comm. Serv. Dist.
Meadow Drive
Twain Harte CA 95383

ENGINEER OF RECORD:



ISSUE DATE: 6-6-23
DRAWN BY: KTQ
CHECKED BY: ZPG
SCALE: 1/4"=1'-0"
DRAWING: pavilion
PROJECT NO: 22-07.11
SHEET: 5 OF: 5

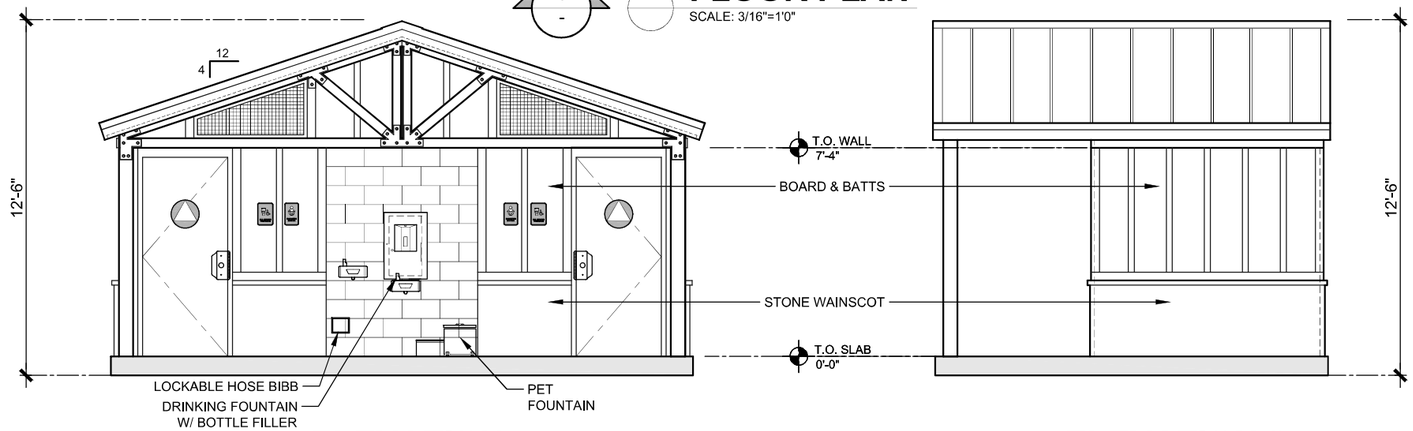
PROJECT REF#: *11613A-4/25/2023-0*



1
-

FLOOR PLAN

SCALE: 3/16"=1'0"



ELEVATION 1

SCALE:3/16"=1'-0"

ELEVATION 2

SCALE:3/16"=1'-0"

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BUILDING TYPE: **RESTROOM BUILDING 'A'**	REVISION # **-**	REVISION DATE:	SHEET# **-**
PROJECT: **TWAIN HARTE MEADOWS, TWAIN HARTE, CA**	PROJECT #: **11613A**	DRAWN BY:	MAX. PERSON / HOUR: **90 S**
		START DATE: **4/25/2023**	
		DRAWN BY: EOR	

~NOT FOR CONSTRUCTION ~ PRELIMINARY DESIGN DRAWING ONLY ~ DO NOT SCALE, DIMENSIONS PRESIDE

OWNER / GENERAL CONTRACTOR AND PUBLIC RESTROOM COMPANY RESPONSIBILITIES

PUBLIC RESTROOM COMPANY RESPONSIBILITIES:

1. PROVIDE FULL ARCHITECTURAL PLANS AND ENGINEERING CALCULATIONS, STAMPED BY STATE GOVERNING AGENCY SUITABLE FOR GENERAL CONTRACTOR TO FILE FOR REQUIRED BUILDING PERMIT.
2. FURNISH AND INSTALL UNDERGROUND UTILITIES UNDER SLAB (INCLUDING TRENCHING) EXTENDING 6 FEET MAX. BEYOND THE BUILDING LINE, MIN. OF 24" - MAX OF 36" BELOW GRADE.
3. FURNISH AND INSTALL SLAB TO FOUNDATION ANCHORS PER DETAILS INCLUDED HEREIN. APPLICABLE ONLY TO BUILDINGS WITH FOUNDATIONS.

GENERAL NOTES:

1. THE DIFFERENCE IN THE ELEVATION BETWEEN THE FINISH FLOOR OF THE BUILDING AT EXTERIOR DOORS AND THE SIDEWALK OUTSIDE IS 1/4" MAX. PRC RECOMMENDS SIDEWALK TO BE FLUSH WITH FINISH FLOOR AT ALL DOORS.
2. THE PLAN & DETAILS HEREIN ARE SPECIFIC TO THE BUILDING SIZE AND MODULE CONFIGURATION OF THIS BUILDING MODEL.

OWNER / GENERAL CONTRACTOR RESPONSIBILITIES:

1. PREPARE BUILDING PAD AND OR FOUNDATION.
2. PROVIDE SITE PLAN & ENGINEERED FOUNDATION PLAN (IF APPLICABLE) AND ATTACH IT TO THE PUBLIC RESTROOM COMPANY'S DEPARTMENT OF HOUSING APPROVED DOCUMENTS AND OBTAIN NECESSARY PERMITS FROM LOCAL JURISDICTION.
3. VERIFY AND SCHEDULE NECESSARY INSPECTIONS WITH LOCAL JURISDICTION FOR SITE PERFORMED WORK BY OTHERS, AND FOR UNDER BUILDING SLAB PLUMBING CONNECTIONS MADE BY PRC.
4. COORDINATE SEWER INVERT ELEVATION WITH THE PUBLIC RESTROOM COMPANY PRIOR TO BUILDING INSTALLATION, VERIFY & COORDINATE LOCATION OF EXISTING UTILITIES INCLUDING WATER METER SIZE, TYPE, AND LOCATION OF EXISTING UTILITIES COMING INTO THE BUILDING SUPPLIED BY PRC
5. MAKE FINAL UTILITY CONNECTIONS (INCLUDING NECESSARY UTILITY BOXES).
6. PREPARE SITE FOR MINIMUM ALLOWABLE SOIL BEARING PRESSURE OF 1,500 psf, WITH SUB-GRADE COMPACTED TO 90% M.D.D.
7. SUPPLY AND STOCK PILE REQUIRED QUANTITY OF COARSE MASON SAND WITHIN BUILDING PROXIMITY FOR USE BY PRC FOR UTILITY TRENCH BACKFILL.
8. PROJECTS WITH FOOTINGS: PROVIDE SLEEVES IN FOOTINGS ACCORDING TO UTILITY LOCATION PLAN AND PAD / FOUNDATION PLAN DIRECTION.

GENERAL SITE CONDITION LIABILITY NOTE:

PUBLIC RESTROOM COMPANY (PRC) PROVIDES BUILDING PAD / FOUNDATION PLAN DRAWINGS FOR PLACEMENT OF OUR BUILDING ON SITE FOUNDATIONS / PADS FOR **REFERENCE ONLY**. PRC DRAWINGS DO NOT INCORPORATE SITE DESIGN FOR LOCAL CODES, SOILS CONDITIONS, FOOTING REQUIREMENTS, AND / OR ANY OTHER CONTRIBUTING SITE FACTORS UP TO AN INCLUDING HIGH WATER TABLES. IT IS THE RESPONSIBILITY OF THE OWNER / GENERAL CONTRACTOR TO PROVIDE A PROPER SITE DESIGN TO ACCOMMODATE THE BUILDING AS WELL AS PROVIDE PROPER SITE CRITERIA SO PRC MAY MODEL SEWER, WATER, AND ELECTRICAL DESIGNS WITHIN THE BUILDING. OUR BUILDING DESIGN INCLUDES AN 8" THICK REINFORCED CONCRETE SLAB AND ASSUMES FULL SLAB BEARING ON SOILS WITH A MINIMUM OF 1500 PSF BEARING CAPACITY. OUR BUILDING DESIGNS SURCHARGE THE SOIL BENEATH THE MAT SLAB AT APPROXIMATE 208 PSF. ANY BUILDING FOUNDATION IN ADDITION TO THE INTEGRAL MAT SLAB ARE SHOWN FOR **REFERENCE ONLY** AND SHOULD BE VERIFIED BY A LICENSED SOILS ENGINEER TO CONFORM WITH REQUIRED CODES.
PRC ASSUMES NO LIABILITY FOR THE OWNER OR GENERAL CONTRACTOR ACCEPTANCE OF THESE TYPICAL DRAWINGS WITHOUT VERIFICATION BY A LICENSED SOILS / FOUNDATION ENGINEER.

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BUILDING TYPE: **RESTROOM BUILDING**	DATE: -	DRAWN BY: -
	PROJECT #: -	
PROJECT: -	SHEET: **FD-1**	
	1 OF 4	

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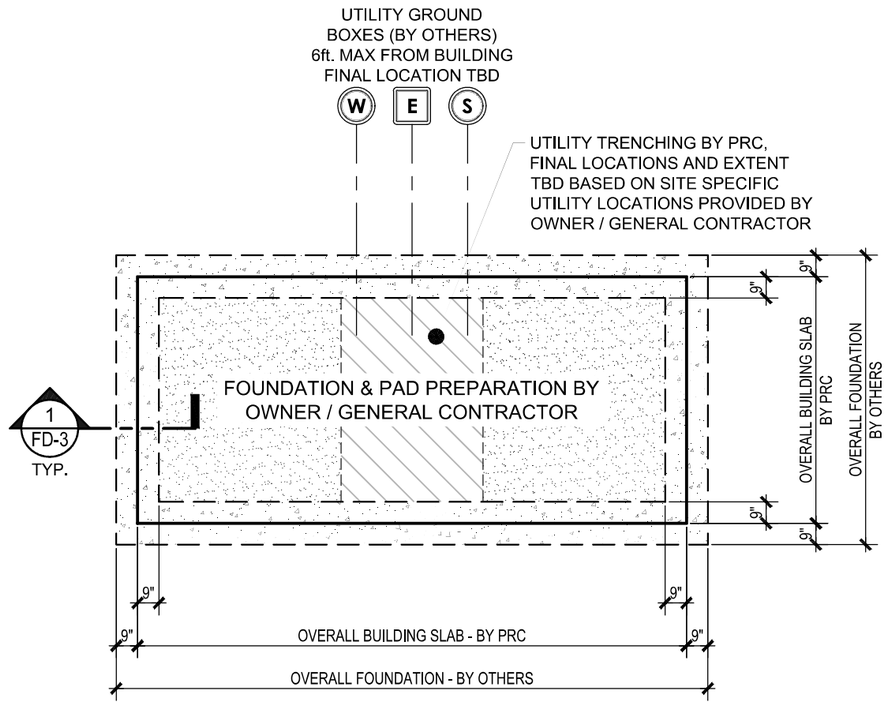
NOTES:

1. **BOTTOM OF PRE-FAB BLDG. MANUFACTURERS SLAB IS DEAD FLAT. TOP OF FOOTINGS & COMPACTED BACK FILL MUST BE DEAD LEVEL. POUR FOOTING WITH LASER TRANSIT TO VERIFY TOP OF FOOTING. IF SHIM PLATES ARE REQUIRED A CHANGE ORDER IS REQUIRED.**
2. **REQUIRED ALLOWABLE SOIL BEARING PRESSURE = 1500 PSF; FIELD VERIFIED BY OTHERS**



1 FD-2 **EXAMPLE FOUNDATION / PAD PREPARATION PLAN**

SCALE: NOT TO SCALE

EXAMPLE FOR REFERENCE ONLY

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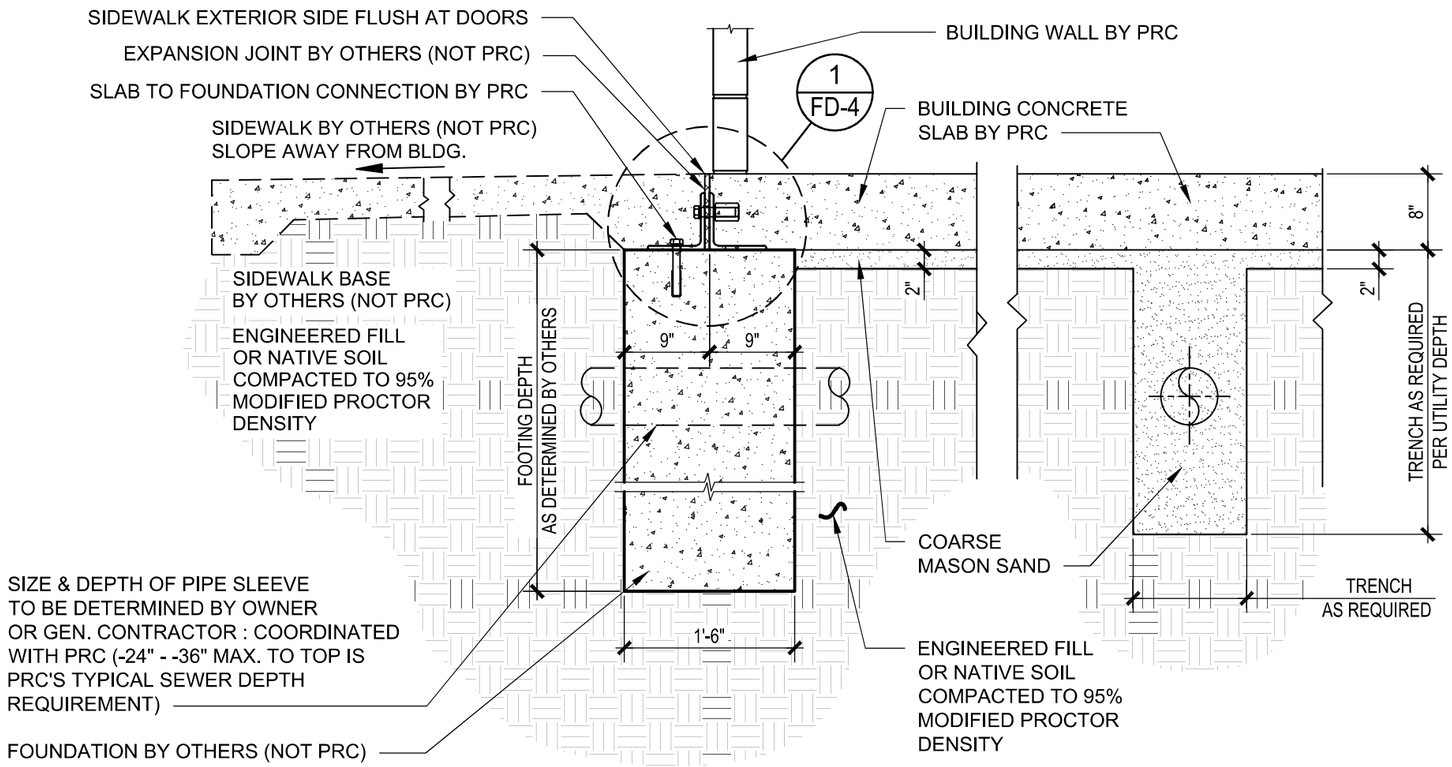
BUILDING TYPE: **RESTROOM BUILDING**	DATE: -	DRAWN BY: -
	PROJECT #: -	
PROJECT: -	SHEET: 2 OF 4	**FD-2**

NOTES:

1. **BOTTOM OF PRE-FAB BLDG. MANUFACTURERS SLAB IS DEAD FLAT. TOP OF FOOTINGS & COMPACTED BACK FILL MUST BE DEAD LEVEL. POUR FOOTING WITH LASER TRANSIT TO VERIFY TOP OF FOOTING. IF SHIM PLATES ARE REQUIRED A CHANGE ORDER IS REQUIRED.**

2. **REQUIRED ALLOWABLE SOIL BEARING PRESSURE = 1500 PSF; FIELD VERIFIED BY OTHERS**



1 / FD-3 **TYPICAL FOUNDATION SECTION DETAIL**

SCALE: NOT TO SCALE

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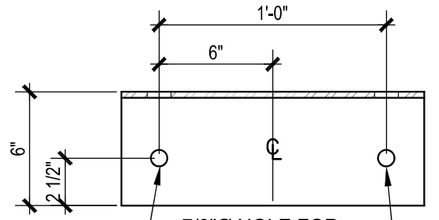
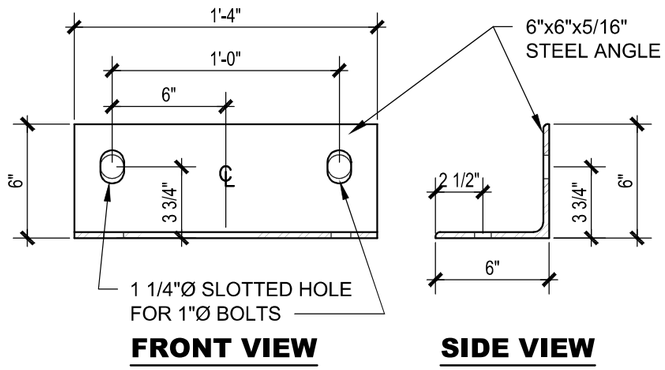
BUILDING TYPE: **RESTROOM BUILDING**	DATE: -	DRAWN BY: -
	PROJECT #: -	
PROJECT: -	SHEET: 3 OF 4	**FD-3**

~NOT FOR CONSTRUCTION ~ PRELIMINARY DESIGN DRAWING ONLY ~ DO NOT SCALE, DIMENSIONS PRESIDE

NOTE:
QUANTITY AND LOCATIONS OF ANCHORS TO BE DETERMINED BY PRC ENGINEER

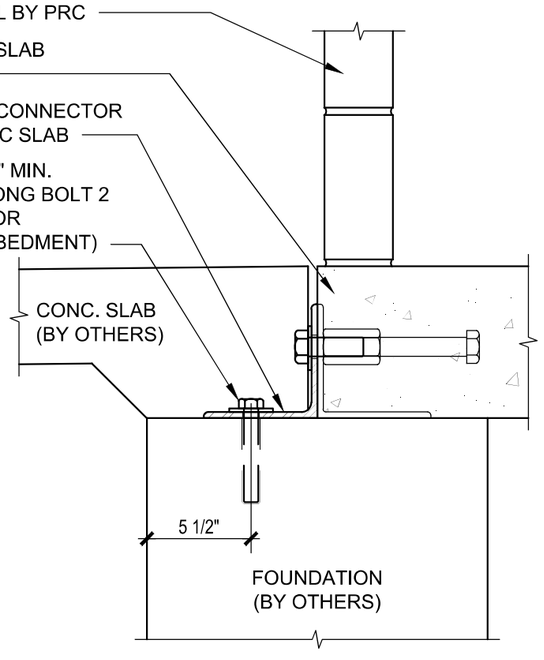


TOP VIEW



FRONT VIEW

SIDE VIEW



1
FD-4

SLAB TO FOUNDATION ANCHOR DETAIL (BY PRC)

SCALE: NOT TO SCALE

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Ph: 888-888-2060 | Fax: 888-888-1448

BUILDING TYPE: **RESTROOM BUILDING**	DATE: -	DRAWN BY: -
PROJECT: -	PROJECT #: -	
	SHEET: 4 OF 4	**FD-4**

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PART IX
APPENDIX

INDEX

APPENDIX A
Caltrans Standard Drawings – Curbs and ADA Ramps

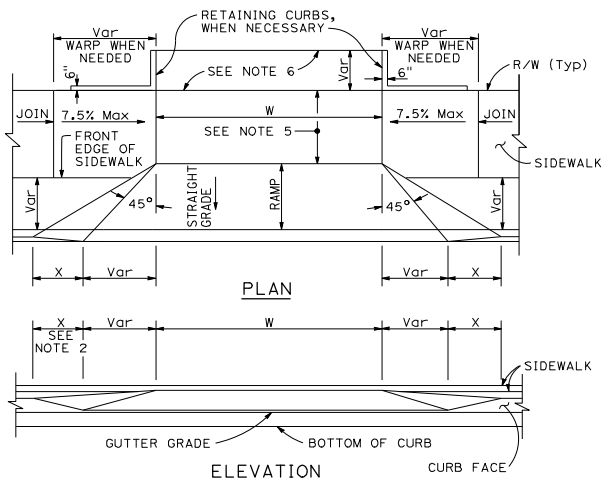
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

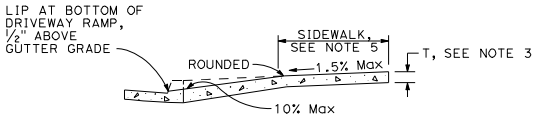
H. David Cordova
REGISTERED CIVIL ENGINEER

August 1, 2022
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

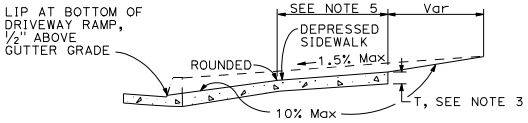
REGISTERED PROFESSIONAL ENGINEER — Hector David Cordova — No. C41957 — Exp. 3-31-24 — CIVIL — STATE OF CALIFORNIA





CASE A

Typical driveway, sidewalk not depressed



CASE B

Driveway with depressed sidewalk

SECTIONS

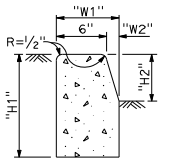
TABLE A

CURB TYPE	DIMENSIONS			
	"H1"	"H2"	"W1"	"W2"
A1-6	1'-2"	6"	7½"	1½"
A1-8	1'-4"	8"	8"	2"
A2-6	1'-0"	6"	2'-7½"	1½"
A2-8	1'-2"	8"	2'-8"	2"
A3-6	6"	5"	7¼"	1¼"
A3-8	8"	7"	7¾"	1¾"
B1-4	1'-0"	4"	7½"	2½"
B1-6	1'-2"	6"	9"	4"
B2-4	10"	4"	2'-7½"	2½"
B2-6	1'-0"	6"	2'-9"	4"
B3-4	4"	3"	7"	2"
B3-6	6"	5"	8½"	3½"
D-4	10"	4"	1'-6"	1'-1"
D-6	1'-0"	6"	2'-2"	1'-9"

CURB QUANTITIES

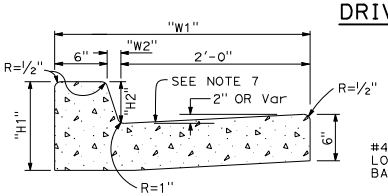
TYPE	CUBIC YARDS PER LINEAR FOOT
A1-6	0.02585
A1-8	0.03084
A2-6	0.05903
A2-8	0.06379
A3-6	0.01036
A3-8	0.01435
B1-4	0.02185
B1-6	0.02930
B2-4	0.05515
B2-6	0.06171
B3-4	0.00641
B3-6	0.01074
B4	0.05709
D-4	0.04083
D-6	0.06804
E	0.06661

DRIVEWAYS



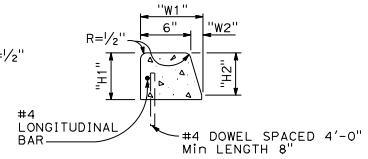
TYPE A1 CURBS

See Table A



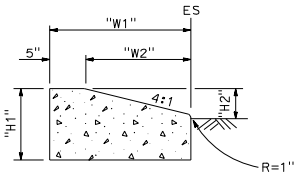
TYPE A2 CURBS

See Table A



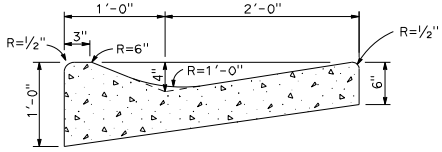
TYPE A3 CURBS

Superimposed on existing pavement
See Table A

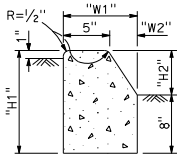


TYPE D CURBS

See Table A

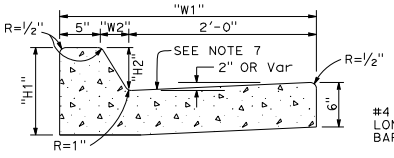


TYPE E CURB



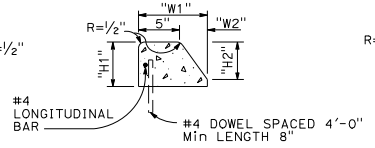
TYPE B1 CURBS

See Table A



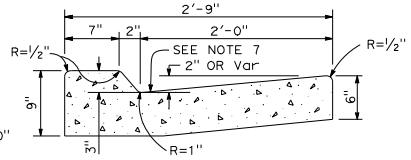
TYPE B2 CURBS

See Table A

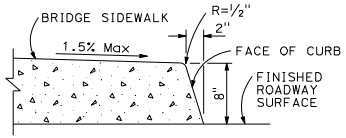


TYPE B3 CURBS

Superimposed on existing pavement
See Table A



TYPE B4 CURBS



TYPE H CURB

On Bridges

CURBS

NOTES:

1. Case A driveway section typically applies.
2. X=3'-0" except for curb heights over 10" where 4:1 slopes shall be used on curb slope.
3. Sidewalk and ramp thickness "T" at driveway shall be 4" for residental and 6" for commercial.
4. Difference in slope of the driveway ramp and the slope of a line between the gutter and a point on the roadway 5'-0" from gutter line shall not exceed 15%. Reduce driveway ramp slope, not gutter slope, where required.
5. Minimum width of clear passageway for sidewalk shall be 4'-2".
6. Retaining curbs and acquisition of construction easement may be necessary for narrow sidewalks or curb heights in excess of 6".
7. Across the pedestrian route at curb ramp locations, the gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURBS AND DRIVEWAYS

NO SCALE

A87A

6-24-22

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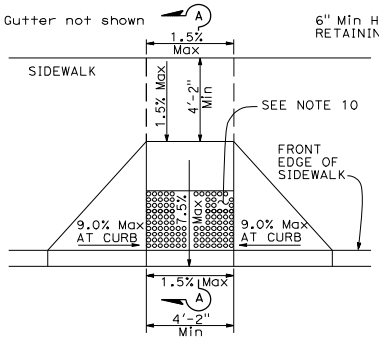
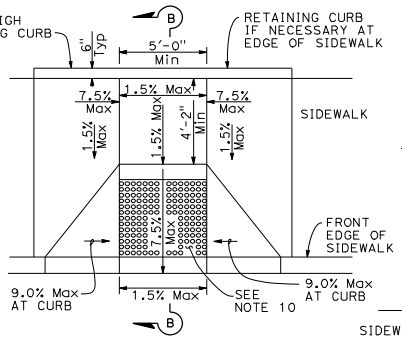
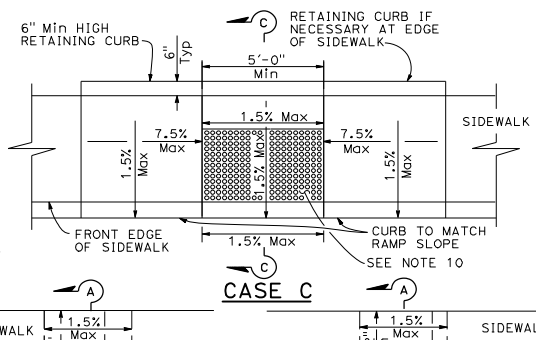


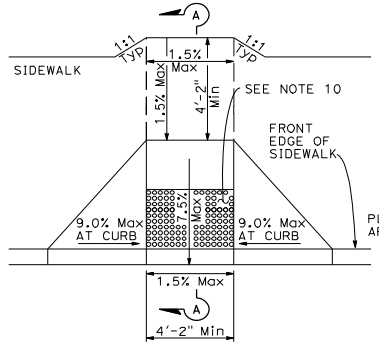
CASE A



CASE B



CASE C



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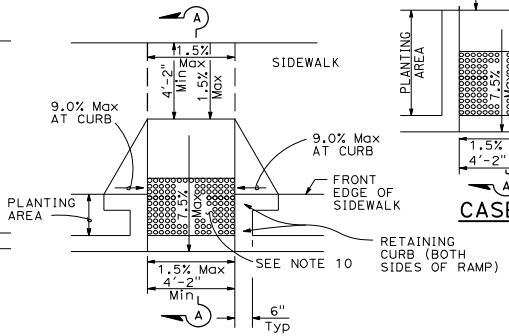
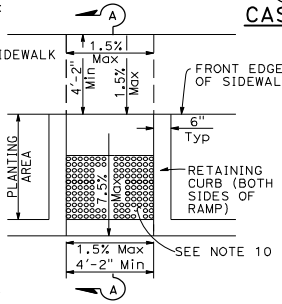


CASE E



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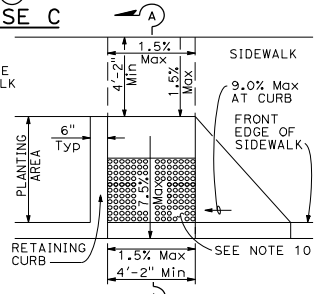
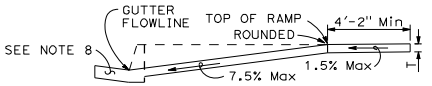
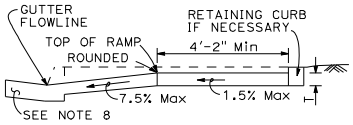


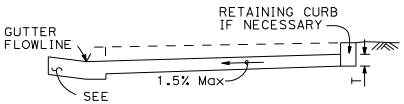
CASE G
See Note 4



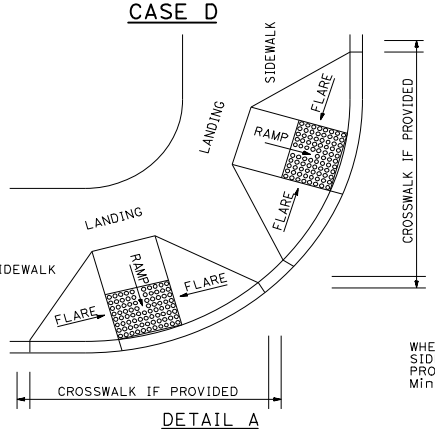
SECTION A-A



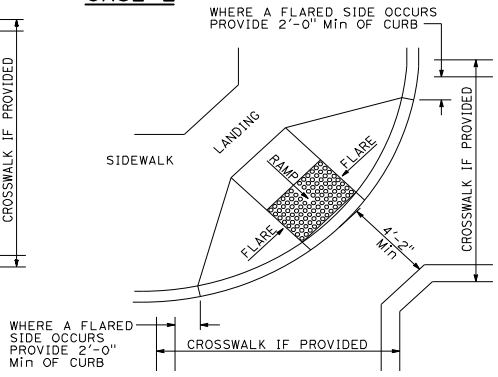
SECTION B-B
Depress entire sidewalk as required



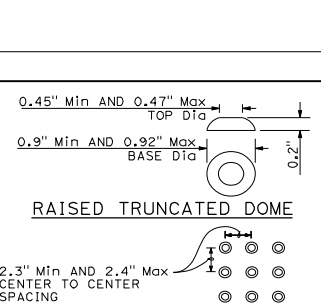
SECTION C-C



DETAIL A
TYPICAL TWO-RAMP CORNER INSTALLATION
See Note 1



DETAIL B
TYPICAL ONE-RAMP CORNER INSTALLATION
See Notes 1 and 3



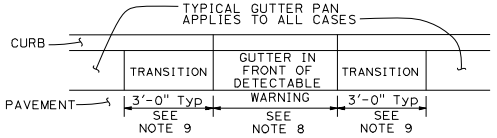
RAISED TRUNCATED DOME

RAISED TRUNCATED DOME PATTERN (IN-LINE)

DETECTABLE WARNING SURFACE

NOTES: See Note 10

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate. For specific site condition configuration, including the conform to existing sidewalk, see Project Plans.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. The ramp portion of the curb ramp is a typical rectangle, unless modified in the Project Plans.
6. Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
8. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1V:20H (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
9. Transition gutter pan slope from 1" of depth for each 2'-0" of width to match typical gutter pan slope per Standard Plan A87A.
10. The detectable warning surface will be a rectangle as shown at back of curb, unless modified in the Project Plans. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable warning surfaces shall extend the full width of the ramp except a maximum gap of 1 inch is allowed on each side of the ramp. Detectable warning surfaces shall conform to the requirements in the Standard Specifications.
11. Sidewalk and ramp thickness "T", shall be 3½" minimum.
12. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
13. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.



GUTTER PAN TRANSITION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER
Rebecca Lynn Mowry
No. C54415
Exp. 12-31-23
CIVIL
STATE OF CALIFORNIA
August 1, 2022
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

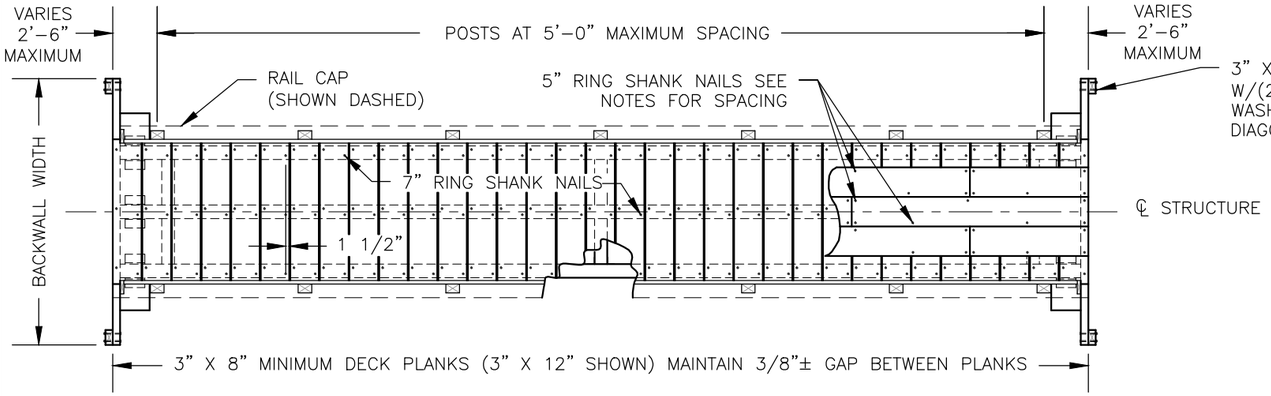
A88A

6-24-22

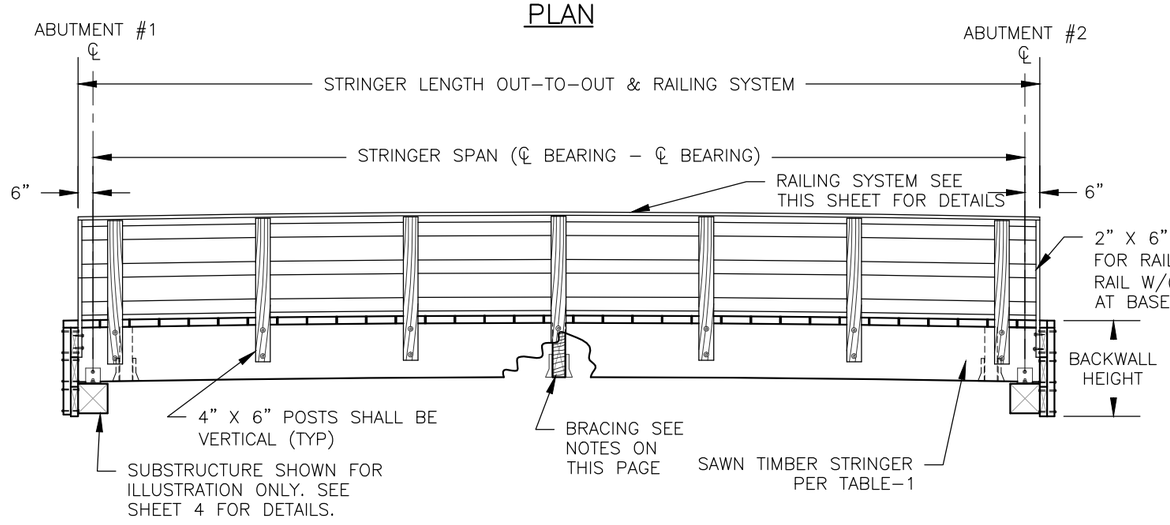
2022 STANDARD PLAN A88A

Return to Table of Contents

APPENDIX B
US Forest Service Standard Drawings – Pedestrian Boardwalks

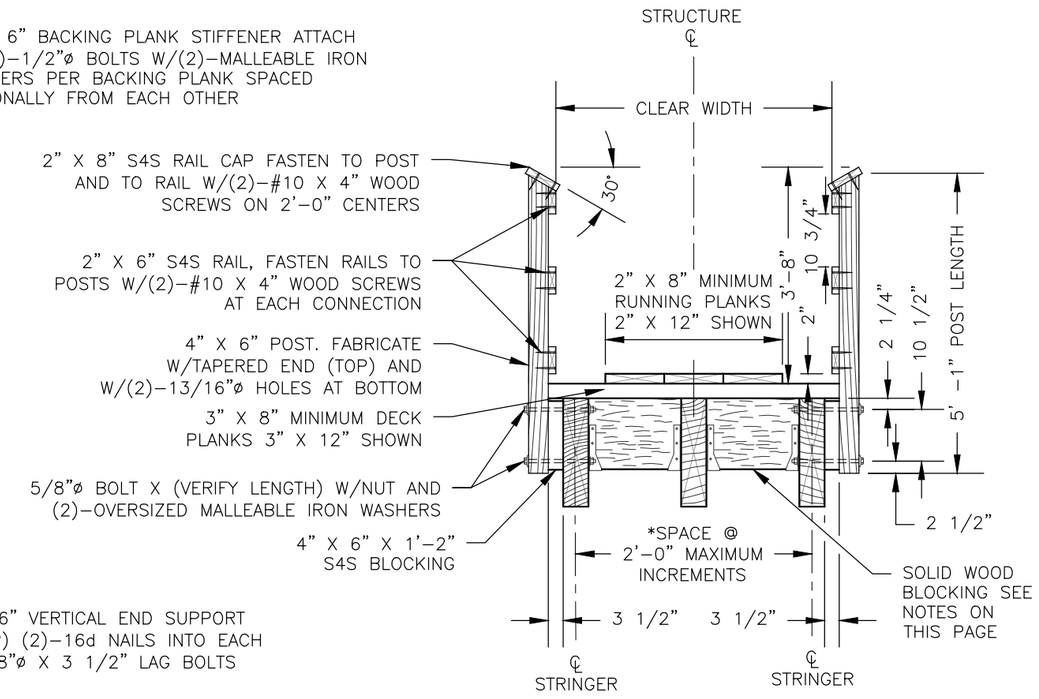


PLAN



ELEVATION

GRADE SHOWN = 0.0%, RUNNING PLANKS NOT SHOWN FOR CLARITY



TYPICAL DECK SECTION W/RAILING SYSTEM

NOTES:

1. ALL DIMENSIONS IN TABLE-1 ARE NOMINAL (ROUGH SAWN). THE MINIMUM STRINGER DEPTH FOR BRIDGES WITH A PEDESTRIAN RAILING SYSTEM IS 15-INCHES. BRIDGES WITH STRINGER DEPTHS LESS THAN 15-INCHES SHALL HAVE CURBS ONLY. THE MINIMUM NUMBER OF STRINGERS IS THREE.
2. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
3. FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
4. PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING AND BACKWALL FOR AIR CIRCULATION.
5. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
6. BRACING REQUIRED AT THE ENDS OF EACH MEMBER. THE BRACING SHALL BE THREE-QUARTERS TO FULL DEPTH AND PLACED WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING. BRACING REQUIRED AT MID-SPAN FOR SPANS OVER 20 FEET LONG.
7. WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

*TABLE-1: SOLID SAWN STRINGER SIZE REQUIREMENTS - LRFD

**STRINGER SPAN (FEET)	TIMBER SPECIES - DOUGLAS FIR - LARCH GRADE - NO.1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LIVE LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
●10	3" X 8"	3" X 10"	3" X 12"	4" X 10"	4" X 12"
●15	4" X 10"	4" X 12"	4" X 14"	4" X 16"	6" X 12"
●20	4" X 14"	6" X 12"	6" X 12"	6" X 14"	6" X 16"
▲25	6" X 14"	6" X 14"	6" X 16"	6" X 18"	6" X 20"
▲30	6" X 16"	6" X 18"	6" X 20"	6" X 20"	8" X 20"

●INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING
▲INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN
* STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS
** STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT
*** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

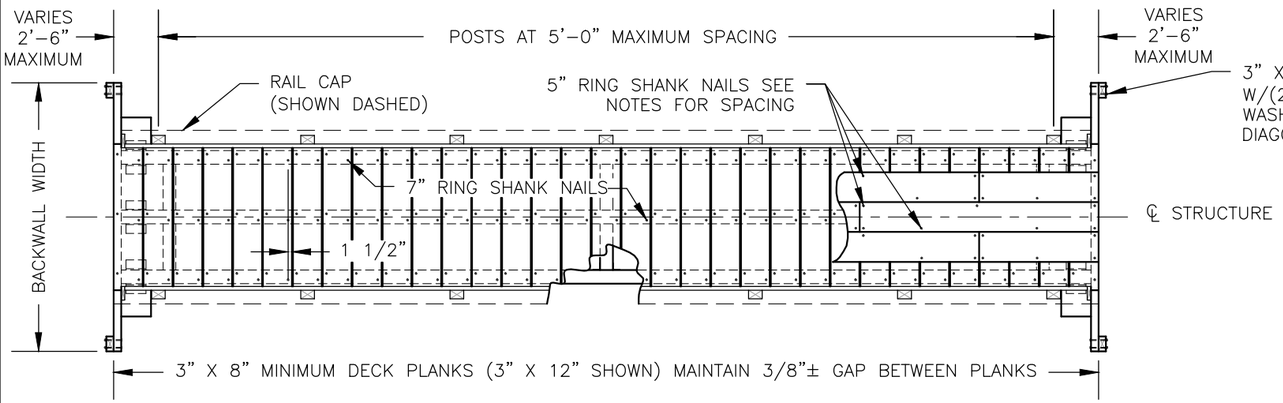
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

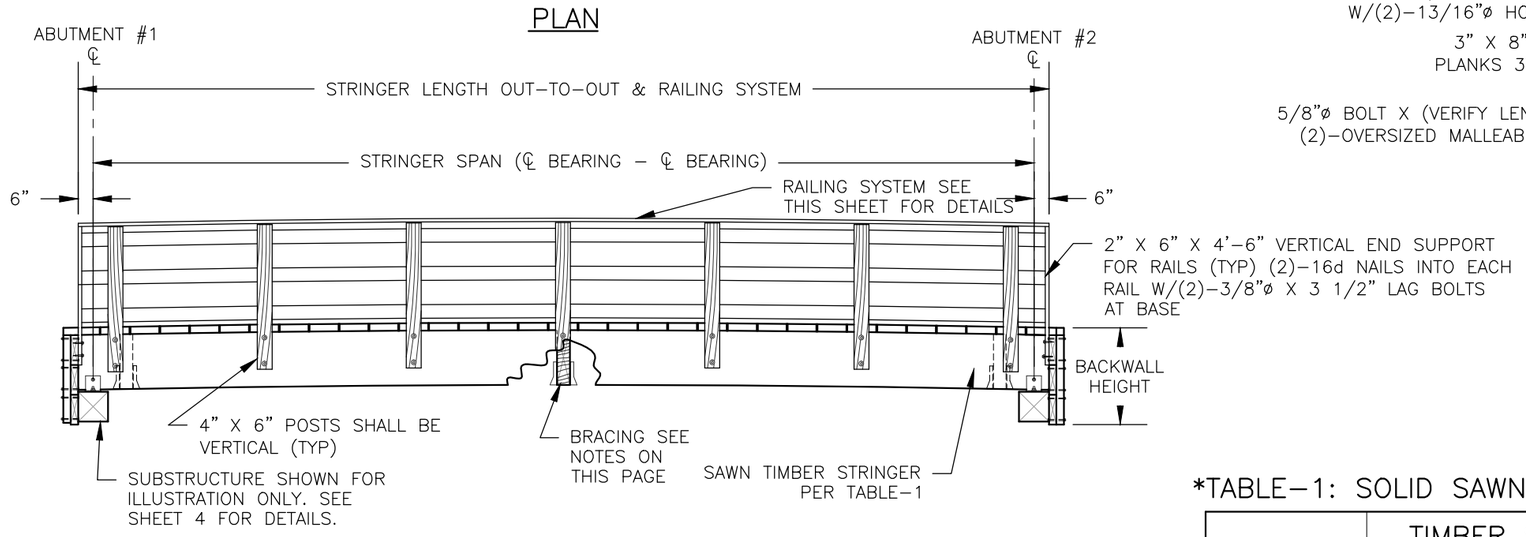
DRAWING NAME
SAWN TIMBER STRINGER TRAIL BRIDGE
SECTION
962 - SAWN TIMBER TRAIL BRIDGE
TYPICAL ID
STS

REVISION DATE
NOT TO SCALE

DRAWING NO.
STD_962-10-02a
SHEET
OF

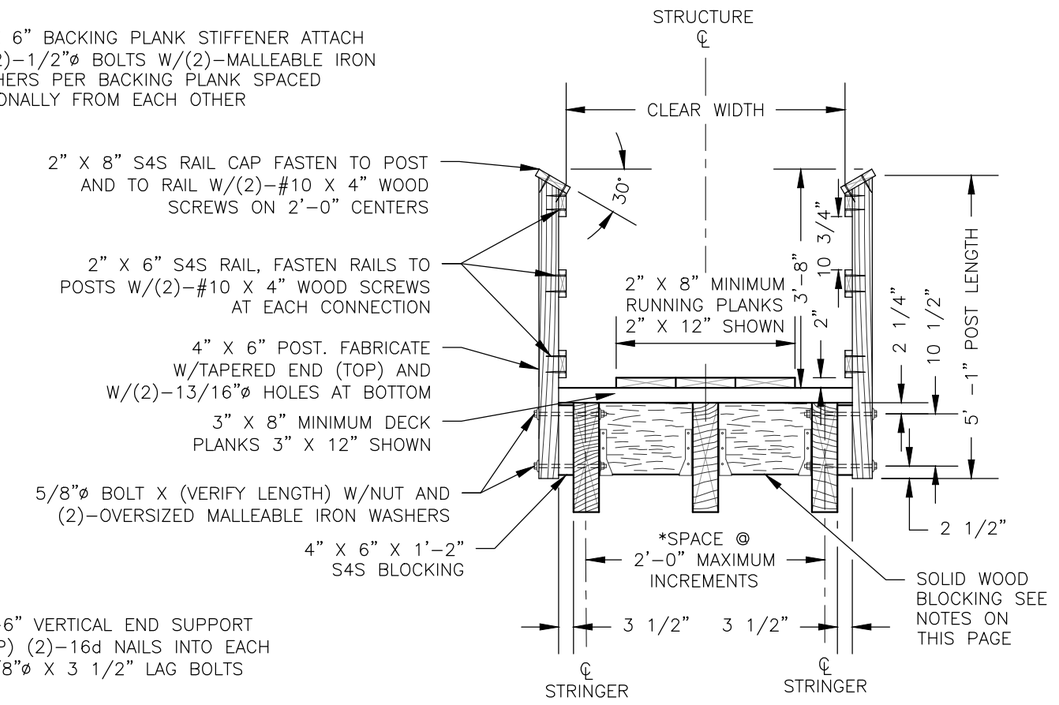


PLAN



ELEVATION

GRADE SHOWN = 0.0%, RUNNING PLANKS NOT SHOWN FOR CLARITY



TYPICAL DECK SECTION W/RAILING SYSTEM

NOTES:

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2. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
3. FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
4. PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING AND BACKWALL FOR AIR CIRCULATION.
5. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
6. BRACING REQUIRED AT THE ENDS OF EACH MEMBER. THE BRACING SHALL BE THREE-QUARTERS TO FULL DEPTH AND PLACED WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING. BRACING REQUIRED AT MID-SPAN FOR SPANS OVER 20 FEET LONG.
7. WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

*TABLE-1: SOLID SAWN STRINGER SIZE REQUIREMENTS - LRFD

**STRINGER SPAN (FEET)	TIMBER SPECIES - SOUTHERN PINE GRADE - NO.1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
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	***65	90	120	150	200
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▲INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN
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** STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT
*** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

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SAWN TIMBER STRINGER TRAIL BRIDGE
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962 - SAWN TIMBER TRAIL BRIDGE
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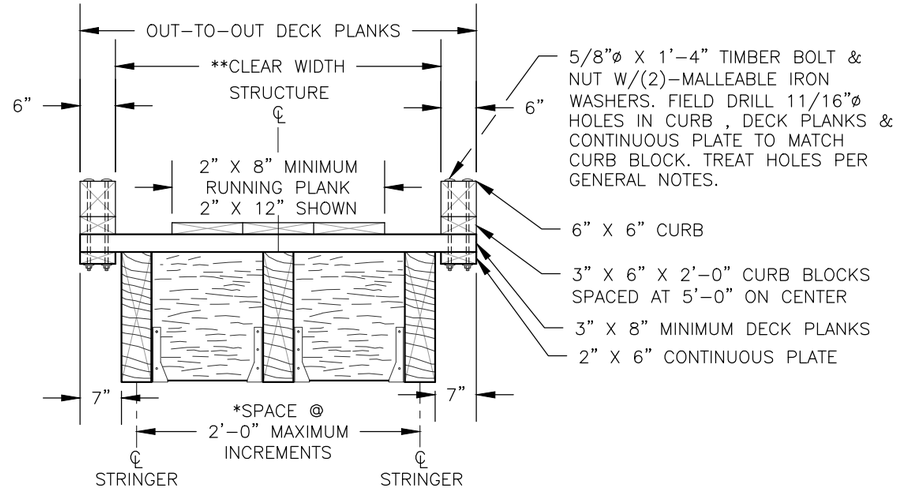
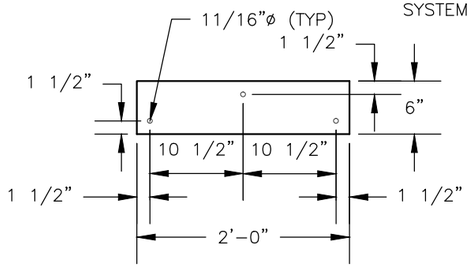
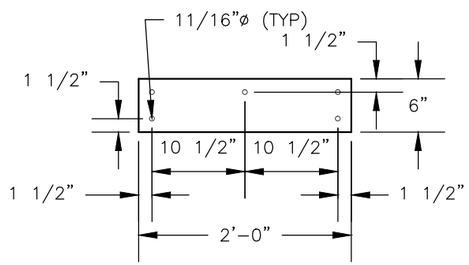


BRIDGE WITH CURBS ONLY
DECK SECTION W/STRINGERS @2'-0" O.C.

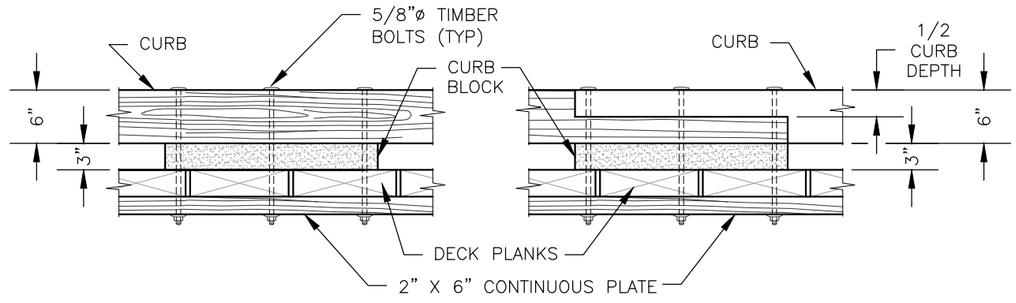
* MINIMUM NUMBER OF STRINGERS IS THREE
** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



PLAN-CURB BLOCK



PLAN-CURB BLOCK AT SPLICE



ELEVATION-TYPICAL CONNECTION

ELEVATION-CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

DECK PLANKS, CURBS, SILLS, & BACKING PLANKS
- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RUNNING PLANKS
- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED
- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY - RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - WWPA, WCLIB

TREATED
- HEM-FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY - WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 50W, WITH BOLTS AND NUTS CONFORMING TO ASTM A325, TYPE 3. USE MALLEABLE IRON WASHERS AGAINST WOOD UNLESS OTHERWISE NOTED.

WHEN STRUCTURAL STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.1 AND SHALL BE SUITABLE FOR THE GRADE OF STEEL AND INTENDED USE OR SERVICE.

FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBER. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

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SECTION
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TYPICAL ID
STS

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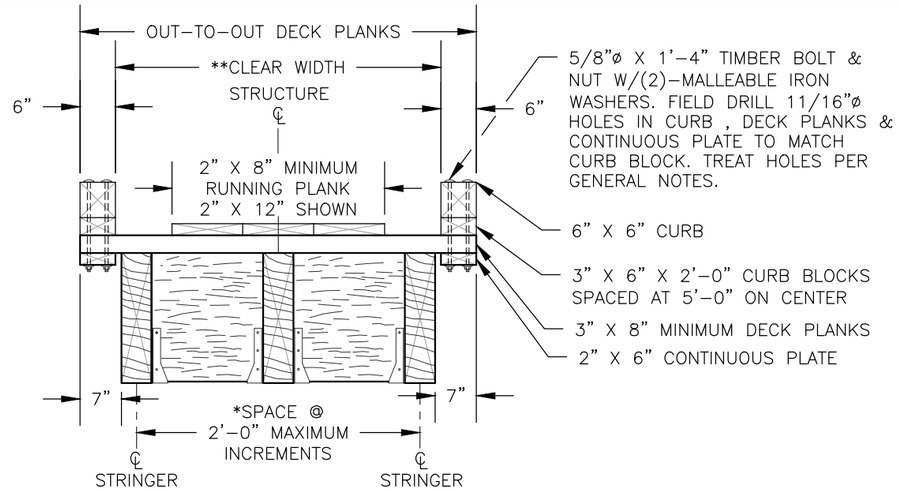
NOT TO SCALE

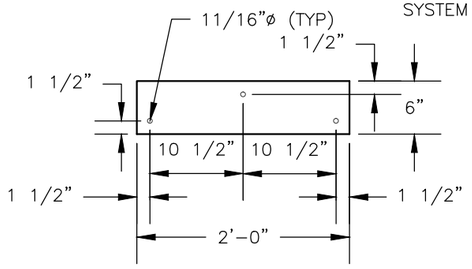
DRAWING NO.
STD_962-10-03a

SHEET
X OF

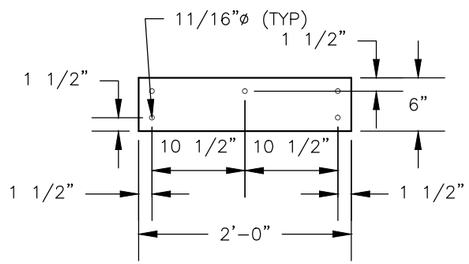


BRIDGE WITH CURBS ONLY
DECK SECTION W/STRINGERS @2'–0" O.C.

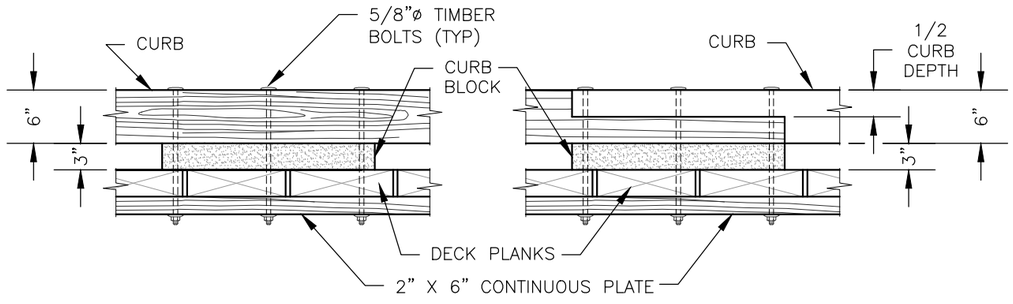
* MINIMUM NUMBER OF STRINGERS IS THREE
** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



PLAN–CURB BLOCK



PLAN–CURB BLOCK AT SPLICE



ELEVATION–TYPICAL CONNECTION

ELEVATION–CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP–03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

DECK PLANKS, CURBS, SILLS, & BACKING PLANKS RUNNING PLANKS
- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY – SPIB
- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY – SPIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED
- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY – SPIB
- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY – NELMA

TREATED
- SOUTHERN PINE, S4S, NO.1 GRADE GRADING RULES AGENCY – SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND–EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT–HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS –APPROVED BY THE C.O.R.– SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 50W, WITH BOLTS AND NUTS CONFORMING TO ASTM A325, TYPE 3. USE MALLEABLE IRON WASHERS AGAINST WOOD UNLESS OTHERWISE NOTED.

WHEN STRUCTURAL STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.1 AND SHALL BE SUITABLE FOR THE GRADE OF STEEL AND INTENDED USE OR SERVICE.

FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBER. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME
SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION
962 - SAWN TIMBER TRAIL BRIDGE

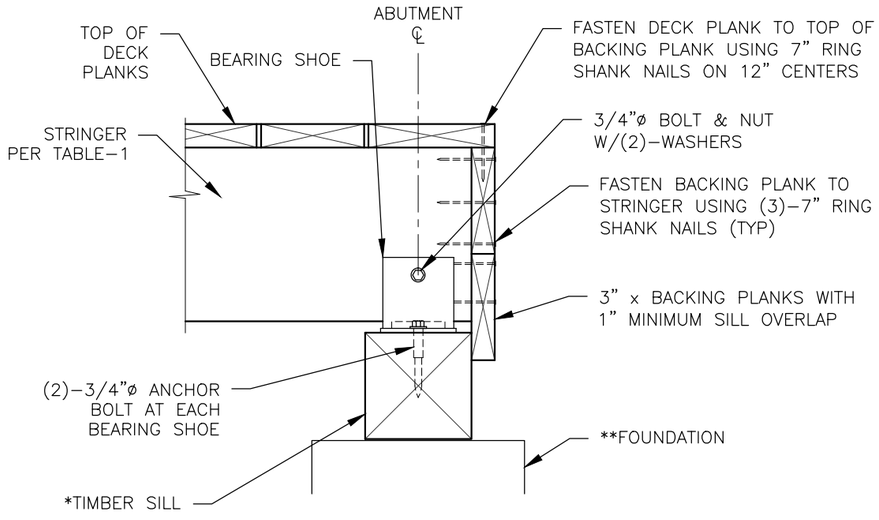
TYPICAL ID
STS

REVISION DATE

NOT TO SCALE

DRAWING NO.
STD_962-10-03b

SHEET
OF

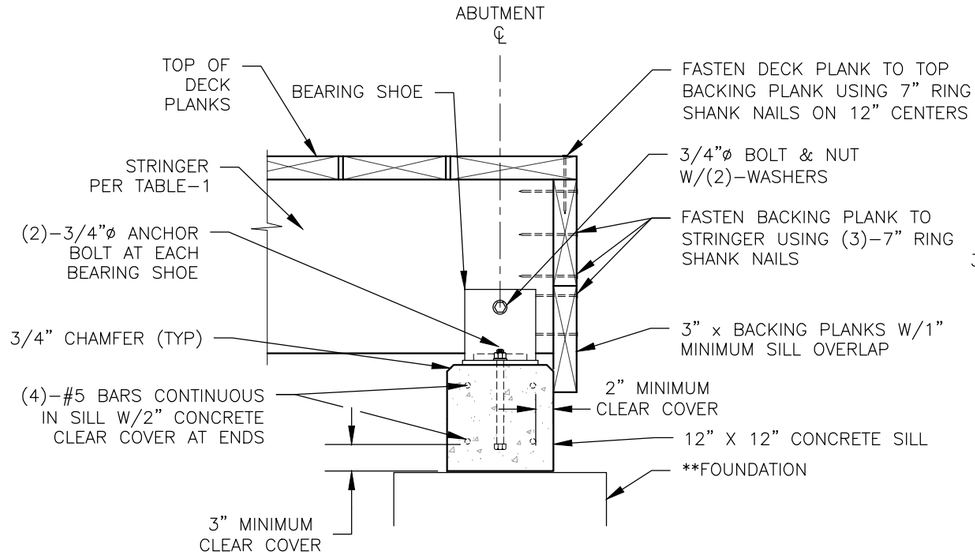


GLU–LAM/SAWN TIMBER SILL CONNECTION DETAIL

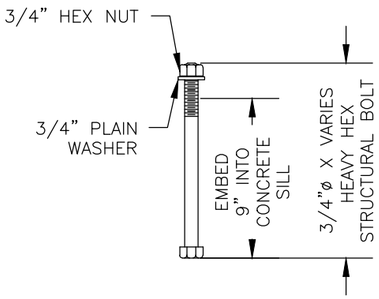
BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

** TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE–LAMINATED, BUILT–UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS.

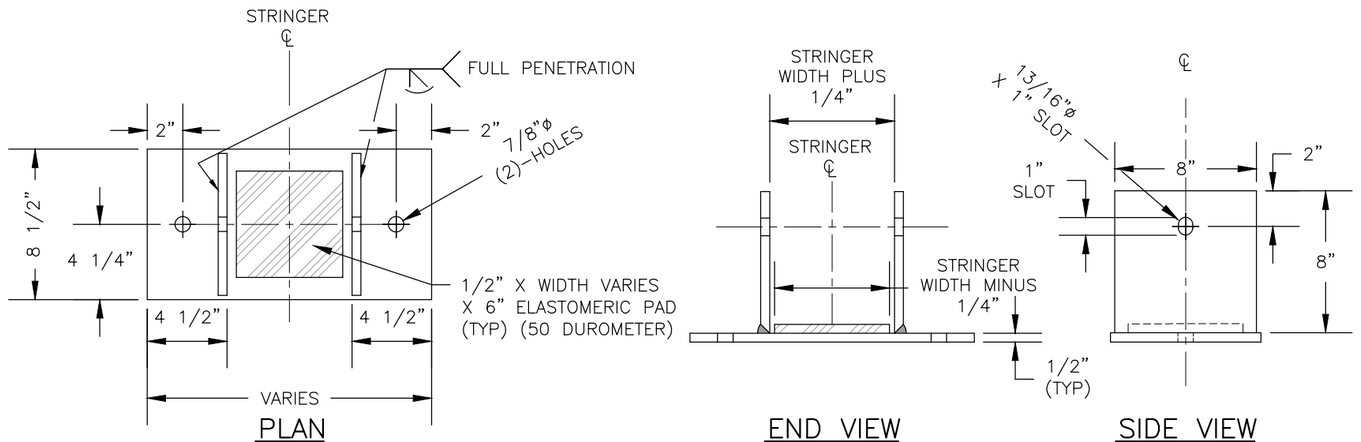
** SEE STANDARD DRAWINGS 965–10, 965–20, 965–30, & 965–40 FOR FOUNDATION ALTERNATIVES



CONCRETE SILL CONNECTION DETAIL



CONCRETE SILL ANCHOR BOLT DETAIL



BEARING SHOE DETAIL

MATERIAL = 1/2" STEEL PLATE A36

NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP–03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

CONCRETE: USE STRUCTURAL CONCRETE WITH 7 SACK MINIMUM MIX APPROVED BY THE C.O., CONCRETE SHALL RECEIVE A TOWELED SURFACE FINISH. CONCRETE SHALL HAVE 4%–6% ENTRAINED AIR. MAXIMUM SIZE AGGREGATE SHALL BE 3/4–INCH AND CONCRETE SLUMP SHALL NOT EXCEED 4–INCHES.

REINFORCING STEEL: PROVIDE REINFORCING STEEL THAT CONFORMS TO ASTM A615 (AASHTO M31), GRADE 40 OR 60. PROVIDE 2–INCH CLEAR CONCRETE COVER FOR ALL REBAR, UNLESS NOTED OTHERWISE ON THE PLANS.

HARDWARE AND STRUCTURAL STEEL: SEE SHEET 3 FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

LAG SCREW INSTALLATION: PRE–BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16–INCH LARGER THAN THE SHANK DIAMETER AND IS TO BE BORED TO THE DEPTH OF PENETRATION OF THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION IS TO BE 70% OF THE BOLT DIAMETER AS SHOWN ON THE PLANS AND IS TO BE BORED AT LEAST TO THE LENGTH OF THE THREADS. **DO NOT DRIVE LAG SCREWS WITH A HAMMER.**

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