

CHICO AREA RECREATION DISTRICT

CHICO, CALIFORNIA



NOTICE INVITING BIDS
GENERAL CONDITIONS
SPECIAL PROVISIONS
TECHNICAL SPECIFICATIONS
PROJECT PLANS
PROJECT CONTRACT
BID PROPOSAL

FOR

PROJECT NAME: ROTARY CENTENNIAL PARK

BID OPENING DATE: August 18, 2020

Approved By: _____

General Manager
CARD

**FOR INFORMATION PURPOSES ONLY;
THIS IS NOT A PART OF THE CONTRACT DOCUMENT**

WHEN SUBMITTING YOUR BID, PLEASE SUBMIT ONLY:

1. ALL PF (PROPOSAL FORMS) FROM THE SPECIFICATION SET, PF-1 THROUGH PF-11.
2. ALL REQUIRED SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS
3. ALL ADDENDA (IF THERE ARE ANY).
4. BIDDER'S BOND.

**IT IS NOT NECESSARY TO SUBMIT THE ENTIRE SET OF SPECIFICATIONS. PLEASE
KEEP THE REMAINDER OF THE SET FOR YOUR INFORMATION.**

**PROPOSAL SHALL BE SUBMITTED IN A SEALED ENVELOPE PLAINLY MARKED ON
THE OUTSIDE WITH THE PROJECT NAME, BID OPENING DATE AND TIME OF BID
OPENING.**

THANK YOU.

TABLE OF CONTENTS

I.	NOTICE TO CONTRACTORS	NIB-1 thru NIB-2
II.	GENERAL CONDITIONS	GC-1 thru GC-39
III.	SPECIAL PROVISIONS	SP-1 thru SP-11
IV.	PROJECT PLANS & TECHNICAL SPECIFICATIONS	(Index of Drawings Included)
V.	CONTRACT	CF-1 thru CF-5
VI.	PROPOSAL	PF-1 thru PF-11

CHICO AREA RECREATION DISTRICT
CHICO, CALIFORNIA

NOTICE TO CONTRACTORS

PROJECT NAME: ROTARY CENTENNIAL PARK

NOTICE INVITING BIDS - The Chico Area Recreation District will receive sealed bids for the above at the District Main Office, 545 Vallombrosa Avenue, Chico, CA 95926, until **3:00 PM August 18, 2020**, at which time they will be publicly opened and read.

GENERAL WORK DESCRIPTION - The work, in general, to be done under this contract consists of the grading of existing soil, construction of a park that includes playground features, turf, picnic areas, concrete sidewalks, site lighting, and irrigation; all within the confines of the property located on Ceres Ave. at Whitewood Way in Chico, CA. In addition, this is a collaborative project with the Chico Rotary Clubs and will require coordinator between the contractor and Rotary Clubs to provide volunteer labor for identified sections of the project.

BIDDERS INFORMATION - Bidder's instruction, specifications and/or plans for this project may be downloaded from www.CIPLIST.com, Valley Contractor's Exchange, or a hard copy may be purchased at Ellis A&E Reprographic Supplies and Services, 3035 Esplanade, Chico CA 95973.

BIDDERS CONFERENCE - A **MANDATORY** pre-bidders meeting will be held on **July 28th at 9:00 AM at the project site located on Ceres Ave. at Whitewood Way** to discuss issues pertaining to the project and answer any contractor questions that may arise.

BID SUBMITTAL REQUIREMENTS - Bidders may only submit their bids on proposal forms provided by the District. **Bids must be submitted in a sealed envelope plainly marked on its outside with the item title and the bid opening date.** Each bid must be accompanied by cash, a certified or cashier's check, or a bid bond in favor of the CHICO AREA RECREATION DISTRICT (CARD) in an amount equal to at least ten percent (10%) of the amount bid, such guaranty to be forfeited should the bidder to whom the contract is awarded fail to enter into the contract.

BID AWARD PROVISIONS; REJECTION - An award of bid, if a bid is awarded, will be made to the lowest responsible base bidder whose bid complies with the District's requirements within fourteen - (14) days of the bid opening date. The District has the option of accepting none, or any number and combination of bid alternatives. The District reserves the right, in its sole discretion, to reject any bid which fails to meet bid requirements in any respect, to reject all bids for any reasons whatsoever and to waive minor irregularities in any bid. In addition to its right to accept or reject any and all bids, the District reserves the right in its sole discretion to base the award of bid on the inclusion of any, all, or none of the additive alternate bid items included in the bid proposal.

INSURANCE; BONDS; REQUIRED - The bidder to whom a contract is awarded will be required to furnish to the District evidence of insurance coverage(s) and performance/labor and materials bonds in full compliance with the provisions of the contract documents.

APPRENTICESHIP STANDARDS - In accordance with the provisions of Part 7, Chapter 1, Article 2, Section 1777.5 of the Labor Code of the State of California, the prime contractor shall be responsible for fully complying with the provisions of this Section, as well as any regulations adopted by the Director of Industrial Relations, for all apprenticeable crafts of trades, and shall also assure compliance by his/her subcontractors with respect to such apprenticeable crafts or trades.

LICENSING REQUIREMENTS - At the time the District awards the contract for this project, the Contractor shall possess either an A, B or C27 Contractors License.

PAYMENT RETENTIONS; SUBSTITUTION OF SECURITIES - Ten percent (10%) will be withheld from each progress payment made to the contractor for work performed and will be held until completion of the work, its acceptance and the expiration of the period provided by law for filing liens by laborers or suppliers. In accordance with the provisions of Section 23300 of the Public Contract code of the State of California, securities may be substituted for the moneys which the District withholds.

PUBLISH DATE: July 20, 2020

SB854 NOTICE TO CONTRACTORS

The following requirements apply when:

1. Work being performed is "Public Works" as defined in Section 1720 et. seq. of California Labor Code; and
2. The total cost of the project (with or without materials) exceeds \$1,000.00.

Contractor Registration Requirements

Effective January 1, 2015, per California Senate Bill 854, CARD shall provide Notice to Contractors as follows:

- No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]; and
- No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5; and
- This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Contractor Reporting Requirements

- For all new projects awarded on or after April 1, 2015, contractor and subcontractors must furnish electronic certified payroll records to the Labor Commissioner.
- The Labor Commissioner may at any time require contractors and subcontractors to furnish electronic certified payroll records. **The District will not be able to issue final payment to the Contractor until confirmation of submission of Certified Payroll has been received.**
- Beginning January 1, 2016 the requirement to furnish electronic payroll records to the Labor Commissioner will apply to all public works projects regardless of the project start date.

Prevailing Wage

Contractor shall incorporate the prevailing hourly rate of per diem wages for this locality and project as determined by the Director of Industrial Relations pursuant to Labor Code 1770 et seq. seq., a copy of which may be accessed on the Internet at <http://www.dir.ca.gov/Public-Works/PublicWorks.html>. If the project requires the employment of work in any apprenticeable craft or trade, once awarded, the Contractor or Subcontractors must apply to the joint apprenticeship council unless already covered by local apprentice standards (Labor Code 1777.5).

Contractor or subcontractor shall forfeit twenty-five (\$25) for each worker employed in the execution of this contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week as penalty for violation of California Labor Code section 1813. In addition, any work performed by employees in excess of eight (8) hours per day and forty (40) hours per week shall be compensated for all hours worked in excess of eight (8) hours per day at not less than 1.5 times the basic rate of pay in accordance with Labor Code section 1815.

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 APPLICABLE CODE REQUIREMENTS. The term “Applicable Code Requirements” means all laws; statutes; the most recent applicable building standard codes, as modified by State Regulations (Title 24); ordinances; rules; regulations; and lawful orders of all public authorities having jurisdiction over the Chico Area Recreation District, Contractor, any Subcontractor, the Project, the Project site, the Work, or the prosecution of the Work.

1.1.2 CONTRACT AGREEMENT. The term “Contract Agreement” means the written agreement executed between the District and the Contractor which requires the Contractor to do all the work and furnish all the labor and materials necessary for the Project, which sets forth the consideration to be paid by District to the Contractor for such work, and which incorporates by reference these general provisions.

1.1.3 CONTRACT DOCUMENTS. The “Contract Documents” consist of all documents listed in Article 6 of the Contract Agreement.

1.1.4 CONTRACT MODIFICATION. The “Contract Modification” means (1) an amendment to the Contract Documents, (2) a change order, (3) a field order, or (4) a letter of instruction.

1.1.5 CONTRACT SUM. The term “Contract Sum” means the entire sum to be paid by District to Contractor for all work to be performed on the Project as set forth in the Contract Agreement.

1.1.6 CONTRACT TIME. The term “Contract Time” means the number of days set forth in the Contract Agreement within which full completion of the Work must be achieved. The Contract Time may be adjusted only by change order.

1.1.7 DAY. The term “Day,” as used in the bidding requirements and the Contract Documents, shall mean calendar day, unless otherwise specifically provided.

1.1.8 DRAWINGS. The term “Drawings” means the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams. The Drawings are listed in the list of drawings.

1.1.9 FINAL COMPLETION. The term “Final Completion” means the Work has been fully completed in accordance with the Contract Documents as determined by District’s Representative pursuant to Section 9.7, Final Completion and Final Payment, of the General Conditions.

1.1.10 DISTRICT. The term “District” means the Chico Area Recreation District (CARD).

1.1.11 CITY. The term “City” means the City of Chico.

1.1.12 COUNTY. The term “County” means the County of Butte.

1.1.13 DISTRICT’S REPRESENTATIVE. The term “District’s Representative” means the District’s Project Inspector or designee identified as such in the Contract Documents.

1.1.14 PRODUCT DATA. “Product Data” are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by Contractor to illustrate or describe materials or equipment for some portion of the Work.

1.1.15 PROJECT. The term “Project” means the total construction of the Work performed under the Contract Documents which may be the whole or a part and which may include construction by City, District or by separate contractors.

1.1.16 SAMPLES. “Samples” are physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

1.1.17 SHOP DRAWINGS. “Shop Drawings” are drawings, diagrams, schedules, and other data specially prepared for the Work by Contractor or a Subcontractor to illustrate some portion of the Work.

1.1.18 SPECIFICATIONS. The term “Specifications” means that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.19 SUBCONTRACTOR. The term “Subcontractor” means any person or legal entity who contracts with Contractor to provide labor, materials, equipment and/or services required for construction of the Project.

1.1.20 WORK. The term “Work” means the construction and services required by the Contract Documents and includes all labor, materials, equipment, tools, and services provided or to be provided by Contractor to fulfill Contractor’s obligations.

1.2 INTERPRETATION

1.2.1 The Contract Documents are complementary and what is required by one shall be as binding as if required by all. In the case of conflict or inconsistency, the Supplementary Conditions shall control over the General Conditions and the Specifications shall control over the Drawings. Figured dimensions shall control over scaled measurements.

1.2.2 The Contract Documents may omit modifying words such as “all” and “any,” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. The use of the word “including,” when following any general statement, shall not be construed to limit such statement to specific items or matters set forth immediately following such word or to similar items or matters, whether or not nonlimiting language (such as “without limitation,” “but not limited to,” or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement.

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

ARTICLE 2

DISTRICT

2.1 INFORMATION AND SERVICES PROVIDED BY DISTRICT

2.1.1 If required for performance of the Work, as determined by District's Representative, District will make available a survey describing those physical characteristics, boundaries, easements, and utility locations for the Project site of which District has actual knowledge.

2.1.2 Contractor will be furnished, free of charge, such copies of the Contract Documents as District deems reasonably necessary for execution of the Work.

2.2 DISTRICT TO PROVIDE ACCESS TO PROJECT SITE

2.2.1 District will provide, no later than the date designated in the current contract schedule accepted by District’s Representative, the lands and facilities upon which the Work is to be performed, including such access to other lands and facilities designated in the Contract Documents for use by Contractor.

2.3 DISTRICT'S RIGHT TO STOP THE WORK

2.3.1 If Contractor fails to correct defective work as required by Section 12.2 or fails to perform the Work in accordance with the Contract Documents, District or District's Representative may direct Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated by Contractor. Contractor shall not be entitled to any adjustment of Contract Time or Contract Sum as a result of any such order. District and District's Representative shall have no duty or responsibility to Contractor or any other party to exercise the right to stop the Work.

2.4 DISTRICT'S RIGHT TO CARRY OUT THE WORK

2.4.1 If Contractor fails to carry out the Work in accordance with the Contract Documents, fails to provide sufficient labor, materials, equipment, tools, and services to maintain the contract schedule, or otherwise fails to comply with any material term of the Contract Documents, and fails within four (4) days after receipt of notice from District to promptly commence and thereafter diligently continue to completion the correction of such failure, District may, without prejudice to other remedies District may have, correct such failure at Contractor's expense. In such case, District shall be entitled to deduct from payments then or thereafter due Contractor the cost of correcting such failure, including compensation for the additional services and expenses of District's Representative and District's consultants made necessary thereby. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall pay the additional amount to District.

2.5 DISTRICT'S RIGHT TO REPLACE DISTRICT'S REPRESENTATIVE

2.5.1 District may at any time and from time to time, without prior notice to or approval of Contractor, replace District's Representative with a new District's Representative. Upon receipt of notice from District informing Contractor of such replacement and identifying the new District's Representative, Contractor shall recognize such person or firm as District's Representative for all purposes under the Contract Documents.

ARTICLE 3

CONTRACTOR

3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by District, and shall promptly report in writing to District's Representative any errors, inconsistencies, or omissions in the Contract Documents or inconsistencies with Applicable Code Requirements observed by Contractor.

3.1.2 Contractor shall take field measurements, verify field conditions, and carefully compare with the Contract Documents such field measurements, conditions, and other information known to Contractor before commencing the Work. Errors, inconsistencies, or omissions discovered at any time shall be promptly reported in writing to District's Representative.

3.1.3 If Contractor performs any construction activity which it knows or should know involves an error, inconsistency, or omission referred to in Paragraphs 3.1.1 and 3.1.2, without notifying and obtaining the written consent of District's Representative, Contractor shall be responsible for the resultant losses, including, without limitation, the costs of correcting defective work.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 Contractor shall supervise, coordinate, and direct the Work using Contractor's best skill and attention. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures, and the coordination of all portions of the Work, unless otherwise shown or specified in the Contract Documents or directed in writing by District's Representative.

3.2.2 Contractor shall be responsible to District for acts and omissions of Contractor's agents, employees, and Subcontractors, and their respective agents and employees.

3.2.3 Contractor shall not be relieved of its obligation to perform the Work in accordance with the Contract Documents either by acts or omissions of District or District's Representative in the administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons or firms other than Contractor.

3.2.4 Contractor shall be responsible for inspection of all portions of the Work, including those portions already performed under the Contract Documents, to determine that such portions conform to the requirements of the Contract Documents and are ready to receive subsequent Work.

3.2.5 Contractor shall at all times maintain good discipline and order among its employees and Subcontractors. Contractor shall provide competent, fully qualified personnel to perform the Work.

3.2.6 Contractor shall furnish District's Representative at the beginning of each week with a copy of each of Contractor's daily Project reports prepared by Contractor's superintendent (or other Project manager) for the prior week.

3.3 LABOR AND MATERIALS

3.3.1 Unless otherwise provided in the Contract Documents, Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4 CONTRACTOR'S WARRANTY

3.4.1 Contractor warrants to District that all materials and equipment used in or incorporated into the Work will be of good quality, new, and free of liens, Claims, and security interests of third parties; that the Work will be of good quality and free from defects; and that the Work will conform with the requirements of the Contract Documents. If required by District's Representative, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.5 TAXES

3.5.1 Contractor shall pay all sales, consumer, use, and similar taxes for the Work or portions thereof provided by Contractor, which are enacted when bids for the Work are received, whether or not yet effective or merely scheduled to go into effect.

3.6 PERMITS, FEES, AND NOTICES

3.6.1 Contractor shall secure and pay for all permits, approvals, government fees, licenses, and inspections necessary for the proper execution and performance of the Work. Contractor shall deliver to District all original licenses, permits, and approvals obtained by Contractor in connection with the Work prior to the final payment or upon termination of the Contract Agreement, whichever is earlier.

3.7 APPLICABLE CODE REQUIREMENTS

3.7.1 Contractor shall perform the Work in accordance with the following Applicable Code Requirements:

- .1 All laws, statutes, the most recent applicable building standard codes, ordinances, rules, regulations, and lawful orders of all public authorities having jurisdiction over District, Contractor, any Subcontractor, the Project, the Project site, the Work, or the prosecution of the Work.
- .2 The Federal Occupational Safety and Health Act and all other Applicable Code Requirements relating to safety.
- .3 Applicable titles in the State of California Code of Regulations.
- .4 Applicable sections in the State of California Labor Code.
- .5 All Applicable Code Requirements relating to nondiscrimination, payment of prevailing wages (if required by the Supplementary Conditions), payroll records, apprentices, and Work day. (In accordance with California law, District retains the right to opt out of prevailing wage requirements where the Project is not being funded with a state grant or subvention or is not otherwise considered to be a matter of state concern.)

Without limiting the foregoing, Contractor shall comply with the provisions regarding nondiscrimination, payment of prevailing wages (if required by the Supplementary Conditions), payroll records, apprentices, and Work day set forth in Article 14.

3.7.2 Contractor shall comply with and give notices required by all Applicable Code Requirements, including all environmental laws and all notice requirements under the State of California Safe Drinking Water and Enforcement Act of 1986 (State of California Health and Safety Code Section 25249.5 and applicable sections that follow). Contractor shall promptly notify District's Representative in writing if Contractor becomes aware during the performance of the Work that the Contract Documents are at variance with Applicable Code Requirements. If changes in the Work are necessary to correct such variance, Contract Sum and Contract Time will be subject to change by change order.

3.7.3 If Contractor performs Work which it knows or should know is contrary to Applicable Code Requirements, without prior notice to District and District's Representative, Contractor shall be responsible for such Work and shall bear the resultant losses, including, without limitation, the costs of correcting defective work.

3.8 SUPERINTENDENT

3.8.1 Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the performance of the Work. The superintendent and any replacement superintendent shall be subject to the approval of District. Upon notice from District's Representative requesting replacement of a superintendent who is unsatisfactory to District, Contractor shall promptly replace such superintendent with a competent superintendent satisfactory to District. The superintendent shall have authority to act on behalf of the contractor and all communications given to and received from superintendent shall be binding on Contractor.

3.9 SCHEDULES REQUIRED OF CONTRACTOR

3.9.1 Contractor shall submit a preliminary contract schedule to District's Representative in the form and within the time limit required by the Specifications. District's Representative will review the preliminary contract schedule with Contractor within the time limit required by the Specifications.

3.9.2 Contractor shall submit a contract schedule to District's Representative in the form and within the time limits required by the Specifications, which must be acceptable to District's Representative. Contractor shall submit updated contract schedules, which must be acceptable to District's Representative, within five (5) days following the end of each calendar month during which Work is in progress or at such other frequency as many be provided by the plans and Specifications. Failure to provide the required acceptable schedules may result in District's withholding of partial payments.

3.9.3 The preliminary contract schedule, the contract schedule, and updated contract schedules shall represent a practical plan to complete the Work within the Contract Time. Extension of any schedule beyond the Contract Time shall not be acceptable. Schedules showing the Work completed in less than the Contract Time may be acceptable if judged by District's Representative to be practical. However, acceptance of such a schedule by District's Representative shall not change the Contract Time. The Contract Time, not the contract schedule, shall control the determination of whether liquidated damages should be assessed against the Contractor because of any delay in completion of the Project.

If a schedule showing the Work completed in less than the Contract Time is accepted, Contractor shall not be entitled to extensions of the Contract Time for Excusable Delays or Compensable Delays or to adjustments of the Contract Sum for Compensable Delays until such delays extend the completion of the Work beyond the expiration of the Contract Time.

3.9.4 Contractor shall prepare and keep current, to the satisfaction of District's Representative, a schedule of submittals, as required by the Specifications, and that is coordinated with the contract schedule.

3.9.5 District's Representative's review of the form and general content of the preliminary contract schedule, contract schedule, and updated contract schedules is for the purpose of determining, in its judgment, whether the following requirements are satisfied:

- .1 Schedules must be suitable for monitoring progress of the Work.
- .2 Schedules must provide necessary data about the timing for District decisions and District-furnished items.
- .3 Schedules must be in sufficient detail to demonstrate adequate planning for the Work.
- .4 Schedules must represent a practical plan to complete the Work within the Contract Time.

Contractor shall plan, develop, supervise, control, and coordinate the performance of the Work so that its progress and the sequence and timing of Work activities conform to the current accepted contract schedule. Contractor shall continuously obtain from Subcontractors information and data about the planning for and progress of the Work and the delivery of equipment, shall coordinate and integrate such information and data into updated contract schedules, and shall monitor the progress of the Work and the delivery of equipment. Contractor shall act as the expeditor of potential and actual delays, interruptions, hindrances, or disruptions for its own forces and those forces of Subcontractors, regardless of tier. Contractor shall cooperate with District's Representative in the development of the contract schedule and updated contract schedules.

District's Representative's acceptance of or its review comments about any schedule or scheduling data shall not relieve Contractor from its sole responsibility to plan for, perform, and complete the Work within the Contract Time.

Acceptance of or review comments about any schedule shall not transfer responsibility for any schedule to District's Representative or District nor imply their agreement with (1) any assumption upon which such schedule is based or (2) any matter underlying or contained in such schedule.

Failure of District's Representative to discover errors or omissions in schedules that it has reviewed, or to inform Contractor that Contractor, Subcontractors, or others are behind schedule, or to direct or enforce procedures for complying with the contract schedule shall not relieve Contractor from its sole responsibility to perform and complete the Work within the Contract Time and shall not be a cause for an adjustment of the Contract Time or the Contract Sum.

3.9.6 Contractor shall perform the Work in accordance with the current accepted contract schedule.

3.10 DOCUMENTS AND SAMPLES AT PROJECT SITE

3.10.1 Contractor shall maintain the following at the Project site:

- .1 One record copy of the Contract Documents, in good order and marked to record current changes and selections made during construction.
- .2 The current accepted contract schedule.
- .3 Shop Drawings, Product Data, and Samples.
- .4 All other required submittals.
- .5 A copy of each subcontract requiring Work to be done for the Project.

These shall be available to District's Representative and shall be delivered to District's Representative for submittal to District upon the earlier of Final Completion or termination of the Contract Agreement.

3.11 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.11.1 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate, for those portions of the Work for which submittals are required, how Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

3.11.2 Contractor shall review, approve, and submit to District's Representative Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of District or of separate contractors. Submittals made by Contractor which are not required by the Contract Documents may be returned without action by District's Representative.

3.11.3 Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until the respective submittal has been reviewed by District's Representative and no exceptions have been taken by District's Representative. Such Work shall be in accordance with approved submittals and the Contract Documents.

3.11.4 By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, Contractor represents that it has determined or verified materials and field measurements and conditions related thereto, and that it has checked and coordinated the information contained within such submittals with the requirements of the Contract Documents and Shop Drawings for related Work.

3.11.5 If Contractor discovers any conflicts, omissions, or errors in Shop Drawings or other submittals, Contractor shall notify District's Representative and receive instruction before proceeding with the affected Work.

3.11.6 Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by District's Representative's review of Shop Drawings, Product Data, Samples, or similar submittals, unless Contractor has specifically informed District's Representative in writing of such deviation at the time of submittal and District's Representative has given written approval of the specific deviation. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by District's Representative's review, acceptance, comment, or approval thereof.

3.11.7 Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by District's Representative on previous submittals.

3.12 USE OF SITE AND CLEAN UP

3.12.1 Contractor shall confine operations at the Project site to areas permitted by law, ordinances, permits, and the Contract Documents. Contractor shall not unreasonably encumber the Project site with materials or equipment.

3.12.2 Contractor shall, during performance of the Work, keep the Project site and surrounding area free from the accumulation of excess dirt, waste materials, and rubbish caused by Contractor. Contractor shall remove all excess dirt, waste material, and rubbish caused by the Contractor; tools; equipment; machinery; and surplus materials from the Project site and surrounding area at the completion of the Work.

3.12.3 Personnel of Contractor and Subcontractors shall not occupy, live upon, or otherwise make use of the Project site during any time that Work is not being performed at the Project site, except as otherwise provided in the Contract Documents.

3.13 CUTTING AND PATCHING

3.13.1 Contractor shall do all cutting, fitting, or patching of the Work required to make all parts of the Work come together properly and to allow the Work to receive or be received by Work of separate contractors shown upon, or reasonably implied by, the Contract Documents.

3.13.2 Contractor shall not endanger the Work, the Project, or adjacent property by cutting, digging, or otherwise. Contractor shall not cut or alter the Work of any separate contractor without the prior consent of District's Representative.

3.14 ACCESS TO WORK

3.14.1 District, District's Representative, their consultants, and other persons authorized by District shall at all times have access to the Work wherever it is in preparation or progress. Contractor shall provide safe and proper facilities for such access and for inspection.

3.15 ROYALTIES AND PATENTS

3.15.1 Contractor shall pay all royalties and license fees required for the performance of the Work. Contractor shall defend suits or Claims resulting from Contractor's or any Subcontractor's infringement of patent rights and shall indemnify District and District's Representative from losses on account thereof.

3.16 CONCEALED OR UNKNOWN CONDITIONS

3.16.1 If conditions are encountered by Contractor or any Subcontractor at the Project site which are:

- .1 subsurface,
- .2 otherwise concealed and unusual, or
- .3 unknown and unusual physical conditions, which differ materially from those:
 - .1 indicated in or reasonably inferable from the Contract Documents, or
 - .2 discoverable by a reasonable pre-bid Project site inspection, then Contractor shall give notice to District's Representative promptly before such conditions are disturbed and no later than three (3) days after the first observance of such conditions. District's Representative will promptly, using reasonable efforts to minimize delay to the progress of the Work, investigate and determine if such conditions meet the criteria specified above. If such criteria are met, District's Representative will determine what action shall be taken and to what extent, if any, adjustments should be made to the Contract Sum and the Contract Time. District's Representative will state the reasons for such determination in writing.

3.17 REPAIR OF DAMAGED WORK

3.17.1 Contractor shall promptly repair and replace any Work or materials damaged or destroyed prior to Final Completion. If such damage to or loss of the Work does not arise, in whole or in part, from the acts or omissions of Contractor, any Subcontractor, anyone directly or indirectly employed by either of them, or anyone for whose acts either of them may be liable, the following may occur:

- .1 The Contract Time will be subject to adjustment by change order.
- .2 The Contract Sum will be subject to adjustment by change order, if and to the extent that the actual costs of such repair and replacement exceed the greater of the following:
 - .1 The proceeds of insurance received by Contractor for such loss.
 - .2 The amount of insurance proceeds which would have been obtained under the insurance policies required to be maintained by Contractor under the Contract Documents.
 - .3 The amount of insurance proceeds which would have been obtained under the insurance policies required to be maintained by Contractor under the Contract Documents, but for the insurers' inability or refusal to honor such policies.

3.18 DUTY TO DEFEND

3.18.1 To the fullest extent permitted by law, the Contractor shall defend District from and against all suits filed against District alleging Claims (including costs of attorneys' fees) by reason of liability imposed by law and all Claims, including but not limited to, Claims of personal injury, death, damage to property and loss of use thereof, or any Claims arising out of Contractor's performance of the Contract Agreement, or damages or other relief based on allegations of the failure of the Contractor or its Subcontractors to properly perform its obligations under the Contract Agreement, or the Contractor's violations of any legal duties, even if the allegations of any such suit are groundless, false or fraudulent, and the Contractor may make such investigation and settlement of any such suit as it deems expedient. This duty to defend is separate and independent from the Contractor's duty to indemnify and hold harmless District from such Claims. Any failure to fulfill this obligation shall be a default of the Contractor's performance obligations under the Contract Agreement.

3.19 DUTY TO INDEMNIFY

3.19.1 To the fullest extent permitted by the law, the Contractor shall hold harmless and indemnify District from and against all Claims, losses and expenses (including costs of attorneys' fees) by reason of liability imposed by law for any and all Claims, including but not limited to, Claims of personal injury, death, damage to property and loss of use thereof, or any Claims arising out of Contractor's performance of the Contract Agreement, or damages or other relief based on allegations of the failure of the Contractor or its Subcontractors to properly perform its obligations under the Contract Agreement, or the Contractor's violations of any legal duties. Any failure to fulfill this obligation shall be a default of the Contractor's performance obligations under the Contract Agreement.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ADMINISTRATION OF THE CONTRACT BY DISTRICT'S REPRESENTATIVE

4.1.1 District's Representative will provide administration of the Contract Documents in the manner provided therein and will be the representative of District as follows:

- .1 During construction.
- .2 Until final payment is due.

- .3 At District's request from time to time during the guarantee to repair period described in Section 12.2.

District's Representative will have authority to act on behalf of District only to the extent provided in the Contract Documents. The approval by any architect or designer providing design services for District of any modification to the Drawings or Specifications and/or any time extension is not effective unless and until incorporated into a change order approved by District's Representative.

4.1.2 District's Representative will visit the Project site at intervals appropriate to the stages of construction to become familiar with the progress and quality of the completed Work and to determine if the Work is being performed in accordance with the Contract Documents. However, no actions taken during such Project site visit by District's Representative shall relieve Contractor of its obligations as described in the Contract Documents.

4.1.3 District's Representative will not have control over, will not be in charge of, and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely Contractor's responsibility, unless otherwise required by the Contract Documents.

4.1.4 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, District and Contractor shall communicate through District's Representative. Communications by Contractor with District's consultants shall be through District's Representative. Communications by District and District's Representative with Subcontractors shall be through Contractor. Communications by Contractor and Subcontractors with separate contractors shall be through District's Representative. Contractor shall not rely on oral or other non-written communications.

4.1.5 Based on District's Representative's Project site visits and evaluations of Contractor's partial payment requests, District's Representative will review and certify the amounts, if any, due Contractor and will issue certificates for payment in such amounts.

4.1.6 District's Representative will have the authority to reject the Work, or any portion thereof, which does not conform to the Contract Documents. District's Representative shall have the authority to stop the Work or any portion thereof. Whenever District's Representative considers it necessary or advisable for implementation of the intent of the Contract Documents, District's Representative will have the authority to require additional inspection or testing of the Work in accordance with the Contract Documents, whether or not such Work is fabricated, installed, or completed. However, no authority of District's Representative conferred by the Contract Documents, nor any decision made in good faith either to exercise or not exercise such authority, shall give rise to a duty or responsibility of District's Representative to Contractor, Subcontractors, directors, officers, agents, or employees of Contractor or Subcontractors, any other person or firm performing portions of the Work, or third parties.

4.1.7 District's Representative will prepare change orders, field orders, and letters of instruction.

4.1.8 District's Representative will conduct inspections in connection with Beneficial Occupancy, as described in Section 9.6, and to determine the dates of substantial completion and Final Completion; will receive and forward to District, for District's review, any records, written warranties, and related documents required by the Contract Documents and assembled by Contractor; and will issue a final certificate for payment upon Contractor's compliance with the requirements of the Contract Documents.

4.1.9 District's Representative shall be, in the first instance, the interpreter of the requirements of the Contract Documents and the judge of performance thereunder by Contractor. Should Contractor discover any conflicts, omissions, or errors in the Contract Documents; have any questions about the interpretation or clarification of the Contract Documents; question whether Work is within the scope of the Contract Documents; or question that Work required is not sufficiently detailed or explained, then, before proceeding with the Work affected, Contractor shall notify District's Representative in writing and request interpretation, clarification, or furnishing of additional detailed instructions. District's Representative's response to questions and requests for interpretations, clarifications, instructions, or decisions will be made with reasonable promptness. Should Contractor proceed with the Work affected before receipt of a response from District's Representative, any portion of the Work which is not done in accordance with District's Representative's interpretations, clarifications, instructions, or decisions shall be removed or replaced and Contractor shall be responsible for all resultant losses.

4.2 CLAIMS

4.2.1 The term "Claim" means a written demand or assertion by Contractor seeking, as a matter of right, adjustment or interpretation of the terms of the Contract Documents, payment of money, extension of time, or other relief with respect to the Contract Documents, or determination of other disputes or matters in question between District and Contractor arising out of or related to the Contract Documents or the performance of the Work, including Claims alleging an error or omission by District's Representative. However, the term "Claim" shall not include, and the claims procedures provided under this Article 4 shall not apply to the following:

- .1 Claims respecting penalties for forfeitures prescribed by statute or regulation which a government agency is specifically authorized to administer, settle, or determine.
- .2 Claims respecting personal injury, death, reimbursement, or other compensation arising out of or resulting from liability for personal injury or death.
- .3 Claims respecting a latent defect, breach of warranty, or guarantee to repair.
- .4 Claims respecting stop notices.

4.2.2 A Claim must be stated with specificity, including identification of the event giving rise to the Claim, the date of the event, and the asserted effect on the Contract Sum and the Contract Time. The Claim shall include adequate supporting data. Adequate supporting data for a Claim for an adjustment of the Contract Time shall include scheduling data demonstrating the impact of the event on completion of the Work. Adequate supporting data for a Claim for an adjustment of the Contract Sum shall include a detailed cost breakdown of items allowed under Section 7.2. If the exact amount of a Claim is not ascertainable at the time such Claim is made, such supporting data as are then available shall be submitted. Supplemental data supporting the exact amount of the Claim shall be submitted as soon as available.

4.2.3 Submission of a Claim, and all supporting data, correspondence, and documentation relating thereto, shall be made in accordance with Section 15.8.

4.2.4 Contractor shall provide written notice to District's Representative of a potential Claim for additional time or compensation as soon as possible and before proceeding to execute the Work or portions of the Work giving rise to any such Claim. The written notice of potential Claim shall set forth the reasons the Contractor believes additional compensation or time may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential Claim. Thereafter, Contractor shall submit a more detailed Claim in the manner required by Section 4.3. Contractor hereby expressly waives any Claims of which Contractor was aware, whether or not the exact amounts of such Claims were ascertainable, that are not submitted to District's Representative prior to Contractor proceeding to execute the Work or portions of the Work giving rise to such Claims.

4.3 ASSERTION OF CLAIMS

4.3.1 SUBMISSION TO DISTRICT'S REPRESENTATIVE. All Claims shall be first submitted to District's Representative within the time limits provided in Paragraphs 4.2.4 and 4.3.3. Such submission to District's Representative shall be a condition precedent to submission of such Claim to mediation or arbitration.

4.3.2 CONTINUING CONTRACT PERFORMANCE. Notwithstanding the making of any Claim or the existence of any dispute regarding any Claim, unless otherwise directed by District's Representative, Contractor shall not cause any delay, cessation, or termination in or of Contractor's performance of the Work, but shall diligently proceed with performance of the Work in accordance with the Contract Documents. District will continue to make payments in accordance with the Contract Documents.

4.3.3 TIME LIMIT ON CLAIMS. Contractor shall submit documentation in support of a Claim, together with adequate supporting data, to District's Representative as soon as possible but not later than twenty-one (21) days after the occurrence of the event giving rise to the Claim or the date Contractor first recognized, or reasonably should have recognized, the condition giving rise to the Claim, whichever is later. Contractor hereby expressly waives all Claims not made within the aforesaid time limits.

4.4 DECISION ON CLAIMS

4.4.1 District's Representative shall promptly review Claims. If District's Representative reasonably determines that additional supporting data are necessary, District's Representative shall request such additional data within ten (10) days after receipt of the Claim. Such data shall be furnished no later than ten (10) days after such request. District's Representative shall render a decision promptly, but, in any event, within forty-five (45) days after the later of the receipt of the Claim or the receipt of such additional supporting data; provided that, if the amount of the Claim is in excess of \$50,000, the aforesaid forty-five (45) day period shall be sixty (60) days. Failure of District's Representative to render a decision within the aforesaid forty-five (45) or sixty (60) day period shall be deemed a decision denying the Claim and the last day of such period shall be the date of such decision. The decision of District's Representative shall be final and binding, subject, however, to arbitration as provided in Paragraph 4.4.2.

4.4.2 If either Contractor or District disputes District's Representative's decision on a Claim, such party (the "Disputing Party") may initiate arbitration not later than one hundred eighty (180) days after the date of service in person or by mail on the Disputing Party of the final written decision of District's Representative or, if no written decision has been issued, within two hundred forty (240) days after acceptance of the Work.

4.4.3 If a demand for arbitration is not filed by either party within one hundred eighty (180) days after the written decision of District's Representative, that decision shall be final and binding, both parties shall have waived the right to arbitrate, and there shall not be any right to arbitrate or litigate such waiver or any other dispute arising out of the Contract Documents.

4.5 ARBITRATION

4.5.1 All Claims, disputes and other matters in question between the parties arising out of or relating to the Contract Documents shall be decided by arbitration in accordance with the provisions of Public Contract Code Sections 10240-10240.13 and 22201 and the rules of the Office of Administrative Hearings. The Contractor's surety may be made a party to the arbitration proceeding and the arbitration decision shall be binding upon the Contractor's surety. The arbitration decision shall be decided under and in accordance with the laws of the State of California, supported by substantial evidence and, in writing, contain the basis for the decision, findings of fact, and conclusions of law.

4.5.2 An Arbitration is commenced by filing with the Office of Administrative Hearings in Sacramento a verified Complaint in Arbitration within one hundred eighty (180) days from receipt of the decision, or, if no written decision has been issued, within two hundred forty (240) days after acceptance of the Work. The Petitioner shall serve copies of the complaint on the Respondent and any other named party.

4.5.3 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any arbitration proceeding.

4.5.4 Contractor shall include appropriate language requiring arbitration of all disputes as required by this Article 4 in all subcontracts and agreements of all kinds to which it is a party and which relate to any aspect of the Work so that all Subcontractors and material suppliers are subject to and bound by arbitration as set forth in this Article.

4.5.5 The provisions for arbitration and mediation provided in these General Conditions are in lieu of those contained in Article 1.5, Section 20104, of the Public Contract Code, which provisions are not binding upon District, which is a charter district governed by the California Constitution, Article XI, Section 5.

4.6 MEDIATION

4.6.1 If the parties to a dispute agree in writing, any Claim appealed from the decision of District's Representative may be submitted to mediation in accordance with the Construction Industry Mediation Rules of the American Arbitration Association ("AAA") then in effect.

ARTICLE 5

SUBCONTRACTORS

5.1 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.1.1 Unless otherwise stated in the Contract Documents, Contractor shall submit in writing, prior to entering into subcontract agreements, the names and addresses of all Subcontractors proposed for the Work that were not previously listed in Contractor's bid. Any Subcontractor may be disqualified if District or District's Representative determines that such Subcontractor fails to meet the requirements of the Contract Documents or for any other reason.

5.1.2 In accordance with the Subletting and Subcontracting Fair Practices Act, nothing herein shall be deemed to entitle Contractor, without the approval of District, to substitute other Subcontractors for those named in Contractor's list of Subcontractors and list of changes in Subcontractors due to alternates contained in the completed bid form; and, except with such approval, no such substitution shall be made.

5.1.3 Except as hereinafter provided, any increase in the cost of the Work resulting from the replacement or substitution of a Subcontractor, as required by District or District's Representative pursuant to Paragraph 5.1.1, shall be borne solely by Contractor and Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time on account of such replacement or substitution. However, if a replacement or substitution of any Subcontractor is made as a result of the request of District or District's Representative for any reason other than failure of such Subcontractor to meet the requirements of the Contract Documents, the Contract Sum shall be subject to adjustment of an amount equal to the increase or decrease in the original subcontract amount. In such cases and at the request of District, the replacement Subcontractor shall be selected through a competitive bidding process acceptable to District.

5.2 SUBCONTRACTUAL RELATIONS

5.2.1 All subcontracts shall be in writing and shall require the Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to Contractor by the terms of the Contract Documents, to assume toward Contractor all the obligations and responsibilities which Contractor assumes towards District by the Contract Documents, and to perform such portion of the Work in accordance with the Contract Documents. Each such subcontract shall preserve and protect the rights of District under the Contract Documents, with respect to the Work to be performed by Subcontractor, so that subcontracting thereof will not prejudice such rights. Contractor shall cause each such subcontract to expressly include the following requirements:

- .1 Subcontractor waives all rights that Subcontractor may have against District for damages caused by fire or other perils covered by builder's risk property insurance carried by Contractor or District, except for such rights Subcontractor may have to the proceeds of such insurance held by District under Article 11.
- .2 District and entities and agencies designated by District shall have access to and the right to audit and copy at District's cost all of Subcontractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, and memoranda relating to the Work. Subcontractor shall preserve all such records and other items for a period of at least three (3) years after Final Completion.
- .3 Subcontractor recognizes the rights of District under Section 5.3, Contingent Assignment of Subcontracts, and agrees, upon notice from District that District has elected to accept said assignment and to retain Subcontractor pursuant to the terms of the subcontract, to complete the

unperformed obligations under the subcontract and, if requested by District, to execute a written agreement confirming that Subcontractor is bound to District under the terms of the subcontract.

5.2.2 Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and District, except when, and only to the extent that, District elects to accept the assignment of the subcontract with such Subcontractor pursuant to Section 5.3, Contingent Assignment of Subcontracts.

5.2.3 No Subcontractors shall commence to Work at the Project unless and until their subcontract is available for inspection at the Contractor's office at the Project site. Upon request of District's Representative, any or all subcontracts shall be produced for inspection. Any failure to produce a requested subcontract for inspection by District's Representative will be cause for District to withhold partial payments.

5.3 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.3.1 Contractor hereby assigns to District all its interest in subcontracts now or hereafter entered into by Contractor for performance of any part of the Work. The assignment will be effective upon acceptance by District in writing and only as to those subcontracts which District designates in writing. District may accept said assignment at any time during the course of the Work and prior to Final Completion in the event of a suspension or termination of Contractor's rights under the Contract Documents. Such assignment is part of the consideration to District for entering into the Contract Agreement with Contractor and may not be withdrawn prior to Final Completion.

ARTICLE 6

SITE INVESTIGATION AND CONDITIONS

6.1 SITE INFORMATION PROVIDED BY DISTRICT

6.1.1 The District has made available to the Contractor, prior to the receipt of bids, all information of which District is aware as to surface and subsurface conditions in the vicinity of the Project site, including any topographical maps, reports of investigation of soil or subsurface conditions and logs of test borings, written opinions of technical advisers, and other information. All such information was obtained by District to assist the Project consultants and provide geotechnical data available for site preparation, grading and design of foundations.

6.1.2 The information which District has made available is not part of the Contract Documents and was made available solely for the convenience of the Contractor. It is expressly understood and agreed that the District assumes no responsibility whatsoever in respect to the sufficiency or accuracy of any investigation District has made, the records thereof, or of the interpretations set forth therein, and there is no warranty or guaranty, express or implied, that the conditions indicated by such investigations or records are representative of those existing throughout the Project site or any part thereof, or that unanticipated developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

6.2 CONTRACTOR'S DUTY TO INSPECT SITE

6.2.1 The availability to the Contractor of District's information shall not be construed as a waiver of the Contractor's duty to examine the Project site. The Contractor represents that prior to submitting a bid, the Contractor visited the Project site and made such independent investigations and examinations deemed necessary to determine the existing conditions, nature of materials to be encountered and other facts concerning or affecting the Work to be performed under the Contract Documents.

6.3 RISK OF UNANTICIPATED SOIL OR SUBSURFACE CONDITIONS

6.3.1 The information which District has made available to Contractor will not relieve the Contractor from the risk of unanticipated soil or subsurface conditions or other physical conditions which were discoverable by a reasonable pre-bid inspection of the project site or from properly fulfilling the terms of the Contract Documents at the Contract Sum.

ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 District may, from time to time, order additions, deletions, and other changes in the Work. Changes in the Work may be effected by change order or field order without invalidating the Contract Agreement and without notice to sureties.

7.1.2 Contractor shall proceed promptly with any changes in the Work, unless otherwise provided in the relevant change order, field order, or letter of instruction.

7.1.3 An adjustment of the Contract Time shall not be made unless the change described in the change order affects Work that is on the critical path of the Contract Schedule or otherwise affects critical Work activities.

7.2 CHANGE ORDERS

7.2.1 A change order is a written instrument prepared by District's Representative, which provides for the following:

- .1 A change in the Work, if any.
- .2 An adjustment of the Contract Sum, if any.
- .3 An adjustment of the Contract Time, if any.

Change orders cannot be authorized by District's project architect or by anyone other than District's Representative, unless specifically authorized by the plans and specifications.

7.2.2 If requested, Contractor shall promptly provide District's Representative with a change order proposal, setting forth Contractor's proposed adjustments of the Contract Sum and the Contract Time, if any, for performing the change in the Work. Adjustments of the Contract Sum shall be determined using the methods described in this Section 7.2.

7.2.3 When Work is omitted by change order, the adjustment to the Contract Sum shall be computed on the basis of one or more of the following:

- .1 Unit prices stated in the Contract Documents or agreed upon by District's Representative and Contractor.
- .2 A lump sum agreed upon by District's Representative and Contractor, based upon the estimated costs of the omitted portions of the Work, with no Contractor fee.
- .3 As determined by District's Representative, if District and Contractor cannot agree upon one or both of the methods described above, which determination shall be in accordance with the methods described in Paragraphs 7.2.4 to 7.2.12.

Note that the District retains the right to specify which of the above basis of computation will be required per change order.

7.2.4 EXTRA WORK PERFORMED BY CONTRACTOR. The Contractor will be paid the direct costs for labor, materials and equipment used in performing extra work approved by District's Representative and determined as provided in Paragraphs 7.2.5 "Labor," 7.2.6 "Materials," 7.2.7 "Equipment Rental," 7.2.8 "Equipment on the Work," 7.2.9 "Equipment Not on the Work," 7.2.10 "Owner-Operated Equipment," and 7.2.11 "Dump Truck Rental."

To the total of the direct costs computed as provided in Paragraphs 7.2.5 "Labor," 7.2.6 "Materials," and 7.2.7 "Equipment Rental," there will be added a markup for overhead and profit of twenty-five percent (25%) to the cost

of labor, fifteen percent (15%) to the cost of materials, and fifteen percent (15%) to the equipment rental. These markups shall constitute full compensation for all profit and overhead costs, regardless of whether the work was performed by Contractor or a Subcontractor, and shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Paragraphs 7.2.5 "Labor," 7.2.6 "Materials," and 7.2.7 "Equipment Rental." The total payment made as provided herein shall constitute full compensation therefor.

7.2.5 LABOR. Contractor will be paid the cost of labor for the workers (including supervisors when authorized by the District's Representative), used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, Subcontractor, or other forces, will be the sum of the following:

- .1 Actual Wages. The actual wages paid shall include any employer payments to or on behalf of the workers for health and welfare, pension, vacation, and similar purposes.
- .2 Labor Surcharge. To the actual wages, as defined in Subparagraph 7.2.5.1, will be added a labor surcharge set forth in the California Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates, which is in effect on the date upon which the work is accomplished. The labor surcharge shall constitute full compensation for all payments imposed by State and Federal laws and for all other payments made to or on behalf of the workers, other than actual wages as defined in Subparagraph 7.2.5.1 and subsistence and travel allowance as specified in Subparagraph 7.2.5.3.
- .3 Subsistence and Travel Allowance. The actual subsistence and travel allowance paid to the workers.

7.2.6 MATERIALS. The District reserves the right to furnish any materials it deems advisable, and the Contractor shall have no claims for costs and markup on these materials.

Only materials furnished by the Contractor and necessarily used in the performance of the work will be paid for. The cost of those materials will be the cost to the purchaser, whether Contractor, Subcontractor or from the supplier thereof, except as the following are applicable:

- .1 If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the District notwithstanding the fact that the discount may not have been taken.
- .2 If materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to the purchaser, the cost of those materials shall be deemed to be the price paid to the actual supplier as determined by the District's Representative plus the actual costs, if any, incurred in the handling of the materials.
- .3 If the materials are obtained from a supply or source owned wholly or in part by the purchaser, the cost of those materials shall not exceed the price paid by the purchaser for similar materials furnished from that source on contract items or the current wholesale price for those materials delivered to the job site, whichever price is lower.
- .4 If the cost of the materials is, in the opinion of the District's Representative excessive, then the cost of the material shall be deemed to be the lowest current wholesale price at which the materials were available in the quantities concerned delivered to the job site less any discounts as provided in Subparagraph 7.2.6.1.
- .5 If the Contractor does not furnish satisfactory evidence of the cost of the materials from the actual supplier thereof within sixty (60) days after the date of delivery of the material or within fifteen (15) days after acceptance of the Work, whichever occurs first, the District reserves the right to establish the cost of the materials at the lowest current wholesale prices at which the materials were available in the quantities concerned delivered to the location of the work, less any discounts as provided in Subparagraph 7.2.6.1.

7.2.7 EQUIPMENT RENTAL. The Contractor will be paid for the use of equipment at the rental rates listed for that equipment in the California Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the Contract Documents, regardless of ownership and any rental or other agreement, if they may exist, for the use of

that equipment entered into by the Contractor, except that for those pieces of equipment with a rental rate of \$10.00 per hour or less as listed in the Labor Surcharge and Equipment Rental Rates publication and which are rented from a local equipment agency, other than Contractor owned, the Contractor will be paid at the hourly rate shown on the rental agency invoice or agreement for the time used on the work as provided in Paragraph 7.2.8 "Equipment on the Work." If a minimum equipment rental amount is required by the local equipment rental agency, the actual amount charged will be paid to the Contractor.

If it is deemed necessary by District's Representative to use equipment not listed in the Labor Surcharge and Equipment Rental Rates publication, a suitable rental rate for that equipment will be established by the District's Representative. The Contractor may furnish any cost data which might assist the District's Representative in the establishment of the rental rate. If the rental rate established by the District's Representative is \$10.00 per hour or less, the provisions above concerning rental of equipment from a local equipment agency shall apply. The rental rates paid as above-provided shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Operators of rented equipment will be paid for as provided in Paragraph 7.2.5 "Labor."

All equipment shall, in the opinion of the District's Representative, be in good working condition and suitable for the purpose for which the equipment is to be used. Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools not listed in the Labor Surcharge and Equipment Rental Rate publication and having a replacement value of \$500 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

Rental time will not be allowed while equipment is inoperative due to breakdowns.

7.2.8 EQUIPMENT ON THE WORK. The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than the extra work.

The following shall be used in computing the rental time of equipment on the work:

- .1 When hourly rates are listed, less than thirty (30) minutes of operation shall be considered to be 0.5-hour of operation.
- .2 When daily rates are listed, less than four (4) hours of operation shall be considered to be 0.5-day of operation.

7.2.9 EQUIPMENT NOT ON THE WORK. For the use of equipment moved in on the work and used exclusively for extra work paid, the Contractor will be paid the rental rates listed in the California Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates, which is in effect on the date upon which the work is accomplished, or determined as provided in Paragraph 7.2.7 and for the cost of transporting the equipment to the location of the work and its return to its original location, all in accordance with the following provisions:

- .1 The original location of the equipment to be hauled to the location of the work shall be agreed to by the District's Representative in advance.
- .2 The District will pay the costs of loading and unloading the equipment.

- .3 The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers.
- .4 The cost of transporting equipment shall not exceed the applicable minimum established rates of the Public Utilities Commission.
- .5 The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays, and legal holidays unless the equipment is used to perform the extra work on those days, and shall terminate at the end of the day on which the District's Representative directs the Contractor to discontinue the use of the equipment.

The rental time to be paid per day will be in accordance with the following:

Hours Equipment is in Operation	Hours to be paid
0	4
0.5	4.25
1	4.5
1.5	4.75
2	5
2.5	5.25
3	5.5
3.5	5.75
4	6
4.5	6.25
5	6.5
5.5	6.75
6	7
6.5	7.25
7	7.5
7.5	7.75
8	8
Over 8	hours in operation

The hours to be paid for equipment which is operated less than eight (8) hours due to breakdowns shall not exceed eight (8) less the number of hours the equipment is inoperative due to breakdowns.

When hourly rates are listed, less than thirty (30) minutes of operation shall be considered to be 0.5-hour of operation.

When daily rates are listed, payment for 0.5-day will be made if the equipment is not used. If the equipment is used, payment will be made for one (1) day.

The minimum rental time to be paid for the entire rental period on an hourly basis shall not be less than eight (8) hours or, if on a daily basis, shall not be less than one (1) day.

- .6 Should the Contractor desire the return of the equipment to a location other than its original location, the District will pay the cost of transportation in accordance with the above provisions, provided the payment shall not exceed the cost of moving the equipment to the work.
- .7 Payment for transporting, and loading and unloading equipment, as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for.

When extra work, other than work specifically designated as extra work in the plans and specifications, is to be paid and the District's Representative determines that the extra work requires the Contractor to move on to the work equipment which could not reasonably have been expected to be needed in the performance of the work, the

District's Representative may authorize payment for the use of the equipment at equipment rental rates in excess of those listed as applicable for the use of that equipment subject to the following additional conditions:

- .1 The District's Representative shall specifically approve the necessity for the use of particular equipment on that work,
- .2 The Contractor shall establish to the satisfaction of the District's Representative that the equipment cannot be obtained from the Contractor's normal equipment source or sources and those of the Contractor's Subcontractors,
- .3 The Contractor shall establish to the satisfaction of the District's Representative that the proposed equipment rental rate for the equipment from the proposed source is reasonable and appropriate for the expected period of use,
- .4 The District's Representative shall approve the equipment source and the equipment rental rate to be paid by the District before the Contractor begins work involving the use of that equipment.

7.2.10 OWNER-OPERATED EQUIPMENT. When owner-operated equipment is used to perform extra work, the Contractor will be paid for the equipment and operator, as follows:

Payment for the equipment will be made in accordance with the provisions in Paragraph 7.2.7 "Equipment Rental."

Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the Contractor to other workers operating similar equipment already on the project or, in the absence of other workers operating similar equipment, at the rates for that labor established by collective bargaining agreements for the type of workers and location of the work, whether or not the owner-operator is actually covered by an agreement. A labor surcharge will be added to the cost of labor described herein, in accordance with the provisions in Subparagraph 7.2.5.2 "Labor Surcharge."

To the direct cost of equipment rental and labor, computed as provided herein, will be added the markups for equipment rental and labor as provided in Paragraph 7.2.4 "Extra Work Performed by Contractor."

7.2.11 DUMP TRUCK RENTAL. Dump truck rental shall conform to the provisions of Paragraphs 7.2.7 "Equipment Rental," 7.2.8 "Equipment on the Work," and 7.2.9 "Equipment Not on the Work," except as follows:

- .1 Fully maintained and operated rental dump trucks used in the performance of extra work will be paid for at the same hourly rate paid by the Contractor for use of fully maintained and operated rental dump trucks in performing contract item work.
- .2 In the absence of contract item work requiring dump truck rental, the District's Representative will establish an hourly rental rate to be paid. The Contractor shall provide the District's Representative with complete information on the hourly rental rates available for rental of fully maintained and operated dump trucks.
- .3 The provisions in Paragraph 7.2.5 "Labor" shall not apply to operators of rented dump trucks.
- .4 The rental rates listed for dump trucks in the California Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates shall not apply.
- .5 To the total of the rental costs for fully maintained and operated dump trucks, including labor, there will be added a markup of fifteen percent (15%). No separate markup will be made for labor.
- .6 The provisions of Paragraph 7.2.10 "Owner-Operated Equipment" shall not apply to dump truck rentals.

7.2.12 WORK PERFORMED BY SPECIAL FORCES OR OTHER SPECIAL SERVICES. When the District's Representative and the Contractor, by agreement, determine that a special service or an item of extra work cannot be performed by the forces of the Contractor or those of any of the Contractor's Subcontractors, that service

or extra work item may be performed by a specialist. Invoices for the service or item of extra work on the basis of the current market price thereof may be accepted without a complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with the established practice of the special service industry to provide a complete itemization.

In those instances wherein a Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the job site, the charges for that portion of the extra work performed in the facility may, by agreement, be accepted as a specialist billing.

To the specialist invoice price, less a credit to the District for any cash or trade discount offered or available, whether or not the discount may have been taken, will be added fifteen percent (15%) in lieu of the percentages provided in Paragraph 7.2.4 "Extra Work Performed by Contractor."

7.2.13 RECORDS. The Contractor shall maintain records in such a manner as to provide a clear distinction between the direct costs of extra work and the costs of other operations. From the above records, the Contractor shall furnish the District's Representative completed daily extra work reports, either on forms furnished by the District or on computerized facsimiles of the California Department of Transportation's forms acceptable to the District's Representative, for each day's extra work. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces, except for charges described in Paragraph 7.2.12 "Work Performed by Special Forces or Other Special Services." The daily extra work reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Material charges shall be substantiated by valid copies of vendor's invoices. The invoices shall be submitted with the daily extra work reports or, if not available, they shall be submitted with subsequent daily extra work reports. Should the vendor's invoices not be submitted within sixty (60) days after the date of delivery of the material or within fifteen (15) days after completion of the extra work, whichever occurs first, the District reserves the right to establish the cost of the materials at the lowest current wholesale prices at which those materials were available in the quantities concerned, delivered to the location of work, less any discounts as provided in Subparagraph 7.2.6.1.

Daily extra work reports shall be signed by the Contractor or the Contractor's authorized representative.

The District's Representative will compare his or her records with the completed daily extra work reports furnished by the Contractor and make any necessary adjustments. When these daily extra work reports are agreed upon and signed by both parties, the reports shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit by the District.

The Contractor's cost records pertaining to extra work shall be open to inspection or audit by representatives of the District during the life of the Contract Agreement and for a period of not less than four (4) years after the date of the notice of completion or cessation of labor therefor, and the Contractor shall retain those records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor shall make every reasonable effort to ensure that the cost records of those other forces will be open to inspection and audit by representatives of the District on the same terms and conditions as the cost records of the Contractor. If an audit is to be commenced more than sixty (60) days after the acceptance date of the notice of completion or cessation of labor, the Contractor will be given a reasonable notice of the time when the audit is to begin.

7.2.14 PAYMENT. Payment as provided in Paragraphs 7.2.4 "Extra Work Performed by Contractor" and 7.2.12 "Work Performed by Special Forces or Other Special Services" shall constitute full compensation to the Contractor for performance of extra work and no additional compensation will be allowed therefor. The payment will be made in accordance with the provisions in Section 9.2 "Partial Payment."

7.3 FIELD ORDERS

7.3.1 A field order describing the scope of the change in the Work and the estimated adjustments of the Contract Sum and the Contract Time may be issued by District's Representative to order a change in the Work before the terms of the change incorporated into a change order. If appropriate, Contractor shall promptly provide

District's Representative with a change order proposal setting forth its estimate of the adjustments of the Contract Sum and the Contract Time, if any, for performing the change in the Work. The field order will be superseded by a change order which shall include the actual adjustments, if any, of the Contract Sum and the Contract Time, as well as the scope of the change in the Work. Only District's Representative has the authority to issue field orders, except when otherwise provided in the plans or Specifications.

7.3.2 If the field order provides for an adjustment of the Contract Sum, the adjustment shall be based upon one of the methods described in Section 7.2.

7.3.3 Upon receipt of a field order, Contractor shall promptly proceed with the change in the Work. Contractor shall advise District's Representative of its agreement or disagreement with the method, if any, provided in the field order for determining the proposed adjustments of the Contract Sum and the Contract Time.

7.3.4 A field order signed by Contractor indicates the agreement of Contractor therewith, including Contractor's agreement to the estimated adjustments of the Contract Sum and the Contract Time and the methods used to determine those adjustments. Such agreement shall be effective immediately and will be followed with a change order at such time as the actual adjustments are determined.

7.3.5 If Contractor does not agree to the adjustment of the Contract Sum set forth in a field order, District's Representative shall determine the adjustment of the Contract Sum in accordance with the provisions of Paragraphs 7.2.4 through 7.2.12 and Contractor shall comply with the provisions of Paragraph 7.2.13 regarding records and documentation of actual costs.

7.4 LETTERS OF INSTRUCTION

7.4.1 District's Representative may issue letters of instruction which make interpretations or clarifications of the Contract Documents that do not change the scope of Work or involve an adjustment of the Contract Sum or the Contract Time and that are consistent with the intent of the Contract Documents. Letters of instruction shall be binding upon Contractor. Contractor shall promptly carry out the requirements of such letters of instruction.

7.5 VARIATION IN QUANTITY OF UNIT PRICE WORK

7.5.1 District has the right to increase or decrease the quantity of any unit price item for which an estimated quantity is stated in the Contract Agreement. If the actual quantity of any unit price item is more than one-hundred twenty-five percent (125%) or less than seventy-five percent (75%) of the estimated quantity stated for such item in the Contract Agreement, an equitable adjustment in the unit price may be made if requested by either District or Contractor.

ARTICLE 8

CONTRACT TIME

8.1 COMMENCEMENT OF THE WORK

8.1.1 The date of commencement of the Work shall be set forth in the notice to proceed. The date of commencement of the Work shall not be postponed by the failure of Contractor, or of persons or firms for whom Contractor is responsible, to act.

8.2 PROGRESS AND COMPLETION

8.2.1 By signing the Contract Agreement, Contractor represents to District that the Contract Time is reasonable for performing the Work and that Contractor is able to perform the Work within the Contract Time.

8.2.2 Contractor shall not, except by agreement or instruction of District's Representative in writing, commence operations on the Project site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by Contractor. The dates of commencement and completion of the Work shall not be changed by the effective date of such insurance.

8.2.3 Contractor shall proceed expeditiously with adequate forces and shall achieve Final Completion within the Contract Time. If Contractor is not diligently proceeding with the prosecution of the Work as scheduled, Contractor shall, immediately and at no additional cost to District, take all measures necessary, including working such overtime, additional shifts, Sundays, or holidays, as may be required to correct said delays and to ensure no further delays to the completion of the Work.

8.3 DELAY

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

- .1 "Excusable Delay" means any delay of the completion of the Work beyond the expiration of the Contract Time caused by conditions beyond the control and without the fault or negligence of Contractor such as embargoes, fire, unavoidable casualties, unusual delays in transportation, national emergency, and abnormal stormy and inclement weather conditions in which the Work cannot continue. The financial inability of Contractor or any Subcontractor and any default of any Subcontractor, without limitation, shall not be deemed conditions beyond Contractor's control. An Excusable Delay may entitle Contractor to an extension of the Contract Time, in accordance with Paragraphs 7.1.3 and 8.3.2, but shall not entitle Contractor to any adjustment of the Contract Sum.
- .2 "Compensable Delay" means any delay of the completion of the Work beyond the expiration date of the Contract Time caused by the gross negligence or willful acts of District or District's Representative, and which delay is unreasonable under the circumstances involved and not within the contemplation of the parties. A Compensable Delay may entitle Contractor to an extension of the Contract Time, in accordance with Paragraph 8.3.2 and subject to Paragraph 7.1.3, and/or an adjustment of the Contract Sum, in accordance with Paragraph 8.3.3. Except as provided herein, Contractor shall have no Claim for damage or compensation for any delay, interruption, hindrance, or disruption.
- .3 "Unexcusable Delay" means any delay of the completion of the Work beyond the expiration of the Contract Time resulting from causes other than those listed in Subparagraphs 8.3.1.1 and 8.3.1.2. An Unexcusable Delay shall not entitle Contractor to an extension of the Contract Time or an adjustment of the Contract Sum.

8.3.2 CLAIMS FOR ADJUSTMENT OF THE CONTRACT TIME FOR DELAYS. Contractor may make a Claim for an extension of the Contract Time, for an Excusable Delay or a Compensable Delay, subject to the following:

- .1 If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last.
- .2 If an Unexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, by which the Excusable Delay or the Compensable Delay exceeds the Unexcusable Delay.
- .3 If an Unexcusable Delay occurs concurrently with both an Excusable Delay and a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, by which the number of days determined pursuant to Subparagraph 8.3.2.1 exceeds the number of days of the Unexcusable Delay.

8.3.3 CLAIMS FOR ADJUSTMENT OF THE CONTRACT SUM FOR DELAYS. For a Compensable Delay, Contractor shall only be entitled to an adjustment of the Contract Sum in an amount equal to the sum of the following:

- .1 Actual and unavoidable additional costs of labor, material, and equipment provided by Contractor at the Project site as a result of the Compensable Delay,
- .2 plus actual and unavoidable additional costs incurred by Contractor for labor, material, and equipment provided by Subcontractors as a result of the Compensable Delay,

- .3 plus actual and unavoidable additional wages or salaries and fringe benefits and payroll taxes of supervisory and administrative personnel provided by Contractor and Subcontractors at the Project site as a result of the Compensable Delay,
- .4 plus the amount of the Contractor fee determined by applying the provisions of Paragraph 7.2.4 to the sum of items .1, .2, and .3 above.

To be entitled to an adjustment of the Contract Sum for Compensable Delay, Contractor shall comply with the provisions of Sections 4.2 through 4.5. Except as provided herein, Contractor shall have no Claim for damage or compensation for any delay, interruption, hindrance, or disruption.

8.3.4 The parties agree that District's exercise of its rights to order changes in the Work, regardless of the extent and number of changes, or to suspend the Work, is within the contemplation of the parties and shall not be the basis for any Claim for Compensable Delay. The rights of Contractor to adjustments of the Contract Time and the Contract Sum, based on changes ordered in the Work or suspension of the Work, shall be solely governed by the provisions of Articles 7 and 13, respectively.

8.3.5 The determination of whether a delay is an Excusable Delay, Compensable Delay, or Unexcusable Delay shall not be affected by the fact that any earlier delay occurred, regardless of fault or causation.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 COST BREAKDOWN

9.1.1 Within thirty (30) days after signing the Contract Agreement, but in any event prior to the first partial payment request, Contractor shall submit to District's Representative a detailed schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. The cost breakdown shall itemize as separate line items the cost of each Work activity and all other costs, including warranties, record documents, insurance, bonds, overhead expenses, and the total allowance for profit, the total of which shall equal the Contract Sum. The schedule of values, when approved by District, shall become the basis for determining the cost of Work performed for Contractor's partial payment requests.

9.2 PARTIAL PAYMENT

9.2.1 District agrees to pay monthly to Contractor, subject to Paragraph 9.4.2, an amount equal to ninety percent (90%) of the sum of the following:

- .1 Cost of the Work in permanent place as of the end of the preceding month,
- .2 plus cost of materials not yet incorporated in the Work, subject to Paragraph 9.3.5,
- .3 less amounts previously paid.

9.2.2 The balance of the Contract Sum shall be paid after Final Completion in accordance with Section 9.7.

9.3 PARTIAL PAYMENT REQUEST

9.3.1 On or before the tenth (10th) day of the month or such other date as is established by the Contract Documents, Contractor shall submit to District's Representative an itemized partial payment request for the cost of the Work in permanent place, as approved by District's Representative, which has been completed in accordance with the Contract Documents as of the last day of the preceding month, less amounts previously paid. The partial payment request shall be prepared as follows:

- .1 Itemize in accordance with the cost breakdown.
- .2 Include such data substantiating Contractor's right to payment as District's Representative may reasonably require, such as invoices, certified payrolls, daily time and material records, and, if securities are deposited in lieu of retention pursuant to Section 9.5, a certification of the market value of all such securities as of a date not earlier than five (5) days prior to the date of the partial payment request.
- .3 Itemize retention.

9.3.2 Partial payment requests shall not include requests for payment on account of (1) changes which have not been authorized by change orders or (2) amounts Contractor does not intend to pay a Subcontractor because of a dispute or other reason.

9.3.3 If required by District, a partial payment request shall be accompanied by (1) a summary showing payments that will be made to Subcontractors covered by such request and (2) unconditional waivers and releases of Claims and stop notices from each Subcontractor listed in the preceding partial payment request covering sums disbursed pursuant to that preceding partial payment request.

9.3.4 Contractor warrants that, upon submittal of a partial payment request, all Work for which partial payment authorizations have been previously issued and payment has been received from District shall be free and clear of all Claims, stop notices, security interests, and encumbrances in favor of Contractor, Subcontractors, or other persons or firms entitled to make Claims by reason of having provided labor, materials, or equipment relating to the Work.

9.3.5 At the sole discretion of District, District's Representative may approve for inclusion in the partial payment request the cost of materials not yet incorporated in the Work but already delivered and suitably stored either at the Project site or at some other appropriate location acceptable to District's Representative. In such case, Contractor shall furnish evidence satisfactory to District's Representative (1) of the cost of such materials and (2) that such materials are under the exclusive control of Contractor. Only materials to be incorporated in the Work will be considered for payment. Any payment shall not be construed as acceptance of such materials nor relieve Contractor from sole responsibility for the care and protection of such materials; nor relieve Contractor from risk of loss to such materials from any cause whatsoever; nor relieve Contractor from its obligation to complete the Work in accordance with the Contract Documents; nor act as a waiver of the right of District to require fulfillment of all terms of the Contract Agreement.

9.4 PARTIAL PAYMENT AUTHORIZATION

9.4.1 If Contractor has submitted a partial payment request in accordance with Section 9.3, District's Representative shall, not later than five (5) working days after the date of receipt of the partial payment request, issue to District, with a copy to Contractor, a partial payment authorization for such amount as District's Representative determines to be properly due.

9.4.2 Approval of all or any part of a partial payment request may be withheld, a partial payment authorization may be withheld, and all or part of a previous partial payment authorization may be nullified and that amount withheld from a current partial payment authorization on account of any of the following:

- .1 Defective work not remedied.
- .2 Third-party claims against Contractor or District arising from the acts or omissions of Contractor or Subcontractors.
- .3 Stop notices.
- .4 Failure of Contractor to make timely payments due Subcontractors for material or labor.
- .5 A reasonable doubt that the Work can be completed for the balance of the Contract Sum then unpaid.
- .6 Damage to District or a separate contractor for which Contractor is responsible.

- .7 Reasonable evidence that the Work will not be completed within the Contract Time; and that the unpaid balance of the Contract Sum would not be adequate to cover District's damages for the anticipated delay.
- .8 Failure of Contractor to maintain and update record documents.
- .9 Failure of Contractor to submit schedules or their updates as required by the Contract Documents.
- .10 Performance of Work by Contractor without properly processed Shop Drawings.
- .11 Liquidated damages assessed in accordance with Article 4 of the Contract Agreement.
- .12 Any other failure of Contractor to perform its obligations under the Contract Documents.

9.4.3 Subject to the withholding provisions of Paragraph 9.4.2, District shall pay Contractor the amount set forth in the partial payment authorization no later than fifteen (15) days after the issuance of the partial payment authorization.

9.4.4 Neither a partial payment authorization nor any partial payment made by District shall constitute acceptance of defective work.

9.5 DEPOSIT OF SECURITIES IN LIEU OF RETENTION AND DEPOSIT OF RETENTION INTO ESCROW

9.5.1 At the request and expense of Contractor, a substitution of securities may be made for any monies retained by District under Section 9.2 to ensure performance under the Contract Documents. Securities equivalent in value to the retention amount required by the Contract Documents for each partial payment authorization shall be deposited by Contractor with a state or federally chartered bank in the State of California ("Escrow Agent"), which shall hold such securities pursuant to the escrow agreement referred to in Paragraph 9.5.3 until final payment is due in accordance with Section 9.7. Securities shall be valued as often as conditions of the securities market warrant, but in no case less than once per month. Contractor shall deposit additional securities so that the current market value of the total of all deposited securities shall be at least equal to the total required amount of retention.

9.5.2 Alternatively to Paragraph 9.5.1, and at the request and expense of Contractor, District shall deposit retentions directly with an escrow agent. Contractor may direct the investment of such deposited retention into interest bearing accounts or securities, and such deposits or securities shall be held by the escrow agent upon the same terms provided for securities deposited by Contractor.

9.5.3 A prerequisite to the substitution of securities in lieu of retentions or the deposit of retentions into escrow shall be the execution by Contractor, District, and escrow agent of an escrow agreement for deposit of securities in lieu of retention and deposit of retention in the following form:

behalf of the District and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of District:

Title

Name

Signature

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

At the time the Escrow Account is opened, the District and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

District:

Title

Name

Signature

Contractor:

Title

Name

Signature

Leg.H. Amended by Stats 1991, Ch. 933, Sec. 1; Stats 1993, Ch. 1195, Sec. 25.5.

9.6 BENEFICIAL OCCUPANCY

9.6.1 District reserves the right, at its option and convenience, to occupy or otherwise make use of all or any part of the Work at any time prior to Final Completion upon ten (10) days' notice to Contractor. Such occupancy or use is herein referred to as "Beneficial Occupancy." Beneficial Occupancy shall be subject to the following conditions:

- .1 District's Representative will make an inspection of the portion of the Project to be beneficially occupied and prepare a list of items to be completed or corrected prior to Final Completion. Prior to Beneficial Occupancy, District will issue a certificate of Beneficial Occupancy on District's form.
- .2 Beneficial Occupancy by District shall not be construed by Contractor as an acceptance by District of that portion of the Work which is to be occupied.
- .3 Beneficial Occupancy by District shall not constitute a waiver of existing Claims of District or Contractor against each other.
- .4 The guarantee to repair periods, as defined in Section 12.2, will commence upon the first dates of actual occupancy or use of portions of the Work actually occupied and equipment or systems fully utilized.
- .5 District shall pay all normal operating and maintenance costs resulting from its use of equipment in areas beneficially occupied.
- .6 District shall pay all utility costs which arise out of the Beneficial Occupancy.
- .7 Contractor shall not be responsible for providing security in areas beneficially occupied.
- .8 Contractor shall continue to maintain all insurance required by the Contract Documents in full force and effect.

9.7 FINAL COMPLETION AND FINAL PAYMENT

9.7.1 Upon receipt of notice from Contractor that the Work is ready for final inspection, District's Representative will make such inspection. Final Completion shall be when District's Representative determines that the Work is fully completed and in accordance with the Contract Documents. District will file a notice of completion within ten (10) days after Final Completion. After receipt of the final payment request, if District's Representative determines that Final Completion has occurred, District's Representative will issue the final authorization for payment.

9.7.2 Neither final payment nor any retention shall become due until Contractor submits the following items to District's Representative:

- .1 The final payment request and all submittals required by Section 9.3 and the Contract Documents.
- .2 If required by District, conditional releases from Subcontractors entitled to receive any portion of the final payment and unconditional releases from Contractor, such releases to be in a form satisfactory to District.
- .3 All guarantees and warranties procured by Contractor from Subcontractors, all operating manuals for equipment installed in the Project, record documents, and all other submittals required by the Contract Documents.
- .4 Contractor has furnished to District written consent from the performance bond and payment bond sureties to such release of retention.

If releases are required, Contractor shall pay or cause to be paid to Subcontractors the amount stated in the conditional releases within five (5) days after receipt of the final payment, and shall promptly thereafter furnish evidence of such payment to District. If District does not require releases, the final payment shall be made, subject to the satisfaction of all other conditions to final payment, thirty-five (35) days after the filing of the notice of completion.

9.7.3 Acceptance of final payment by Contractor shall constitute a waiver of all Claims, except those previously made in writing and identified by Contractor as unsettled at the time of the final payment request.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract Documents.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 Contractor shall take adequate precautions for safety of persons and property and shall provide adequate protection to prevent damage, injury, or loss to the following:

- .1 Employees involved in the Work and other persons who may be affected thereby.
- .2 The Work in place and materials and equipment to be incorporated therein, whether in storage on or off the Project site, under care, custody, or control of Contractor or Subcontractors.
- .3 Other property at the Project site and adjoining property.

10.2.2 Contractor shall erect and maintain, as required by existing conditions and performance of the Work, adequate safeguards for safety and protection, including providing adequate lighting and ventilation, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying District and users of adjacent sites and utilities.

10.2.3 When use or storage of explosives, other hazardous materials, equipment, or unusual methods is necessary for execution of the Work, Contractor shall exercise the utmost care and carry on such activities only under the supervision of properly qualified personnel.

10.2.4 Contractor shall designate a responsible member of Contractor's organization at the Project site whose duty shall be the prevention of accidents. That person shall be the Contractor's superintendent, unless otherwise designated by Contractor in writing to District and District's Representative.

10.2.5 Contractor shall not load or permit any part of the Work or the Project site to be loaded so as to endanger the safety of persons or property.

10.3 EMERGENCIES

10.3.1 In an emergency affecting the safety of persons or property, Contractor shall act to prevent or minimize damage, injury, or loss. Contractor shall promptly notify District's Representative, which notice may be oral followed by written confirmation, of the occurrence of such an emergency and Contractor's action.

ARTICLE 11

INSURANCE AND BONDS

11.1 LIABILITY INSURANCE

11.1.1 Contractor shall, at its expense, purchase and maintain in full force and effect such insurance as will protect itself and District, District's boards and commissions and members thereof, and District's officers, employees and agents from Claims, such as for bodily injury, death, and property damage, which may arise out of or result from the Work required by the Contract Documents, whether such Work is done by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

11.1.2 The following liability policies and coverages shall be furnished by Contractor:

- .1 The Contractor shall obtain commercial general liability insurance from one or more U.S. domiciled insurance companies licensed to do business in the State of California with an A.M. Best Company rating of "B" or better or, in the alternative, an unlicensed U.S. domiciled company or companies with an "A" rating, which provides coverage for bodily injury, personal injury and property damage liability in the amount of at least **\$2,000,000 per occurrence, and \$2,000,000 in the aggregate**, with a maximum policy deductible of **\$5,000.00**. Said insurance coverage shall be evidenced by a certificate of insurance with policy endorsements and shall be executed by an authorized official of the insurer(s).

11.1.3 Contractor's liability insurance as required by Paragraph 11.1.2 shall, by endorsement to the policies, include the following:

- .1 An additional insured provision stating that District, District's boards and commissions and members thereof, and District's officers, employees and agents are covered as insureds with respect to liabilities arising out of work or operations performed by or on behalf of the Contractor, including materials, parts, or equipment furnished in connection with such work or operations, and with respect to liability arising out of automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. However, coverage shall not extend to indemnity for the active negligence of the additional insureds in any case where an agreement to indemnify the additional insureds would be invalid under Subdivision (b) of Section 2782 of the California Civil Code.
- .2 A severability of interest clause stating that, "The term 'insured' is hereby used severally and not collectively, but the inclusion herein of more than one insured shall not operate to increase the limits of the insurers' liability."
- .3 A cross-liability clause stating that, "In the event of claims being made under any of the coverages of the policies referred to herein by one or more insureds hereunder for which another insured hereunder may be liable, then the policies shall cover such insureds against whom a claim is made or may be made in the same manner as if separate policies had been issued to each insured hereunder. Nothing contained herein, however, shall operate to increase the insurers' limits of liability as set forth in the insuring agreements."
- .4 A provision stating that District, District's boards, commissions and members thereof, and District's officers, employees and agents shall not by reason of their inclusion as insureds incur liability to the insurance carriers for payment of premiums for such insurance.
- .5 A provision stating that the coverage provided by such insurance shall be primary and not in excess of or contributing with respect to any insurance, indemnity coverage afforded by a risk pool, or self-insurance maintained by District, District's board, commissions and members thereof, or District's officers, employees and agents. This provision, however, shall only apply as per the stipulations of Subparagraph 11.1.3.1.
- .6 A provision stating that the coverage provided by such insurance shall not be subject to cancellation or modification without thirty (30) days' prior written notice to District.

11.1.4 Certificates of insurance evidencing the insurance policies required by this Section 11.1, as well as copies of all endorsements to such policies required by Paragraph 11.1.3, shall be submitted by Contractor to District prior to commencing Work on the Project. However, acceptance of such certificates of insurance and endorsement by District shall not in any way limit Contractor's liabilities under the Contract Documents. At the request of District, Contractor shall also submit to District copies of the insurance policies obtained by Contractor.

11.1.5 In the event Contractor does not comply with these insurance requirements, District may, at its option, provide insurance coverage to protect District, District's boards, commissions and members thereof, and District's officers, employees and agents; and the cost of such insurance shall be paid by Contractor and may be deducted from the Contract Sum.

11.1.6 Contractor shall, by mutual agreement with District and at District's cost, furnish any additional liability insurance as may be required by District. Contractor shall provide certificates of insurance evidencing such additional insurance.

11.2 WORKER'S COMPENSATION INSURANCE

11.2.1 Contractor shall, at its expense, purchase and maintain in full force and effect worker's compensation insurance as required by Federal and State of California law. A certificate of insurance or other documentation acceptable to District evidencing such insurance coverage shall be provided by Contractor to District prior to commencing Work on the Project. Contractor shall also require all of its Subcontractors to maintain this insurance coverage.

11.3 MISCELLANEOUS INSURANCE PROVISIONS

11.3.1 Any insured loss is to be adjusted with District and made payable to District on behalf of the insureds, as their interests may appear. District shall have the power to adjust and settle any loss with the insurers unless, within five (5) working days after the loss, one of the parties in interest shall object in writing to District's exercise of this power; and if such objection be made, the matter shall be subject to resolution as provided in Article 4.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 Contemporaneous with the execution of the Contract Agreement, and before commencement of any Work required by the Contract Documents, Contractor shall provide District with separate payment and performance bonds, each in a sum at least equal to the Contract Sum. These bonds will be provided on forms acceptable to District by surety companies licensed and admitted to do business in the State of California and are named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. The surety shall have not less than an "A" minimum rating in the current "Best's Key Rating Guide, Property-Liability."

11.4.2 If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business in California terminated, Contractor shall, within five (5) days thereafter, substitute another surety and bond, both of which shall be acceptable to District.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 All Work shall be inspected by District's Representative before being covered. If any Work is covered before it has been inspected, such Work must, upon written request by District's Representative, be uncovered for District's Representative's observation and be replaced at Contractor's expense without adjustment of the Contract Time or the Contract Sum.

12.2 CORRECTION OF DEFECTIVE WORK AND GUARANTEE TO REPAIR PERIOD

12.2.1 The term "Guarantee to Repair Period" means a period of one (1) year, unless a longer period of time is specified in the Contract Agreement or Supplementary Conditions, commencing as follows:

- .1 For space beneficially occupied or for separate systems fully utilized prior to Final Completion pursuant to Section 9.6, from the first date of such Beneficial Occupancy or actual use, as established in a certificate of Beneficial Occupancy.
- .2 For all Work other than .1 above, from the date of Final Completion.

12.2.2 Contractor shall (1) correct defective work that becomes apparent during the progress of the Work or during the Guarantee to Repair Period and (2) replace, repair, or restore to District's satisfaction any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of defective work or the correction of defective work. Contractor shall promptly commence such correction, replacement, repair, or restoration upon notice from District's Representative or District, but in no case later than ten (10) days after receipt of such notice; and Contractor shall diligently and continuously prosecute such correction to completion. Contractor shall bear all costs of such correction, replacement, repair, or restoration, and all losses resulting from such defective work, including additional testing, inspection, and compensation for District's Representative's services and expenses. Contractor shall perform corrective work at such times that are acceptable to District and in such a manner as to avoid, to the extent practicable, disruption to District's activities.

12.2.3 If immediate correction of defective work is required for life safety or the protection of property and is performed by District or separate contractors, Contractor shall pay to District all reasonable costs of correcting such defective work. Contractor shall replace, repair, or restore to District's satisfaction any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of such defective work or the correction of such defective work.

12.2.4 Contractor shall remove from the Project site portions of the Work and materials which are not in accordance with the Contract Documents and which are neither corrected by Contractor nor accepted by District.

12.2.5 If Contractor fails to commence correction of defective work within ten (10) days after notice from District or District's Representative or fails to diligently prosecute such correction to completion, District may correct the defective work in accordance with Section 2.4; and, in addition, District may remove the defective work and store salvageable materials and equipment at Contractor's expense.

12.2.6 If Contractor fails to pay the costs of such removal and storage as required by Paragraphs 12.2.4 and 12.2.5 within ten (10) days after written demand, District may, without prejudice to other remedies, sell such materials at auction or at private sale, or otherwise dispose of such material. Contractor shall be entitled to the proceeds of such sale, if any, in excess of the costs and damages for which Contractor is liable to District, including reasonable attorneys' fees and expenses and compensation for District's Representative's services and expenses. If such proceeds of sale do not cover costs and damages for which Contractor is liable to District, the Contract Sum shall be reduced by such deficiency. If there are no remaining payments due Contractor or the remaining payments are insufficient to cover such deficiency, Contractor shall promptly pay the difference to District.

12.2.7 Contractor's obligations under this Article 12 are in addition to and not in limitation of its warranty under Section 3.4 or any other obligation of Contractor under the Contract Documents. Enforcement of Contractor's express warranties and guarantees to repair contained in the Contract Documents shall be in addition to and not in limitation of any other rights or remedies District may have under the Contract Documents or at law or in equity for defective work. Nothing contained in this Article 12 shall be construed to establish a period of limitation with respect to other obligations of Contractor under the Contract Documents. Establishment of the Guarantee to Repair Period relates only to the specific obligation of Contractor to correct the Work and in no way limits either Contractor's liability for defective work or the time within which proceedings may be commenced to enforce Contractor's obligations under the Contract Documents.

12.3 ACCEPTANCE OF DEFECTIVE WORK

12.3.1 Notwithstanding the provisions of Section 12.2, District shall have the option, at its sole discretion and by notice to Contractor, to accept defective work instead of requiring its removal or correction, in which case the Contract Sum shall be reduced by an amount equal to the difference between the value to District such Work would have had were it complete, correct, and in conformity with the Contract Documents and the value to District of such defective work. Such option shall be exercised solely by notice to Contractor and shall not be implied from any act or omission by District or District's Representative. If there are no remaining payments of the Contract Sum to be made to Contractor or if the remaining payments and retention are insufficient to cover the amount of the reduction of the Contract Sum, Contractor shall promptly pay to District the amount of any such deficiency.

ARTICLE 13

TERMINATION OR SUSPENSION OF THE CONTRACT

13.1 TERMINATION BY CONTRACTOR

13.1.1 Subject to Paragraph 13.1.2, Contractor shall have the right to terminate the Contract Agreement only upon the occurrence of one of the following:

- .1 The Work is stopped for ninety (90) consecutive days, through no act or fault of Contractor, any Subcontractor, or any employee or agent of Contractor or any Subcontractor, due to an issuance of an order of a court or other public authority having jurisdiction or due to an act of government, such as a declaration of a national emergency making material unavailable.
- .2 District fails to perform any material obligation under the Contract Documents and fails to cure such default within thirty (30) days after receipt of notice from Contractor stating the nature of such default.
- .3 Repeated suspensions by District, other than such suspensions as are agreed to by Contractor under Section 13.3, which constitute in the aggregate more than twenty percent (20%) of the Contract Time or ninety (90) days, whichever is larger.

13.1.2 Upon the occurrence of one of the events listed in Paragraph 13.1.1, Contractor may, upon ten (10) days' additional notice to District and District's Representative, and provided that the condition giving rise to Contractor's right to terminate is continuing, terminate the Contract Agreement.

13.1.3 Upon termination by Contractor, District shall pay to Contractor the sum determined by Paragraph 13.4.4. Such payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract Agreement by Contractor pursuant to Section 13.1; and Contractor will be entitled to no other compensation or damages and expressly waives the same.

13.2 TERMINATION BY DISTRICT FOR CAUSE

13.2.1 District shall have the right to terminate the Contract Agreement for cause at any time after the occurrence of any of the following events:

- .1 Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.
- .2 Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.
- .3 A receiver is appointed to take charge of Contractor's property.
- .4 The commencement or completion of any Work activity is fourteen (14) days or more behind the date set forth in the contract schedule for such Work activity, and which results in an Unexcusable Delay.
- .5 Contractor abandons the Work.

13.2.2 Upon the occurrence of any of the following events, District shall have the right to terminate the Contract Agreement for cause if Contractor fails to promptly commence to cure such default and diligently prosecute such cure within five (5) days after notice from District, or within such longer period of time as is reasonably necessary to complete such cure:

- .1 Contractor persistently or repeatedly refuses or fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the Work in accordance with the Contract Documents.
- .2 Contractor fails to make prompt payment of amounts properly due Subcontractors after receiving payment from District.
- .3 Contractor disregards Applicable Code Requirements.
- .4 Contractor persistently or materially fails to execute the Work in accordance with the Contract Documents.
- .5 Contractor is in default of any other material obligation under the Contract Documents.
- .6 Any legal proceeding is commenced against Contractor which, in the opinion of District's Representative, may interfere with the performance of the Work.
- .7 In the event Contractor is involved in a labor dispute which threatens the progress or cost of Work, or which disrupts District's operations, District may suspend or discontinue the Work of Contractor or any Subcontractor, or terminate the Contract Agreement for cause.

13.2.3 Upon any of the occurrences referred to in Paragraphs 13.2.1 and 13.2.2, District may, at its election and by notice to Contractor, terminate the Contract Agreement and take possession of the Project site and all materials, supplies, equipment, tools, and construction equipment and machinery thereon owned by Contractor; accept the assignment of any or all of the subcontracts; and then complete the Work by any method District may deem expedient. If requested by District, Contractor shall remove any part or all of Contractor's materials, supplies, equipment, tools, and construction equipment and machinery from the Project site within seven (7) days of such request; and if Contractor fails to do so, District may remove or store, and after ninety (90) days sell, any of the same at Contractor's expense.

13.2.4 If the Contract Agreement is terminated by District as provided in this Section 13.2, Contractor shall not be entitled to receive any further payment until the expiration of thirty-five (35) days after Final Completion and acceptance of all Work by District.

13.2.5 If the unpaid balance of the Contract Sum exceeds the cost of completing the Work, including all additional costs and expenses made necessary thereby, plus all losses sustained, including any liquidated damages provided under the Contract Documents, such excess shall be paid to Contractor. If such costs, expenses, losses, and liquidated damages exceed the unpaid balance of the Contract Sum, Contractor shall pay such excess to District.

13.2.6 No termination shall impair District's rights under the performance bond and payment bond required under Section 11.4. No termination or action taken by District after termination shall prejudice any other rights or remedies of District provided by law or by the Contract Documents upon such termination; and District may proceed against Contractor and/or against the surety companies who provided the performance bond and payment bond required under Section 11.4 to recover all losses suffered by District.

13.3 SUSPENSION BY DISTRICT FOR CONVENIENCE

13.3.1 District may, at any time and from time to time, without cause, order Contractor, in writing, to suspend, delay, or interrupt the Work in whole or in part for such period of time, up to ninety (90) days, as District may determine, with such period of suspension to be computed from the date of delivery of the written order. Such order shall be specifically identified as a "Suspension Order" under this Section 13.3. The Work may be stopped for such further period as the parties may agree. Upon receipt of a Suspension Order, Contractor shall, at District's expense, comply with its terms and take all reasonable steps to minimize costs allocable to the Work covered by the Suspension Order during the period of Work stoppage. Within ninety (90) days after the issuance of the Suspension

Order, or such extension to that period as is agreed upon by Contractor and District, District shall either cancel the Suspension Order or delete the Work covered by such Suspension Order by issuing a change order.

13.3.2 If a Suspension Order is canceled or expires, Contractor shall continue with the Work. A change order will be issued to cover any adjustments of the Contract Sum or the Contract Time necessarily caused by such suspension. Any Claim by Contractor for an adjustment of the Contract Sum or the Contract Time shall be made within twenty-one (21) days after the end of the Work suspension.

13.3.3 The provisions of this Section 13.3 shall not apply if a Suspension Order is not issued by District. A Suspension Order shall not be required to stop the Work as permitted or required under any other provision of the Contract Documents.

13.4 TERMINATION BY DISTRICT FOR CONVENIENCE

13.4.1 District may, at its option, terminate this Contract Agreement, in whole or from time to time in part, at any time by giving notice to Contractor. Upon such termination, Contractor agrees to waive any Claims for damages, including loss of anticipated profits, on account thereof; and, as the sole right and remedy of Contractor, District shall pay Contractor in accordance with Paragraph 13.4.4.

13.4.2 Upon receipt of a notice of termination under this Section 13.4, Contractor shall, unless the notice directs otherwise, do the following:

- .1 Immediately discontinue the Work to the extent specified in the notice.
- .2 Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of such portion of the Work as is not discontinued.
- .3 Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent they relate to the performance of the discontinued portion of the Work.
- .4 Thereafter do only such Work as may be necessary to preserve and protect Work already in progress and to protect materials, plants, and equipment on the Project site or in transit thereto.
- .5 Leave the Project site in a safe condition.

13.4.3 Upon termination of the Contract Agreement, the obligations of the Contract Documents shall continue as to portions of the Work already performed and, subject to Contractor's obligations under Paragraph 13.4.2, as to bona fide obligations assumed by Contractor prior to the date of termination.

13.4.4 Upon such termination, District shall pay to Contractor the sum of the following:

- .1 The amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination, less sums previously paid to Contractor,
- .2 plus an amount equal to the lesser of Fifty Thousand Dollars (\$50,000) or five percent (5%) of the difference between the Contract Sum and the amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination,
- .3 plus previously unpaid costs of any items delivered to the Project site which were fabricated for subsequent incorporation in the Work,
- .4 plus any proven losses with respect to materials and equipment directly resulting from such termination,
- .5 plus reasonable demobilization costs.

The above payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract Agreement by District pursuant to Section 13.4; and Contractor will be entitled to no other compensation or damages and expressly waives same.

ARTICLE 14

STATUTORY REQUIREMENTS

14.1 NONDISCRIMINATION

14.1.1 For purposes of this Section 14.1, the term Subcontractor shall not include suppliers, manufacturers, or distributors.

14.1.2 Contractor shall comply and shall ensure that all Subcontractors comply with the California Fair Employment and Housing Act, as set forth in Section 12900, and the applicable sections that follow, of the California Government Code.

14.1.3 Contractor agrees as follows during the performance of the Work:

- .1 Contractor shall not willfully discriminate against any employee or applicant for employment because of race, color, religion, sex, age, ancestry, national origin, sexual orientation, handicap, veteran's status, medical condition (as defined in Section 12926 of the California Government Code), marital status, or citizenship (within the limits imposed by law or District's policy). All applicants for employment and employees are to be treated without regard to their race, color, religion, sex, age, ancestry, national origin, sexual orientation, handicap, veteran's status, medical condition (as defined in Section 12926 of the State of California Government Code), marital status, or citizenship (within the limits imposed by law or District's policy). Such equal treatment shall apply, but not be limited to, employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, a notice of equal employment opportunity setting forth the provisions of this Paragraph 14.1.3.
- .2 Contractor and all Subcontractors will permit access to their records of employment, employment advertisements, application forms, and other pertinent data and records by District or any appropriate agency of the State of California designated by District for the purposes of investigation to ascertain compliance with this Section 14.1. The outcome of the investigation may result in the following:
 - .1 A finding of willful violation of the provisions of the Contract Agreement or of the Fair Employment and Housing Act may be regarded by District as (1) a basis for determining that Contractor is not a "responsible bidder" as to future contracts for which such Contractor may submit bids or (2) a basis for refusing to accept or consider the bids of Contractor for future contracts.
 - .2 District may deem a finding of willful violation of the Fair Employment and Housing Act to have occurred upon receipt of written notice from the Fair Employment Practices Commission that it has (1) investigated and determined that Contractor has violated the Fair Employment and Housing Act and (2) issued an order under the State of California Government Code Section 12970 or obtained an injunction under Government Code Section 12973.
 - .3 Upon receipt of such written notice from the Fair Employment Practices Commission, District may notify Contractor that, unless it demonstrates to the satisfaction of District within a stated period that the violation has been corrected, Contractor's bids on future Projects will not be considered.
- 3 Contractor agrees that, should District determine that Contractor has not complied with this Section 14.1, Contractor shall forfeit to District, as a penalty, for each day or portion thereof, for each person who was denied employment as a result of such non-compliance, a penalty of Fifty

Dollars (\$50.00) per day. Such penalty amounts may be recovered from Contractor; and District may deduct any such penalty amounts from the Contract Sum.

- .4 Nothing contained in this Section 14.1 shall be construed in any manner so as to prevent District from pursuing any other remedies that may be available at law.
- .5 Contractor shall meet the following standards for affirmative compliance and provide District with satisfactory evidence of such compliance upon District's request, which shall be evaluated in each case by District:
 - .1 Contractor shall notify its superintendent and other supervisory personnel of the nondiscrimination requirements of the Contract Documents and their responsibilities thereto.
 - .2 Contractor shall notify all sources of employee referrals (including unions, employment agencies, and the State of California Employment Development Department) of the nondiscrimination requirements of the Contract Documents by sending to such sources and by posting the notice of equal employment opportunity.
 - .3 Contractor or its representative shall, through all unions with whom it may have agreements, develop agreements that (1) define responsibilities for nondiscrimination in hiring, referrals, upgrading, and training and (2) implement a nondiscrimination program, in terms of the unions' specific areas of skill and geography, such that qualified minority women, non-minority women, and minority men shall be available and given an equal opportunity for employment.
 - .4 Contractor shall notify District of opposition to the nondiscrimination requirements of the Contract Documents by individuals, firms, or organizations during the term of the Contract Agreement.
- .6 Contractor shall include the provisions of the foregoing Subparagraphs 14.1.3.1 through 14.1.3.5 in all subcontracts with Subcontractors, so that such provisions will be binding upon each such Subcontractor.

14.2 APPRENTICES

14.2.1 For purposes of this Section 14.2, the term "Subcontractor" shall not include suppliers, manufacturers, and distributors.

14.2.2 Attention is directed to Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code and Title 8, California Code of Regulations, Section 200, and the applicable sections that follow. To ensure compliance and complete understanding of the law requiring apprentices, and specifically the required ratio thereunder, Contractor or Subcontractors should, where some question exists, contact the Division of Apprenticeship Standards, 45 Fremont Street, Suite 1050, San Francisco, California, (415) 975-2035, or one of its branch offices prior to commencement of the Work. Responsibility for compliance with these requirements lies with Contractor.

14.2.3 In the event Contractor willfully fails to comply with this Section 14.2, it will be considered in violation of the requirements of the Contract Agreement.

14.2.4 Nothing contained herein shall be considered or interpreted as prohibiting or preventing the hiring by Contractor or Subcontractors of journey worker trainees who may receive on-the-job training to enable them to achieve journey worker status in any craft or trade under standards other than those set forth for apprentices.

14.3 WORK DAY

14.3.1 Contractor shall not permit any worker to labor more than eight (8) hours during any one (1) calendar day or more than forty (40) hours during any one (1) calendar week, except as permitted by law and in such cases only upon such conditions as are provided by law. Contractor shall forfeit to District, as a penalty, Twenty-Five Dollars (\$25.00) for each worker employed in the execution of the work by Contractor, or any Subcontractor, for each

calendar day during which such worker is 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 in violation of the terms of this Paragraph 14.3.1 or in violation of the provisions of any law of the State of California. Such forfeiture amounts may be deducted from the Contract Sum. Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the actual hours worked each calendar day and each calendar week by each worker employed on the Project, which record shall be kept open at all reasonable hours to the inspection of District, its officers and agents, and to the inspection of the appropriate enforcement agency of the State of California.

ARTICLE 15

MISCELLANEOUS PROVISIONS

15.1 GOVERNING LAW

15.1.1 The Contract Agreement and all of the Contract Documents incorporated into the Contract Agreement shall be interpreted under and governed by the laws of the State of California.

15.2 SUCCESSORS AND ASSIGNS

15.2.1 District and Contractor respectively bind themselves and their successors, permitted assigns, and legal representatives to the other party and to the successors, permitted assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract Agreement shall assign the Contract Agreement, in whole or in part, without prior written consent of the other party. Notwithstanding any such assignment, each of the original contracting parties shall remain legally responsible for all of its obligations under the Contract Documents.

15.3 RIGHTS AND REMEDIES

15.3.1 All District's rights and remedies under the Contract Documents shall be cumulative and in addition to and not in limitation of all other rights and remedies of District under the Contract Documents or otherwise available at law or in equity.

15.3.2 No action or failure to act by District or District's Representative shall constitute a waiver of a right afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing. No waiver by District or District's Representative of any breach or default shall constitute a waiver of any other breach or default; nor shall any such waiver constitute a continuing waiver.

15.3.3 No provision contained in the Contract Documents shall create or give to third parties any Claim or right of action against District, District's Representative, or Contractor.

15.4 SURVIVAL

15.4.1 The provisions of the Contract Documents which by their nature survive termination of the Contract Agreement or Final Completion, including all warranties, indemnities, payment obligations, and District's right to audit Contractor's books and records, shall remain in full force and effect after Final Completion or any termination of the Contract.

15.5 COMPLETE AGREEMENT

15.5.1 The Contract Documents constitute the full and complete understanding of the parties and supersede any previous agreements or understandings, oral or written, with respect to the subject matter hereof. The Contract Documents may be modified only by a written instrument signed by both parties or as provided in Article 7.

15.6 SEVERABILITY OF PROVISIONS

15.6.1 If any one or more of the provisions contained in the Contract Documents should be invalid, illegal, or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein

shall not in any way be affected or impaired thereby.

15.7 DISTRICT'S RIGHT TO AUDIT

15.7.1 District and entities and agencies designated by District shall have access to and the right to audit and copy at District's cost all of Contractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, and memoranda relating to the Work. Contractor shall preserve all such records and other items for a period of at least three (3) years after Final Completion.

15.8 NOTICES

15.8.1 Except as otherwise provided, all notices, requests, demands, and other communications to be given under the Contract Documents shall be in writing and shall be transmitted by one of the following methods:

- .1 Personally delivered.
- .2 Sent by telecopy where receipt is confirmed.
- .3 Sent by courier where receipt is confirmed.
- .4 Sent by registered or certified mail, postage prepaid, return receipt requested.

Such notices and other communications shall be deemed given and received upon actual receipt in the case of all except registered or certified mail; and, in the case of registered or certified mail, on the date shown on the return receipt or the date delivery during normal business hours was attempted. Such notices and communications shall be given at the respective street addresses set forth in such Contract Documents. Such street addresses may be changed by notice given in accordance with this Section 15.8.

15.9 TIME OF THE ESSENCE

15.9.1 Time limits stated in the Contract Documents are of the essence of the Contract Agreement.

III. SPECIAL PROVISIONS

PROJECT NAME: ROTARY CENTENNIAL PARK

A. DEFINITIONS

The work embraced herein shall be done in accordance with the appropriate provisions of construction details of the specifications, entitled "State of California, Department of Transportation, Technical Specifications" dated July 2002, as revised, which specifications are hereinafter referred to as the Technical Specifications, and the City of Chico Design Criteria and Improvement Standards, the County of Butte Design Criteria and Improvement Standards, insofar as the same may apply, and in accordance with the following special provisions.

Whenever in the Technical Specifications the following terms are used, they shall be understood to mean and refer to the following:

Department of Transportation - The Chico Area Recreation District (CARD).

Director, Department of Transportation - The General Manager of CARD.

Engineer - The Engineer of Record for CARD acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory - The designated laboratory authorized by the GENERAL MANAGER to test materials and work involved in the contract.

State - The Chico Area Recreation District (CARD).

In case of conflict between the Technical Specifications and the General Conditions and these Special Provisions, the General Conditions and Special Provisions shall take precedence over and be used in lieu of such conflicting portions.

B. DESCRIPTION OF WORK

The work, in general, to be done under this contract consists of the grading of existing soil, construction of a park that includes playground features, turf, picnic areas, concrete sidewalks, site lighting, and irrigation; all within the confines of the property located on Ceres Ave. at Whitewood Way in Chico, CA. In addition, this is a collaborative project with the Chico Rotary Clubs and will require coordinator between the contractor and Rotary Clubs to provide volunteer labor for identified sections of the project.

PROJECT NAME: ROTARY CENTENNIAL PARK

C. PRE-BID MEETING

A **mandatory** pre-bidders meeting will be held on **July 28th at 9:00 AM at the project site located on Ceres Ave. between Whitewood Way and Glenshire Dr.** to discuss issues pertaining to the project and answer any contractor questions that may arise.

D. AWARD

The award of contract, if awarded, will be to the **lowest responsible bidder** whose proposal complies with the entire requirement described. The award, if awarded, will be made within fourteen - (14) days after the opening of the bids. All bids will be compared on the basis of the initial Engineer's Estimate of quantities of work to be done. Award will be based on the **lowest responsible bidder** for the **total of the base bid**. The district has the option of accepting none, or any number and combination of bid alternatives.

E. REQUIRED LISTING OF PROPOSED SUBCONTRACTORS

The Contractor shall not be required to perform at least 50% of the original total contract price with Contractor's own organization.

Each proposal shall have listed therein the name and address of each subcontractor, the associated bid item numbers, and the dollar value of the subcontractors work to whom the bidder proposes to subcontract portions of the work, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The list shall include all subcontractors regardless of the value of the subcontract amount. The bidder's attention is invited to other provisions of said Act related to the imposition of penalties for failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

A sheet for listing the subcontractors, as required herein, is included in the Proposal. If there will be no subcontractors enter "None" on the subcontractor's listing sheet.

F. COOPERATION

Attention is directed to Paragraph B above.

Should construction or other work of any other nature be under way by other forces or by other contractors within or adjacent to the limits of the work herein specified, the Contractor shall cooperate with all other such contractors or other forces to the end that any delay or hindrance to their work will be avoided.

G. PROGRESS OF THE WORK AND TIME FOR COMPLETION

The Contractor shall begin work within fourteen (14) calendar days after receiving a written notice to proceed from the Chico Area Recreation District and shall diligently prosecute the same to completion before the expiration of

CONSTRUCTION TO BE COMPLETE BY MARCH 4, 2021

from the date of said NOTICE TO PROCEED to the end of SUBSTANTIAL COMPLETION.

Substantial Completion is considered the stage in the progress of Construction when the Construction is sufficiently complete in accordance with the Contract Documents so that the District can occupy or utilize the site for its intended use.

H. LIQUIDATED DAMAGES

The Contractor agrees that if the Work is not completed within the Contract Time's damages would be extremely difficult or impracticable to determine. Therefore, and Contractor agree that if Contractor fails to complete the Work within the Contract Time, Contractor shall pay to, on demand, as liquidated damages and not as a penalty, the sum of One Thousand Dollars (\$1,000) for each day after the expiration of the Contract Time that the Work remains incomplete, and that this amount is a reasonable estimate of and a reasonable sum for such damages may deduct any liquidated damages owed to , as determined by , from any payments otherwise payable to Contractor under this Contract.

I. PLANS AND SPECIFICATIONS FURNISHED

The Contractor will be furnished, free of charge, three (3) copies of the contract drawings and contract specifications. Any additional copies requested by the Contractor will be furnished to the Contractor at the actual cost of reproduction. The Contractor shall retain an approved set of plans and specifications on the job at all times during the progress of the work.

J. MATERIALS

The Contractor shall furnish for use under these Special Provisions all materials required to complete the attached contract.

1. Quantity Certificates: The Contractor shall present a certified weight slip to the Engineer or a designee for all materials used in the contract measured by weight. The above-mentioned weight slips shall be submitted to the Engineer on the same day that the material has been delivered to the construction area.
2. Proposed Materials Submittal: The Contractor shall provide a submittal booklet containing product information for the materials proposed for the project. The Engineer will review and approve the submittals. Material submittals failing to meet the required specifications will be rejected. The Contractor shall re-submit new product information for review and approval by the Engineer.

K. QUANTITIES

The preliminary estimates of the quantities of work to be done and materials to be furnished are approximate only, being given as a basis for the comparison of bids, and the Chico Area Recreation District 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 any class or portion of the work or to omit portions of the work that may be deemed necessary or expedient by the Engineer.

The District reserves the right to increase or decrease the quantities in excess of 25% without adjustment to the contract unit price.

L. CONSTRUCTION PROCEDURES AND DETAILS

1. **Order of Work:** The order of work shall be determined by the Contractor and approved by the Engineer.

Order of work shall conform to the provisions in Technical Specifications and these Special Provisions. The Contractor shall submit a construction schedule to the Engineer for review and approval at least seven working days prior to the distribution of notices as described in Section 7 below. A pre-construction meeting shall occur before work is initiated on site.

2. **Contractor Daily Work Hours:**

The Contractor shall restrict his work hours on all Project related work to 7 a.m. to 9 p.m. daily, except Sundays and holidays, when his work hours shall be from 10 a.m. to 6 p.m. unless otherwise approved by the Engineer. The restriction shall include all associated move on, set up, equipment and material delivery, and other project activities not strictly related to the daily progress of the project.

Should the Contractor, his subcontractors, or others under the Contractor's control not comply with the requirements contained in this Special Provision, the District will deduct a penalty charge from the Contractor's next progress payment for each occurrence. The penalty assessed shall be \$500.00 for the first occurrence, and \$1000.00 for each occurrence thereafter.

3. **Protection of Work:** The Contractor shall provide adequate protection of all work until final completion. This shall include, but not be limited to, barricades, lights, flags, cones, fencing, barricades, visual surveillance and other devices both to protect the Contractor's work and provide public safety. Payment for protection of work shall be included in other contract items.

Trees and other site amenities disturbed or damaged by the Contractor's work shall be replaced or restored at the Contractor's expense.

4. **Damage or Loss of Contractor's Supplies or Employee's Property:** The Chico Area Recreation District does not assume any liability from fire, theft, accident or any other cause resulting in damage or loss of the Contractor's supplies, materials or equipment, or of personal property or belongings of Contractor's employees.

5. **Property Damage:** The Contractor shall note the following:

- a. Any private property or property damaged or altered in any way during the performance of the work under this contract shall be reported promptly to the Engineer and shall be rectified in an approved manner back to its former condition, prior to damage, at the Contractor's expense within five (5) calendar days of occurrence.
- b. Any damage noted, or seen, by the Contractor that has occurred by any means other than during the performance of the contractor's work, whether by vandalism or any other means shall be promptly reported to the Engineer and shall be rectified in an approved manner back to its former condition, prior to damage, at the Contractor's expense within five (5) calendar days of occurrence. Particularly, all hazardous conditions shall be reported.

6. **Notification of Utilities:** The Contractor shall notify all utility companies, such as Pac Bell and PG&E, 48 hours prior to commencing underground work by contacting Underground Service Alert at 1-800-642-2444.

7. **Citizen Notification:** The Contractor shall notify all residents and businesses that may be affected by or are in the immediate vicinity of the construction at least 72 hours prior to construction. Notification shall be in writing and include a brief description of the work, starting date, scheduled date of completion, Contractor contact person and

Contractor telephone number. Notification shall be submitted for review and approval at least 24 hours prior to distribution. Notice to be hand carried by Contractor Representative. Should a change in the work schedule occur after the residents and/or businesses have been notified the Contractor shall notify the residents and/or businesses of the change in schedule within 24 hours of the originally scheduled starting date.

When the construction requires prohibiting parking, "No Parking" signs shall be posted along the construction routes. The signs shall include the dates and times that no parking periods will be in effect. "No Parking" signs shall be mounted on Class I barricades and placed in the gutter pan not more than 100' apart. Signs shall be posted a minimum of 24 hours in advance of construction and immediately removed upon completion. Should the Contractor not commence work after 24 hours from placement of the signs, the signs shall be removed. If a vehicle is parked in a properly posted no parking area and is prohibiting the progression of work, the Contractor shall notify the Chico Police Department to arrange for removal of the vehicle.

Failure to comply with the provisions for notification shall result in the suspension of all work until the provisions have been met.

Full compensation for conforming to the requirements of this provision shall be considered as included in the prices paid for the various contract items and no additional compensation will be allowed.

8. **Access to Dwellings:** The Contractor shall provide access to all dwellings within the construction zone at all times throughout the project.
9. **Air and Water Pollution Control and Dust Control:** The Contractor's attention is directed to Sections 01500, 01570, 02100 for requirements related to air and water pollution control and dust control. The Contractor shall abide by the following regarding the control of dust:
 - a. All exposed earth surfaces shall be watered periodically during construction activities. This practice shall be conducted twice during the morning and afternoon work hours. Further, the frequency of watering shall increase if wind speeds exceed 15 miles per hour.
 - b. Soil, grindings or other debris carried onto street surfaces by construction equipment shall be removed on a daily basis.
 - c. The Contractor shall submit a water pollution control plan to prevent discharge into the walkway drains, and shall be responsible for adhering to the requirements of the Technical Specifications, including providing such water pollution control measures as called for in these specifications and as directed by the Engineer.
 - d. Compensation for providing air and water pollution control and dust control shall be included in the prices paid for the other items of work in the contract and no additional payment shall be made.
 - e. All grading operations shall be suspended when winds (as instantaneous gusts) exceed 20 miles per hour as directed by the AQMD.
 - f. Water active construction sites at least twice daily as directed by the Engineer. Frequency shall be based on the type of operation, soil and wind exposure.
 - g. All trucks hauling dirt, sand, soil or other loose materials shall be covered or shall maintain at least two feet of freeboard (i.e. minimum vertical distance between top of the load and the trailer in accordance with the requirements of CVC 23114).
 - h. Sweep streets at the end of the day if visible soil materials are carried onto adjacent public paved roads (recommend water sweeper with reclaimed water).
 - i. Cover inactive storage piles.
 - j. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours. The telephone number of the BCAQMD shall also be visible to ensure compliance with BCAQMD Rule 201 & 207 (Nuisance and Fugitive Dust Emissions).

10. Water: The Contractor shall furnish for use under these Special Provisions all water required and as set forth under Section 02510 of the Specifications.

11. Notice of Potential Claim: See General Conditions

12. Confined Space Entry

The proposed construction involves the entry into confined spaces as defined in Part 1910 of Title 29 of the Code of Federal Regulations and General Safety Order Article 108, Title 8 of the California Administrative Code. The Contractor shall comply with the requirements of said regulations. The Contractor shall submit copies of an Entry Permit(s) and Confined Space Entry Program addressing operating, rescue procedures, surveillance procedures, and training as required by the state regulations.

13. Testing

The Contractor shall pay for all tests as determined by the Engineer. Shall include all tests normally performed by the Engineer to check the Contractor's compliance with the contract provisions.

14. Hazardous Waste in Excavation

If the Contractor encounters material in excavation which he/she has reason to believe may be hazardous waste, as defined by §25117 of the Health and Safety code, he/she shall immediately so notify the Engineer in writing. Excavation in the immediate area of the suspected hazardous material shall be suspended until the Engineer authorizes the work to be resumed. If such suspension delays the current controlling operation, the Contractor will be granted an extension of time as provided in Section 8.3, "Delay", of the General Provisions.

The Department reserves the right to use other forces for exploratory work to identify and determine the extent of such material and for removing hazardous material from such area.

15. Unanticipated Cultural Resources Discovery

Construction operations on this project may unearth or uncover cultural resources of a historic or prehistoric nature. If buried or obscured cultural materials are observed during vegetation removal and/or construction, the work in the area of discovery shall cease, the District shall be notified, the encountered resource shall then be identified, recorded, and an assessment made of the resource by a qualified archaeologist.

The right is reserved to the Chico Area Recreation District and its authorized agents, including a qualified archaeologist and appropriate professionals to enter upon the right-of-way for the purpose of investigating and/or excavating and removing such resources. The Contractor shall cooperate with forces engaged in such work, and shall conduct his operations in such a manner to avoid any unnecessary delay or hindrance to the work being performed by such other forces.

The Contractor shall immediately notify the Chico Area Recreation District of any delays to his operations as a direct result of the discovery of possible cultural resources which were not indicated on the plans or in the Special Provisions. Any such delays will be considered right-of-way delays within the meaning of Section 01570, "Environmental Protection,"

16. Right of Public Utilities

The rights of Public Utilities to enter upon the work for the purpose of making changes necessitated by the improvement are as specified in Section 01700 of the Specifications.

17. Maintenance and Control of Traffic

- a. Description of Work: The Contractor shall supply at his own expense all flagmen, detour signs, barricades and all other traffic control devices and as ordered by the Engineer, necessary to provide a satisfactory level of safety and minimum inconvenience to the general public.

The Contractor shall provide the Engineer with a Traffic Control Plan for each separate element of work seven (7) working days prior to starting work or the pre-construction meeting, whichever is earliest. The Engineer retains the right to modify the plan as he may determine necessary.

The Contractor or his representative and all subcontractors shall have a copy of the approved Traffic Control Plan pertinent to the work in progress on the jobsite at all times. Failure to adhere to the Traffic Control Plan shall be grounds for the District, City of Chico or the County of Butte to require the Contractor to stop the work until traffic control is in compliance with the approved Traffic Control Plan.

Should the Contractor or his subcontractors be required to stop work by direction of the Engineer due to non-compliance with the Traffic Control Plan, the Chico Area Recreation District will deduct a penalty charge from the Contractor's next progress payment for each occurrence. The penalty shall amount to \$250.00 for the first occurrence and \$500.00 for each occurrence thereafter.

During Contractor working hours a minimum of one (1) traffic lane (in each direction - 4 lane street), not less than twelve (12') feet wide shall be open for public use. During non-working hours all traveled lanes, on all roadways, shall remain open. Whenever vehicles or equipment are parked on the pavement or on the shoulder, within 6 feet of a travel lane, the parking area shall be delineated with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment or along the closed portion of the pavement or shoulder at 25-foot intervals to a point approximately twenty-five (25') feet past the last piece of equipment. A minimum of nine (9) cones or portable delineators shall be used for the taper. A C23 (Road Work Ahead) or C24 (Shoulder Work Ahead), as appropriate, shall be mounted on a telescoping flag tree with flags.

Whenever a traffic lane is to be closed to public traffic, the Contractor shall install a traffic control system in accordance with the current "MANUAL OF TRAFFIC CONTROLS - Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways."

Designated legal holidays are: January 1st, Martin Luther King's birthday, February 12th, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Saturday or Sunday, the preceding Friday or the following Monday shall be designated the legal holiday.

The Contractor shall keep current and notify the local Police, Chico Area Transit System (CATS), and Fire Departments of his construction operation and traffic control changes three (3) days before work is to begin or traffic changes are made. The Contractor shall at no time obstruct bus stops without prior written authorization from the City. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements in keeping the work area clear of parked vehicles.

When leaving a work area and entering a roadway carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders, including any section closed to the public.

Wherever the Contractor's operations obliterate pavement delineation (lane lines, either pavement markers or painted lane lines or both), such pavement delineation shall be replaced by either permanent or temporary delineation before opening the traveled way to the traffic. Temporary delineation shall consist of reflective traffic line tape applied in pieces not less than 12 inches long nor less than 4 inches wide spaced no more than 12 feet apart. Reflective traffic line tape shall be applied in accordance with the manufacturer's instructions. Temporary delineation shall be the same color as the permanent delineation. Full compensation for temporary delineation shall be considered as included in the prices paid for the work and no separate payment will be made.

18. Access to Site and Staging Area

- a. Description of Work: The contractor is responsible for maintaining access to staging area and to fix and repair any damage to area at completion of project as needed to return area to its original condition. If existing pavement at or in access to staging area is damaged, it is the Contractors responsibility to repair paved areas back to its original state at no cost to the District.
 - i. When not in use, all contractors and subcontractor vehicles shall be parked within staging area, leaving existing parking open to the public.
 - ii. Prior to starting work, Contractor shall obtain approval of access routes to the site and mark the staging area on site for approval by the District or County Inspector. Two sets of keys for staging area gates shall be provided to the District or County Inspector. The Contractor shall leave the staging area clean and free of debris.
- b. Temporary Fencing: Temporary Chain Link Fence, 6' high, that completely surrounds the site, shall be furnished and constructed, maintained and later removed, as specified in these Special Provisions and as directed by the District Inspector.
 - i. Posts shall be either metal or wood at the contractor's option.
 - ii. Galvanizing and painting of steel items will not be required.
 - iii. Treating wood with wood preservatives will not be required.
 - iv. Concrete footings for metal posts will not be required.
 - v. Insert posts into portable concrete blocks or steel supports as needed to support fence.
 - vi. Install two sets of 8' wide locking gates as needed for access to the staging area. Provide the District Inspector with two sets of keys to gate locks.
 - vii. Temporary fences that are damaged from any cause during the progress of the work shall be repaired or replaced at the Contractor's expense.
 - viii. When no longer required for the work as determined by the District Inspector, temporary fences shall be removed. Removed materials shall become the property of the Contractor and shall be removed from the site of the work.
 - ix. Holes caused by the removal of temporary fences shall be backfilled in accordance with the provisions in the "Preservation of Property" section of the Technical Specifications

19. Safety Construction Fencing and Barricades

- a. Description of Work: Temporary 4' Vinyl Fencing shall be furnished and constructed maintained and later removed as per plans, specifications, these Special Provisions and as directed per the District or County Inspector. Locations include drip line around existing trees in areas of construction, per Drawing Notes "Tree Protection Measures" and surrounding open trenches during construction.
 - i. Steel, wood or plastic Traffic Barricade with Flasher Light shall be furnished and set in front of all open trenches that are within five-feet of pedestrian or vehicular paths and roads.
 - ii. Materials may be of commercial quality providing the dimensions and sizes of said materials are equal to, or greater than the dimensions shown on the plans or specifications.
 - iii. Used materials may be used providing such used materials are structurally sound and suitable for the purpose intended.
 - iv. Posts shall be either metal or wood at the contractor's option.
 - v. Galvanizing and painting of steel items will not be required.
 - vi. Treating wood with wood preservatives will not be required.
 - vii. Concrete footings for metal posts will not be required.
 - viii. Safety fencing and barricades that are damaged from any cause during the progress of the work shall be repaired or replaced at the Contractor's expense.
 - ix. When no longer required for the work as determined by the District Inspector, safety fences and barricades shall be removed. Removed materials shall become the property of the Contractor and shall be removed from the site of the work.
 - x. Holes caused by the removal of safety fencing and barricades shall be backfilled in accordance with the provisions in the "Preservation of Property" section of the Technical Specifications.

20. Construction Layout and Staking

- a. Description of Work: Stakes or marks will be set by the Contractor as the Contractor determines to be necessary to establish the lines and grades required for the completion of the work specified in these specifications, on the plans and in the Special Provisions.

21. Clearing and Grubbing

- a. Description of Work: Clearing and grubbing shall conform to the provisions in Section 02230, "Site Clearing," of the Specifications and these Special Provisions.

The area to be cleared and grubbed shall remain within the excavation and embankment slope lines.

22. Excavation

- a. Description of Work: All references to "Excavation" shall be equally interchangeable with "Roadway Excavation". All Excavation shall conform to the provisions of Section 02300, "Earthwork" of the Technical Specifications and these Special Provisions.

Excavation shall consist of performing all operations necessary to excavate earth, rock, and all other materials upon which the fill, aggregate base, or other material is to be constructed; to build embankment, in the location and to the elevation and form required; to backfill ditches and depressions caused by the removal of obstructions; to furnish all equipment necessary for these operations, and the performances of all incidental work of whatever nature that may be required to build the grade and maintain it in the form specified. Included in the work shall be all associated grading areas to drain, and the scarification and recompacting to 90% relative compaction of the top 6 inches of the subgrade.

Surplus Material: All surplus excavated material shall be collected, hauled and deposited at a location specified by the Engineer. Only if directed to do so in writing by the engineer may surplus excavated material be collected, hauled and deposited away from the project by the Contractor and shall be paid as a part of this item.

23. Aggregate Base

- a. Description of Work: Aggregate Base shall conform to the provisions in Section 02721, "Aggregate Bases" of the Technical Specifications and these Special Provisions and shall be constructed to the thickness and dimensions indicated on the plans. The maximum size of aggregate shall be three-quarters (3/4) inch as set forth in Section 26, or as specified by the Engineer. Aggregate Base shall be Class 2.

24. Water

- a. Description of Work: The Contractor shall furnish for use under these Special Provisions all water required and as set forth under the Technical Specifications.
- b. Measurement and Payment: The cost for furnishing water shall be considered as being included in the contract unit price paid for other items of work, and no separate payment will be allowed.

25. Storm Drain Pipe

Specified Pipe Materials

- a. Description of Work: The storm drain pipe shall be installed in conformance with the manufacturers construction specifications including trench construction, backfill material selection and backfill construction. In addition applicable portions of Section 02630, "Storm Drainage" of the Technical Specifications and these Special Provisions shall apply.
- b. Trench Excavation: In addition to the manufactures construction specifications trench excavation shall conform to the provisions in Section 02324, "Trenching", of the Technical Specifications and these Special Provisions. The excavation for storm drain pipe shall not be made further in advance of laying the pipe than is practical to complete the pipe laying and backfill operation each day.

- c. Trench Backfill, Storm Drain: In addition to the manufactures construction specifications trench backfill shall conform to the provisions in Section 02324 "Trenching" and Section 02316 "Fill and Backfill", of the Technical Specifications and these Special Provisions. Minimum cover shall be maintained during the construction operation by mounding additional material over backfilled storm drain trenches. Storm drain pipes damaged during any project construction operation shall be removed and replaced at the contractor's expense and no additional compensation will be made.

Alternative Pipe Materials

- a. Description of Work: If requested in writing alternative pipe materials may be approved by the engineer and shall conform to the applicable specifications of the following types of pipe materials. Pipe material shall not vary between structures. Existing pipes extending from structures shall be removed if new pipe being installed is of dissimilar material.

Polyvinyl Chloride (PVC) and High Density Polyethylene (HDPE) Pipe

PVC or HDPE pipe shall be in accordance with the requirements of Sections 02811 "Irrigation" and 02630 "Storm Drainage" of the Technical Specifications, except that Type C corrugated polyethylene pipe shall not be allowed.

Smooth interior wall ribbed polyvinyl chloride drain pipe shall meet the requirements for materials and installation of Section 02630 "Storm Drainage", of the Technical Specifications, and the plans.

Smooth interior Type S corrugated polyethylene pipe or ribbed profile wall polyethylene pipe shall meet the requirements for materials and installation of Section 02630 "Storm Drainage", of the Technical Specifications, and the plans.

- b. Trench Excavation: Trench excavation shall conform to the provisions in Section 02324, "Trenching" of the Technical Specifications and these Special Provisions. The excavation for storm drain pipe shall not be made further in advance of laying the pipe than is practical to complete the pipe laying and backfill operation each day.

- i. Excavation for Laying Pipe: Pipe shall, unless otherwise directed, be laid in open cut. All trenches shall have vertical sides from the bottom to a point at least six (6) inches above the top of the pipe. Above this point in unstable ground, with the written consent of the Engineer, the trench may be sloped as directed. Trenches shall be six (6) inches minimum, wider on each side, or a total of twelve (12) inches minimum, wider than the exterior diameter of the pipe, exclusive of sockets. In the event that sheeting is required, the width of the trench shall be increased sufficiently to accommodate the sheeting. Sheeting shall not be driven below the invert grade of the pipe unless absolutely necessary due to ground conditions, as sheeting is to be removed in conjunction with the backfilling. If sheeting is driven below the invert grade as required above, it shall remain in place, except that portion two (2) feet above the top of the pipe, which shall be cut off and removed as the backfilling is completed.

When using movable trench support, care shall be exercised not to disturb the pipe locations, jointing or embedment. Any voids left in the embedment material by support removal shall be carefully filled with compacted granular material. Removal of any bracing between sheeting, trench boxes or shields shall only be done where backfilling procedures permit removal without loss of trench support. Any longitudinal movement or disjuncting of pipe which results from movement of trench boxes or shields shall be corrected before additional pipe is placed.

- ii. Trenches in rock: Every trench in rock shall be fully opened to a final depth at least thirty (30) feet in advance of any place where pipe is being laid. In rock the trench shall be carried six (6) inches below the external diameter of the pipe. Bedding material consisting of clean washed sand, with a maximum particle size of 1/4 inch, and with a minimum of 70 percent passing a No. 20 screen or graded sand and gravel with a maximum particle size of 3/4 inches conforming to the graduation requirements for Class 2 Aggregate Base per Section 02721 of the Technical Specifications, shall be placed, spread and compacted to provide a firm uniform bed for supporting the pipe.

- iii. Soil Testing: Should soil conditions such as running water or unstable soils be encountered during trench excavation, the director may require testing in advance of excavation to determine the nature and extent of the conditions. After such determination is made, the Engineer may require modified trenching and embedment procedures, as required by soil conditions.
 - iv. Preparation of Subgrade: The subgrade for pipe shall be so prepared that the entire length of each section of pipe shall have a firm and uniform bearing except for such distance as is necessary for bell holes and the proper sealing of the pipe joints. Bell holes below the elevations of the pipe subgrade shall not be larger than one-fourth (1/4) of the distance between pipe joints.
 - v. Overcut: Excavations shall be carried to the exact depth indicated on the plans or as specified. Should the Contractor, through his or her negligence or other fault, excavate below the designed lines, he or she shall replace such excavation with approved materials at his own expense.
 - vi. Approval of Excavations: The contractor shall notify the engineer where excavations for structure or pipes are completed, and no concrete shall be deposited or pipes laid until the excavations are approved.
- c. Trench Backfill, Storm Drain: Trench backfill shall conform to the provisions Section 02324 "Trenching" and Section 02316 "Fill and Backfill, of the Technical Specifications and these Special Provisions.
- i. Polyvinyl Chloride and Polyethylene Pipe: Pipe bedding and shading material from the bottom of the trench to a plane one foot above the top of the plastic pipe shall be clean sand with a maximum particle size 1/4-inch and minimum of 70% passing a No. 20 screen, Class 2 aggregate base, 3/4" maximum grading, compacted to a relative compaction of not less than 95% or Slurry Cement Backfill. Backfill material from a plane one foot above the top of the plastic pipe to subgrade shall meet the above requirements for reinforced concrete pipe.
 - ii. Disposal of Excess Material: Excess materials which have been excavated from trenches, and which cannot be utilized for backfill, shall be removed in accordance with the Special Provisions.
 - iii. Compaction: Compaction of backfilled material by ponding or jetting will not be allowed unless specifically authorized by the Engineer.

26. **Miscellaneous Concrete Construction**

- a. Description of Work: Curbs, sidewalks and PCC pavement shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Technical Specifications and these Special Provisions.

Subgrade preparation shall conform to the provisions of Section 02300 "Earthwork" of the Technical Specifications. The Contractor shall be responsible for performing grading, including furnishing fill material and excavating, as necessary to establish finish grade for placement of concrete sidewalk, driveway, handicap ramp, valley gutter, and mow curb construction. Subgrade shall be compacted to a relative density of 90% in conformance with California Test Method No. 216.

No concrete shall be placed until the subgrade and forms have been reviewed for satisfactory compaction, alignment, and grade, and approved by the Engineer.

- b. Premolded Expansion Joints, 1/4-inch-wide, shall be installed in all curbs and sidewalks as follows:
- i. As shown on Drawings.
 - ii. At maximum 48-foot intervals in all new curb and gutter construction.
- c. Control Joints, 1/4-inch-wide, 1/4-inch radius, scored at 1/4-inch-depth of concrete being placed, shall be constructed at maximum 24-foot intervals in all new curbs, gutters, and sidewalks. Weakened plane joints shall be constructed in the ramps in accordance with the applicable provisions of Section 02764 of the Technical Specifications.

- d. Extruded curb, gutter and sidewalk construction shall not be used without prior approval by the Engineer.
- e. Materials:
 - i. Concrete: Construction of all sidewalks, handicap ramps, curbs, gutters and driveways shall be of Class "A" Portland Cement concrete as specified in Section 02515 "Site Concrete", of the Technical Specifications, and shall conform to the provisions of Section 02515 of the Technical Specifications.
 - ii. Adhesives: Adhesives or bonding agents used to join new concrete to existing concrete shall be approved by the Engineer prior to use in the work.
 - iii. Lampblack: Lampblack of approved quality shall be mixed with all concrete used in the work at the rate of one pound per cubic yard of concrete. (If Concrete is not colored)
 - iv. Joint Filler: Premolded expansion joint filler shall conform to the provisions of 02515 "Site Concrete", of the Technical Specifications.
 - v. Dowels: Steel dowels, where specified, shall conform to the plans and details.
 - vi. Curing: The curing method of Portland Cement concrete shall conform to Section 02515 "Site Concrete", The curing compound shall consist of the compound specified in Section 02515 "Site Concrete",
- f. Measurement: Concrete curb and/or gutter will be measured by the lineal foot in place. Concrete sidewalks, driveways, PCC Pavement and bus shelter pads shall be measured by the square foot in place. Handicap ramps shall be measured per each.
- g. Payment: The unit price paid per linear foot for installation of concrete curb, flush curb and/or gutter and the unit price paid per square foot for installation of concrete sidewalk and for each handicap ramp shall include full compensation for furnishing all labor, tools, materials and equipment, and for doing all the work involved in installing curbs, gutters, sidewalks, driveways, and handicap ramps, including grading and sand cushion under sidewalk, handicap ramp, and driveways, or aggregate base under curb and gutter, as shown on the plans as required by the Technical Specifications and these Special Provisions, and as directed by the Engineer.

M. UNDERGROUND FACILITIES

NOTICE IS HEREBY GIVEN THAT there may be underground water, gas, telephone, electric and other utility pipes located beneath the surface of the roadway.

Prior to submittal of bids, and upon obtaining appropriate encroachment permits, prospective bidders may, at their expense, investigate the nature of the site by digging test holes within public right-of-way areas in the vicinity of the work.

The Contractor shall contact the appropriate utility company prior to any excavation and shall determine the exact vertical and horizontal location of any underground facilities.

Following the award of contract for the work, any cost in locating underground facilities shall be considered as included in the cost of other items of the contract and no additional compensation will be allowed.

Payment for removal and disposal of buried man-made objects shall be included in the contract price paid for other items of work and no separate payment shall be allowed.

N. ROTARY CENTENNIAL PARK PLANS

All work encompassed under this project shall be completed in accordance with the notes and drawings shown on the Plans entitled: "**ROTARY CENTENNIAL PARK** Title Sheet through E-1.1"

TABLE OF CONTENTS
ROTARY CENTENNIAL PARK TECHNICAL SPECIFICATIONS

DIVISION 01 – GENERAL REQUIREMENTS

ALTERNATIVES	01230
ADMINISTRATIVE REQUIREMENTS	01300
QUALITY REQUIREMENTS	01400
TEMPORARY FACILITIES AND CONTROLS	01500
TEMPORARY UTILITIES	01510
VEHICULAR ACCESS AND PARKING	01550
PRODUCT REQUIREMENTS	01600
EXECUTION REQUIREMENTS	01700
CLOSEOUT PROCEDURES	01770
CLOSEOUT SUBMITTALS	01780
PROJECT RECORD DOCUMENTS	01781
OPERATIONS AND MAINTENANCE DATA	01782

DIVISION 02 – SITEWORK

DEMOLITION	02100
SITE CLEARING	02230
LANDSCAPE GRADING	02260
EARTHWORK	02300
FILL AND BACKFILL	02316
TRENCHING	02324
SITE FURNISHINGS	02470
WATER DISTRIBUTION	02510
SITE CONCRETE	02515
STORM DRAINAGE	02630
AGGREGATE BASE COURSE	02721
PAVEMENT JOINT SEALANTS	02764
IRRIGATION	02811
LANDSCAPE INSTALLATION	02905
LANDSCAPE MAINTENANCE	02970

DIVISION 10 – SPECIALTIES

SIGNS AND SIGNPOSTS	10430
---------------------	-------

TABLE OF CONTENTS
ROTARY CENTENNIAL PARK TECHNICAL SPECIFICATIONS

DIVISION 16 – ELECTRICAL

ELECTRICAL GENERAL REQUIREMENTS	16050
BASIC MATERIALS AND METHODS	16100
LIGHTING	16500

SECTION 01230

ALTERNATIVES

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Alternative submission procedures.
- B. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED SECTIONS

- A. Construction Agreement: Incorporating monetary value of accepted alternatives.

1.03 ACCEPTANCE OF ALTERNATIVES

- A. Alternatives quoted on Contract Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.
- B. The Owner has the option of accepting none, or any number and combination of Bid Alternatives.
- C. Alternates may be submitted during the construction process. If they are considered to be an equal product by the Owner, then they may be approved.
- D. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01300
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.02 RELATED SECTIONS

- A. Project General Conditions.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. The Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. The Owner
 - 2. Landscape Architect
 - 4. Contractor
 - 5. Landscape Contractor
 - 6. Sub-contractors as requested by the Owner
- C. Agenda
 - 1. Submission of list of Subcontractors, list of Products and schedule of values.
 - 2. Designation of personnel representing the parties to Contract, The Owner, Contractor, Construction Management firm and Landscape Architect.
 - 3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

4. Critical Path Scheduling.

- D. The Landscape Architect will record minutes and distribute copies after meeting to participants.

3.02 SITE MOBILIZATION MEETING

- A. The Landscape Architect will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor
 2. The Owner
 3. Landscape Architect
 4. Contractor's Superintendent
 5. Major Subcontractors
- C. Agenda:
1. Use of premises by The Owner and Contractor.
 2. The Owner's requirements and occupancy prior to completion.
 3. Permit requirements.
 4. Construction facilities and controls provided by Owner.
 5. Temporary utilities.
 6. Survey and park layout.
 7. Security and housekeeping procedures.
 8. Critical Path Schedules.
 9. Application for payment procedures.
 10. Procedures for testing.
 11. Procedures for maintaining record documents.
 12. Requirements for start-up of equipment.
 13. Inspection and acceptance of equipment put into service during construction period.

3.03 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum one-week intervals.
- B. The Owner will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, the Owner and others, as appropriate to agenda topics for each meeting.
- D. Agenda:
1. Review minutes of previous meetings.

2. Review of Critical Path Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that may impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Submit updated schedule and critical path items.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Maintenance of quality and work standards.
11. Effect of proposed changes on progress schedule and coordination.
12. Other business relating to Work.

E. The Architect will record minutes and distribute copies after meeting to participants.

3.04 CONSTRUCTION PROGRESS SCHEDULE

- A. See Contract General Conditions for Schedules Required of Contractor
- B. Construction Timeline Priorities – Contract shall coordinate schedule with Owner's prefabricated restroom contractor to have utilities stubbed out and restroom pad ready for restroom contractor to install restroom.

3.05 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
 5. Ten (10) days before scheduled work, provide mock-up samples onsite for inspection of samples over 50 pounds.
- B. Submit to the Landscape Architect for the limited purpose of checking with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - CLOSEOUT SUBMITTALS.

3.06 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Design data.

2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 6. Other types indicated.
- B. Small size sheets, not larger than 8-1/2 x 11; submit the number of copies which the Contractor requires, plus three copies for the Owner, plus one copy for Landscape Architect.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. As-built documents.
 5. Other types as indicated.
- B. Submit for the Owner's benefit during and after project completion.

3.08 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review: Submit the number of copies which the Contractor requires, plus three copies for the Owner, plus one copy for the Landscape Architect.
1. Small size sheets, not larger than 8-1/2 x 11 inches: Submit the number of copies the Contractor requires, plus two copies, which will be retained by the Landscape Architect.
 2. Larger Sheets, Not Larger Than 11 x 17 inches: Submit to the Owner the number of opaque reproductions which Contractor requires, plus two copies which will be retained by the Landscape Architect.
- B. Documents for Information: Submit two copies.
- C. Documents for Project Closeout: Make one copy of submittal originally reviewed.
- D. Samples: Submit the number specified in individual specification sections, one of which will be retained by the Landscape Architect.
1. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA Form G810.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number; and specification section number, as appropriate on each copy.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Submit three (3) copies of each submittal for the landscape architect to retain plus the number of copies the Contractor would like returned for their use.
- F. Deliver submittals to the Landscape Architect's business address.
- G. Schedule submittals to expedite the Project, and coordinate submission of related items.
- H. Make submissions within the following number of days from issuance of Notice to Proceed:
 - 1. Items needed in initial stages of work, or requiring long lead-time for ordering: 15 days.
 - 2. All electrical equipment items: 21 calendar days
 - 3. All other items including all samples: 30 calendar days
- I. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- J. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- K. Provide space for Contractor and Landscape Architects review stamps.
- L. When revised for resubmission, identify all changes made since previous submission.
- M. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any Inability to comply with requirements.
- N. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01400

QUALITY REQUIREMENTS

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Control of installation.
- B. Testing and inspection services.

1.02 RELATED SECTIONS

- A. General Conditions
- B. Section 01300 Submittals
- C. Section 01700 Contract Closeout
- D. Individual Specifications Section: Submittals, inspection and testing required, and standards for testing.

1.03 REFERENCES

- A. Title 24, California Building Code, current edition.
- B. ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

1.04 TESTING AND INSPECTION AGENCIES

- A. The respective Sections of these specifications contain detailed requirements for materials testing and inspections to be performed by an approved testing laboratory.
- B. All costs incurred for testing laboratory services shall be paid for by the Owner. However, should re-testing be required due to contractor's failure to comply with the Contract Document requirements, the Contractor shall pay costs of re-testing.

1.05 OWNER'S RESPONSIBILITIES

- A. Owners will select and employ a pre-qualified, independent testing laboratory to perform inspections, sampling and testing of materials as specified in the individual Specifications Section.

- B. Owner will pay for all initial testing laboratory services as described within the Contract Document or not normally required by codes and ordinances.
- C. When the initial tests indicate non-compliance with the Contract Documents, the costs all subsequent re-testing occasioned by the non-compliance shall be deducted by the Owner from the Contract Sum.

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work, arrange access to manufacturer's operations.
- B. Provide laboratory preliminary representative samples of materials to be tested, in required quantities.
- C. Furnish copies of mill test reports.
- D. Provide casual labor and facilities for access to work being tested; obtain and handle supplies at the site; facilitate inspections and tests; provide facilities for laboratory's exclusive use for storage and curing of test samples.
- E. Coordinate requests for testing by Owner-employed testing laboratory through the Owner's Representative. Notify Owner's Representative two (2) working days in advance of operations to allow for assignment of personnel and scheduling of tests.
- F. Pay for additional laboratory inspections, sampling and testing required for Contractor's convenience and when initial test indicate that work does not comply with Contract Documents.
- G. Pay for inspections and tests required by code or ordinances or by a plan approval authority, and made by legally constituted authority (i.e., municipal deputy inspector), unless otherwise provided for the Contract Documents.
- H. When required on individual Specifications Section, submit manufacturer's certificate, executed by responsible officer, certifying that product meet or exceed specified requirements. Provide certification in duplicate.

1.07 TESTING LABORATORY RESPONSIBILITIES

- A. Perform specified inspections, sampling and testing of materials and methods of construction, comply with specified standards. Ascertain compliance with requirements of Contract Documents.
- B. Provide prompt notification of irregularities or deficiencies of work observed during performance of services.

- C. Perform additional inspections and tests required by Owner's Representative.
- D. After each inspection and test, promptly submit copies of laboratory report to the Owner. Reports are to include: Date issued, project title and number, name of inspector, date and time of sampling or inspection, identification of product and Specification Section(s), location in the project, type of inspection or test, date of test and results of test, When requested by Owner's Representative provide interpretation of test results.
- E. Testing Laboratory shall have no authority to: release, revoke, alter, or enlarge on requirements of Contract Documents; approve, accept or stop any portion of the work; perform any duties of the Contractor.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Field Office.
- B. Temporary utilities.
- C. Temporary telephone service.
- D. Temporary sanitary facilities.
- E. Temporary Controls: Barriers and fencing.
- F. Security requirements.
- G. Waste removal facilities and services.
- H. Project identification sign.
- I. Dust control.
- J. Erosion control
- K. Existing Conditions verification.

1.02 RELATED SECTIONS

- A. Section 01510 - Temporary Utilities.
- B. Section 01550 - Vehicular Access and Parking.
- C. County General Conditions Section 10.

1.03 TEMPORARY UTILITIES - See Section 01510

1.04 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain portable construction toilet facilities for Contractor's employees and Owner Representatives.
 - 1. Toilet Facilities: Provide sufficient suitably enclosed toilets with urinal for use by all trades engaged on project. The Owner shall approve location.
 - 2. Washing Facilities: Provide properly mounted and adequate wash sinks connected to water supply, in location approved by the Owner.
 - 3. Drinking Water Facilities: Provide clean, sanitary and adequate drinking water.
- B. Maintain daily in clean and sanitary condition.

1.05 BARRIERS AND ACCESS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for owner and residents access to their property and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades required by governing authorities for public rights-of-way.

- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 SECURITY

- A. Contractor is responsible for security of areas of his work during the entire time of the Contract. Within this responsibility, the Contractor will repair and/or replace all damages to the work and loss of materials due to vandalism or theft. This includes damages to existing facilities due to construction activities.

1.07 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and the Owner.
- B. Provide and maintain access to fire hydrants and the emergency vehicle access and access to adjacent residential housing for the public and the Owner, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.

1.08 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Dispose of waste off-site weekly.

1.09 PROJECT IDENTIFICATION SIGN

- A. Provide project identification sign to be posted in advance of construction. Provide painted plywood project identification sign, size to be 4' x 6' and must last the duration of the Project. Sign to read: Site Improvements for the Mission Oaks Recreation and Park District, date-to date of construction, construction company name and contact phone number. Design approval of the sign by the Owner and shall be obtained prior to fabrication and construction.
- B. Erect on site at location to be approved by the owner.
- C. No other signs are allowed without Owner permission except those required by law.

1.10 FIELD OFFICE

Contractor may locate a field office trailer onsite. Size and location of trailer to be approved by Owner prior to placement.

1.11 DUST CONTROL

- A. Use water wagons or spray from hoses to control dust created by work operations.
- B. Comply with all local and state dust control ordinances.

1.12 EROSION CONTROL

- A. Contractor is advised that the State of California has adopted National Pollution Discharge Elimination Requirements in accordance with the requirements of the Clean Water Act. This project is subject to all of the requirements contained in those acts. The contractor shall abide by all of the laws, ordinances, and regulations associated with the NPDES and the Clean Water Act.
- B. The SWPPP must be maintained throughout the course of construction and be available at the construction site. The contractor is advised that he shall conform to this requirement and that he shall implement all of the measures required by the SWPPP, including maintenance of diligent record keeping and logs as required by the SWPPP.
- C. The contractor shall provide copies of the updated SWPPP to the Owner prior to starting construction operations. The contractor shall provide copies of his SWPPP records and logs during the course of construction, on a monthly basis to the Owner. The contractor shall also keep copies of these records and logs with the SWPPP at the construction site for potential viewing by the State of California Regional Water Quality Control Board.

1.13 EXISTING CONDITIONS VERIFICATION

- A. Contractor shall record existing site conditions, either by photographs or video, to provide a record of pre-construction site conditions.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary field office, utilities, equipment, facilities, and materials prior to Final Application for Payment inspection.
- B. Remove underground installations to a minimum depth of 2 feet.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Unless otherwise directed, restore existing and permanent facilities used during construction to original condition.
- E. Maintenance and Removal:
 - 1. Maintain all temporary facilities and controls as long as needed for safe and proper completion of work. Remove all such temporary facilities and controls as rapidly as progress of work will permit.
 - 2. Non-compliance with requirements within this section may result in payment being withheld and/or deductive change orders for lack of proper facilities and controls. If necessary, the owner will provide such facilities and controls as required and back charge the Contractor.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Electricity.
- B. Temporary Water.

1.02 RELATED SECTIONS

- A. Section 01500 - Temporary Facilities and Controls: temporary sanitary facilities required by law.

1.03 TEMPORARY ELECTRICITY

- A. Cost: By Contractor.
- B. It is expected that electrical needs by the Contractor will only require their own generator. If additional electrical services are needed, then the following shall apply;
- C. Provide separate electrical source or metering and reimburse the Owner for cost of energy used. Exercise measures to conserve energy.
- D. Provide temporary electric feeder from electrical service at location as directed.
- E. Complement existing power service capacity and characteristics as required.
- F. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- G. Provide main service disconnect and over-current protection at convenient location and meter.
- H. Permanent convenience receptacles may be utilized during construction.
- I. Provide adequate distribution equipment, wiring, and outlets to provide single-phase branch circuits for power.

1.04 TEMPORARY WATER SERVICE

- A. Cost of Water Used: By Contractor. Contractor to pay for water used for on-site work before irrigation system is connected.
- B. Contractor to coordinate metering of water use with Owner.
- C. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
- D. Extend branch piping with outlets located so water is available by hoses with threaded connections.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01550

VEHICULAR ACCESS AND PARKING

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Parking.
- B. Construction parking controls.
- C. Haul routes.

1.02 RELATED SECTIONS

- A. Section 01500 TEMPORARY FACILITIES AND CONTROLS

PART 2 – NOT USED

PART 3 EXECUTION

3.01 PARKING

- A. Arrange for temporary parking at staging area to accommodate use of construction personnel.
- B. Locate as approved by the Owner.

3.02 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.

3.03 HAUL ROUTES

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Maintain roads in satisfactory condition during the contract time. Repair damages attributable to work of the project at intervals as needed. At completion of Contract, roads and entryways shall be left in condition at least equal to that existing at start of Contract, except as may be otherwise required by Contract Documents.
- D. Temporary access roads are to be provided by and completely removed by the Contractor upon completion of work.

END OF SECTION

SECTION 01570

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the conservation and protection of environmental resources at the work site during and as the result of construction activities, except as otherwise specified. State and federal environmental statutes, rules, regulations, and policies have been enacted to protect environmental resources by ensuring that significant environmental impacts of projects are identified and adequate mitigation measures are incorporated into the project. Environmental protection affects several resource areas, including biological resources, cultural resources, air quality, and water quality. Potential impacts may occur through the generation of noise, dust emissions, discharges of pollutants, disturbances to terrestrial and aquatic areas, additional traffic, creation of traffic obstructions and other threats to public safety, and degradation of resources. Construction activities shall be in accordance with environmental and regulatory permits issued for the project and the Contractor may be held responsible for any violations as prescribed by law. If the Contractor's actions cause infractions that require suspension of work, then the Engineer may, without limiting the District's other rights and remedies, suspend work as specified in Article 13 of the General Conditions.
- B. The Contractor shall be responsible for the sequence and control of construction activities, selection and maintenance of equipment, and the conduct of the Contractor's employees at the work site to ensure that specific mitigation measures to reduce or eliminate identified environmental impacts are implemented.
- C. Contractor's personnel failing or refusing to carry out requirements of this section in the opinion of the Engineer, shall be removed from the work site if ordered.
- D. Construction equipment failing to produce the quality of work within the requirements of this section, in the opinion of the Engineer, shall be removed from the work site if ordered.
- E. The Contractor shall minimize construction activities causing disturbances to vegetation, wildlife or cultural resources. Construction activities may be restricted in various ways that include, but are not limited to, the environmental protection and/or mitigation measures specified.

1.02 RELATED SECTIONS

- A. Drawings, General Conditions, Supplementary General Conditions, Special Provisions and other Division 1 sections apply to this section. This section may require direct correlation with the following sections of the contract:

- 1. Section 02260 – Landscape Grading

2. Section 02905 – Landscape Installation

1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. The District has obtained the following environmental documents/references and permits:

a. CEQA — California Environmental Quality Act of 1970:

- 1) ND — Negative Declaration.
- 2) Notice of Determination.

1.04 SUBMITTALS

A. The Contractor shall develop and submit five detailed plans for implementing the requirements of this section. The plans shall include but not be limited to the following:

1. Name of Contractor's supervisor responsible for implementing the plans.
2. Working drawings and data for implementing the requirements of the plans.
3. Air Quality Control Plan.
4. Water Quality Control Plan and Storm Water Pollution Prevention Plan (SWPPP) (Update existing SWPPP on file with the District).

a. The Storm Water Pollution Prevention Plan (SWPPP) shall be submitted to the Regional Water Quality Control Board (RWQCB) prior to demolition work begins. The SWPPP must be approved by the RWQCB prior to the start of demolition activities.

5. Fire Prevention and Control Plan.
6. Noise Control Plan.
7. Traffic Control Plan.

B. The Contractor shall submit the above plans including working drawings and data to the District for approval five (5) working days prior to mobilization.

C. Copies of all of the above plans shall be maintained at the work site throughout the construction period.

1.05 DELIVERY, STORAGE, AND HANDLING OF HAZARDOUS MATERIALS

A. Construction Sites and Equipment:

1. The storage, transportation, transfer, containment, and disposal of hazardous materials, such as fuel, oil, and lubricants have potential for affecting water quality. Fuel, oil and other petroleum products shall be stored only at designated sites. The use of hazardous materials shall be avoided or minimized where possible. Each hazardous material containment container shall be clearly labeled with its identity, handling and safety instructions, and emergency contact. Similar information shall be clearly available and visible in the storage areas. Storage and transfer of such materials shall not be allowed within 100 feet of streams or sites known to contain sensitive biological resources. Storage or use of hazardous materials in or near wet or dry streams shall be consistent with the Fish and Game Code and other State laws. Material Safety Data Sheets (MSDS) shall be made readily available to the Contractor's employees and other personnel at the work site. The accumulation and temporary storage of hazardous wastes shall not exceed 90 days. Soils contaminated by spills or cleaning wastes shall be contained and shall be removed to an approved disposal site. Disposal of hazardous wastes shall be in compliance with all applicable laws and regulations.
2. Petroleum drippings on equipment have potential to result in water pollution during construction. The Contractor shall maintain construction equipment to minimize petroleum drippings. All stationary power equipment such as engines, pumps, generators, welders, and air compressors shall be positioned over drip pans. Equipment used in water shall be free of exterior petroleum products prior to submersion, and shall be checked and maintained daily to keep the equipment exteriors clean.
3. Petroleum products shall be stored in nonleaking containers at impervious storage sites from which runoff is not permitted to escape.
4. Personnel stationed at or near these sites shall be trained in emergency response and spill containment techniques. An ample supply of absorbent pads, pillows, socks, booms, and other spill containment materials shall be maintained at the hazardous materials storage sites for use in the event of spills. Contaminated absorbent pads, pillows, socks, booms, and other spill containment materials shall be placed in nonleaking sealed container until transport to an appropriate disposal facility. The Contractor shall furnish to the Engineer a contact person and telephony number of a company experienced in emergency response for vacuuming and containing spills of oil or other petroleum products.
5. Fuel may be transferred from the storage areas to construction equipment by tanker trucks. Fuel transfers shall take place at least 100 feet from exclusion zones, drainage areas, water bodies and streams.
6. Fuel transfer vehicles shall have absorbent pads, pillows, socks, booms or other spill containment materials placed under the fueling operation (between the fuel

truck and the equipment being serviced). A trained service attendant shall monitor the filling of equipment and shall stop the fuel flow immediately if any spill occurs. Fuel transfer shall not resume until the problem is resolved to the satisfaction of the Engineer. The service attendant shall be trained in emergency response, fire extinguisher use, and spill containment techniques.

1.06 SENSITIVE SPECIES - NOT USED

1.07 COLLECTION AND HARASSMENT OF SPECIES

- A. No intentional harassment, killing, or collection of plants or animals at or around the work site will be allowed.

1.08 BOUNDARIES OF WORK SITE AND LISTED SENSITIVE SPECIES

- A. The boundaries of the work site is as shown on the construction drawings for showing exact location of work and areas that may be occupied by the Contractor. The Contractor and the Contractor's employees shall not leave the right of way or temporary construction easement, without prior written approval.
- B. Preconstruction surveys will be conducted to designate exclusion zones.
- C. Exclusion zones will be marked with either large flagged stakes connected by cord, or survey laths or wooden stakes prominently flagged with survey ribbon or fencing. The Contractor and Contractor's employees shall not encroach into flagged exclusion zones in any manner, whether in vehicles or on foot, without prior written approval.
- D. No pets, camping, firearms, or any other use of the right of way area will be allowed. Harassment, killing, or destruction of dens or burrows of wildlife species is strictly prohibited. Contractor's employees shall not be allowed at the work site during nonworking hours. Only authorized camping areas may be utilized. Exceptions that will not cause environmental impacts to biological resources may be allowed by the Engineer.
- E. Food-related trash, such as wrappers, cans, bottles, and scraps shall be placed in closed containers and removed daily from work sites. All trash or garbage shall be removed to a county approved disposal site at least weekly by the Contractor. The right of way shall be policed daily by Contractor's personnel and monitored by inspectors or environmental personnel.
- F. Traffic shall be restricted to existing roads and flagged right of way or temporary construction easement. Construction related vehicles shall not exceed 25 mph on straight and level roads, with a 10 mph speed limit in areas of steepness or with curves.

1.09 BIOLOGICAL RESOURCES (PLANTS AND ANIMALS)

- A. The Construction activities have potential for affecting the biological resources by physical destruction, disturbance, and/or displacement.
- B. The Contractor shall not be permitted in areas where sensitive plant species occur until the sensitive plants are removed or soil seed banks are removed by the District.
- C. Unless otherwise approved, the Contractor shall not apply any rodenticide or herbicide to control any vertebrate or plant pest.

1.10 CULTURAL RESOURCES

- A. See also Special Provisions
- B. The construction activities have potential for affecting cultural resources such as historically significant resources, local land uses, commercial establishments, or the activities of local landowners, residents, or recreationalists.
- C. The Contractor shall reduce potential adverse impacts to cultural resources that may be associated with construction by implementing the preservation of culturally significant resources in accordance with the National Historic Preservation Act of 1966, (16 U.S.C.470).
- D. If any potential paleontological, archaeological or historic sites are uncovered, the Owners Representative will be notified prior to proceeding with the work affected. If necessary the Engineer will suspend work as specified in Article 13 of the General Conditions. The Owners Representative will provide for an initial field evaluation of the site within seventy-two (72) hours after receiving notification of Contractor's discovery.
- E. If human remains are exposed, all construction activities shall be halted in the immediate vicinity until the County Coroner has assessed the remains.

1.11 AIR QUALITY CONTROL PLAN

- A. See also Special Provisions.
- B. The construction activities have potential for resulting in localized, short-term construction emissions from stationary, mobile and area sources, and fugitive dust from construction equipment, and trucks for hauling.
- C. The Contractor shall reduce these effects by submitting and implementing an Air Quality Control Plan. The following components, if applicable, shall be included in the plan and if not applicable the Contractor shall explain in the plan why that component or portions thereof is not included in the plan.

- D. Fugitive dust shall be minimized by watering, minimizing cleared areas, covering exposed surfaces, seeding, managing activities to keep the active work area small at any given time, applying chemical suppressant or implementing other dust control measures as approved. One or more of the above control measures shall be used sufficiently to prevent fugitive dust from leaving the work site. Increased application of control measures shall be required whenever conditions cause fugitive dust.
- E. The Contractor shall control fugitive dust by:
 - 1. Minimizing areas cleared to facilitate construction, such as storage areas, staging areas, stockpile areas and vehicle parking.
 - 2. Covering spoil piles when necessary.
 - 3. Constructing roadways, driveways, sidewalks, building pads and other graded surfaces.
 - 4. Chipping cleared vegetation and covering exposed areas as work is completed.
 - 5. Performing seeding requirements as required.
 - 6. Minimizing the amount of construction equipment operating during any given time period. This includes scheduling of construction truck trips to reduce peak emission, limit the length of the construction workday, and phasing of construction activities.
 - 7. Covering haul trucks traveling onto or off the work site. Haul trucks traveling on the work site shall be covered as necessary to prevent dust from leaving the work site.

1.12 WATER QUALITY CONTROL PLAN AND STORM WATER POLLUTION PREVENTION PLAN

- A. The construction activities have potential for resulting in localized, short-term impacts to water quality due to fuel or oil leaks or spills at fuel or oil transfer areas, erosion and runoff.
- B. The Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for the General Construction Storm Water Permit. Development of the SWPPP shall be accomplished by the Contractor using guidelines provided by the State Water Resources Control Board (SWRCB) for containment of construction activity pollutants such as wastes, erosion, and sediments. The SWPPP shall be submitted to the Regional Water Quality Control Board (RWQCB) five (5) working days prior to field mobilization. The SWPPP must be approved by the RWQCB prior to the start of construction activities. Guidelines for the SWPPP are presented in the Construction Storm Water Permit Package available at the Redding, California, office of the RWQCB. The SWPPP shall include provisions for water quality protection and for implementing Best Management Practices (BMPs) chosen to reduce and mitigate construction activity pollutants. The Contractor shall implement this plan during all construction activities by providing BMPs and conforming to the following provisions.
- C. Erosion could potentially cause impacts both on and off the work site. On the work site, erosion could wash away soil and fill material, resulting in the formation of gullies. Off the work site, erosion could result in downstream sedimentation and turbidity impacts. Additionally, the Contractor shall:
 - 1. Restrict personnel to designated roads.

2. Use methods for controlling erosion on designated roads.
3. Use methods for on-site erosion control and sediment capture methods during construction.
4. Minimize erosion during stormy weather at the work site.
5. Use methods for post construction erosion control.
6. If drainage swales are employed as BMPs, they shall be vegetated or otherwise protected to reduce erosion.
7. Contact personnel and emergency procedures shall be posted at the work site to avoid and minimize loss of property and life in case of a significant storm event.
8. The project Storm Water Pollution Prevention Plan (SWPPP) shall be strictly implemented.
9. All settleable solids, oils, and grease shall be contained to prevent their release into the environment. Flocculents may be used on solids that do not readily settle, as long as they do not contaminate water quality.
10. Excess construction and operation materials, rubble, and excavated soil shall be either reused or disposed of in approved sites. All imported fill shall be obtained from approved sources
11. Exposed areas shall be stabilized with temporary mulching, landscaping, and other erosion control methods during and after land disturbance activities.
12. Areas of disturbance with slopes toward a stream shall be stabilized to reduce erosion potential.
13. Stock piles shall be protected from erosion either by covering them or by placing barriers (e.g. silt fence, sand bags) around their perimeter to prevent the escape of sediments.
14. Spoil disposal areas shall be graded to ensure that drainage from these sites will minimize erosion of spoil materials and adjacent native soil material. Grading shall conform with the existing topography of the area.

D. Streams, Creeks, Drainages or Waterbody Crossings:

1. Berms or other diversion structures may be constructed around the work site to allow uninterrupted flow in streams, creeks or waterbody crossings. Construction shall be separated into two phases to maintain flows through half the waterbody width unless otherwise directed. When the diversion is installed, water shall be directed into siltation basins. If straw bales are used to form the basins, water shall be allowed to settle, filter through the straw, and flow over the natural terrain before returning to the stream. If earth fill is used to form the berm, water shall be allowed to settle, and flow over the

protected berm onto the natural terrain before returning to the stream.

2. Earth moving activities shall not occur in streams, creeks, waterbody crossings, or riparian areas within 24 hours of predicted 50 percent chance of National Weather Service anticipated precipitation during the rainy season (November 15 through April 15). Stockpiled topsoil or backfill shall be stored above the stream high water mark, outside any riparian zone, and not in any area where the stockpiled material could be washed back into the stream. Straw bales or other BMPs shall be used at flowing river or creek crossings at the end of each workday during the rainy season, and at the end of each workday during other seasons when rain is forecast. If a major storm is predicted or occurs outside of the rainy season, straw bales or other BMPs shall be implemented immediately.
3. Any diversion site, siltation basin and other measures shall be inspected during day light hours and after normal working hours during adverse weather conditions for proper operation. Any measure not operating properly or effectively shall be corrected immediately.

1.14 FIRE PREVENTION AND CONTROL PLAN

- A. The Contractor shall prepare a fire prevention and control plan in consultation with the Engineer, and responsible fire protection agency(s). The following components, if applicable, shall be included in the plan, and if not applicable the Contractor shall explain in the plan why that component or a portion thereof is not included in the plan:
 1. Procedures and policies for controlling any fires including fires that are off the work site, and other related fire prevention and control procedures developed in consultation with resource agencies and fire protection agency(s).
 2. No fires will be allowed at the work site. Smoking will be allowed only in areas designated for smoking which shall be cleared of vegetation or in enclosed vehicles.
 3. The Contractor shall be responsible for maintaining appropriate fire suppression equipment at the work site. Fire extinguishers, shovels and other fire fighting equipment, shall be inventoried and available at work sites and on construction equipment. Each vehicle on the right of way shall be equipped with a minimum 20 pound (or two 10 pound) fire extinguisher(s) and a minimum of five gallons of water in a fire fighting apparatus (e.g. bladder bag).
 4. At the work site, a sealed fire toolbox shall be located at a point accessible in the event of fire. This fire toolbox shall contain: one backpack pump-type extinguisher filled with water, two axes, two McLeod fire tools, and enough shovels so that each employee at the work site can be equipped to fight fire.
 5. One or more chainsaws of 3-1/2 or more horsepower with a cutting bar 20 inches in length or longer shall be immediately available at the work site.

6. Gasoline powered construction equipment with catalytic converters shall be equipped with shielding or other acceptable fire prevention features. Internal combustion engines shall be equipped with spark arrestors.
7. Welding sites shall include fire prevention provisions.
8. The Contractor shall maintain contact with local fire fighting agencies throughout the fire season for update on fire conditions and such fire conditions shall be communicated to the Contractor's employees and the Engineer daily.
9. Vehicles are restricted to the work site unless otherwise allowed for fire control procedures.
10. Disturbance to the terrestrial or aquatic environment through the use of heavy construction equipment shall be kept to a minimum. Clearing of vegetation shall occur from the outer boundaries of the work area toward the interior. If a fire should start, the appropriate fire protection agencies responsible shall be contacted immediately. Hand crews, fire fighting water trucks or other fire control measures may be used as a first defense. Only as required, heavy construction equipment shall be utilized to contain the fire or protect a structure from damage.

1.15 NOISE CONTROL PLAN

- A. The Contractor shall prepare a Noise Control Plan in consultation with the District and the Engineer. The following components, if applicable, shall be included in the plan. If the components are not applicable, the Contractor shall explain in the plan why the component or portion is not included in the plan.
 1. All construction vehicles and equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers.
 2. Stockpiling and vehicle staging areas shall be sited as far as practical from residences.
 3. Hours of construction shall be limited to the hours specified in applicable local noise ordinances.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

PART 4 PAYMENT NOT USED

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Requirements: Product quality monitoring.
- B. Section 01300 - Submittal; review, information, procedure and project closeout.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Also see Section 01300 for Submittal requirements.
- C. Shop Drawing Submittals: Prepared specifically for this Project.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
- E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Provide interchangeable components of the same manufacture for components being replaced.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufactures named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; provide receipts to owner as part of close out documents.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
- D. Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Owner will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.

3.03 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- J. Deliveries of plant materials must be scheduled so that plant materials arrive no more than five calendar days prior to planting. When temperatures exceed 90 degrees F,

plants must be stored under shade cloth and watered at least twice each day, as required to maintain plants in a healthy, turgid condition. Wilted and/or otherwise unhealthy plants shall be immediately removed from the job site.

END OF SECTION

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

- B. Related Sections include the following:

1. General Conditions Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
2. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit two copies signed by land surveyor.
- E. Final Project Survey: Submit digital copies in AutoCAD and Adobe Acrobat format showing the Work performed and recorded survey data.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility or Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Owner. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Changes to Work due to Contractors negligence to contact Owner for clarification shall be paid by Contractor.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner promptly.

- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Owner when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the Owner.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Owner. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Owner before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Owner.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in General Conditions Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 01770
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related Sections include the following:
 - 1. General Conditions "Payments and Completion" section for requirements for Final Completion and Final Payment.
 - 2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
 - 3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 5. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.

2. Advise Owner of pending insurance changeover requirements.
 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover any applicable utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup galvanized painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Landscape Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Landscape Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to General Conditions "Payments and Completion".

2. Submit certified copy of Owner's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order.
 2. Organize items applying to each space by major element, including categories for grading, concrete, fences, walls, irrigation and planting.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Owner Representative
 - d. Name of Contractor.
 - e. Page number.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Landscape Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove labels that are not permanent.
 - g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - h. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - i. Replace parts subject to unusual operating conditions.
 - j. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Training.
- D. Warranties and bonds.

1.02 RELATED SECTIONS

- A. Section 01300 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to the Owner with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Melton Design Group will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by the Owner, submit completed documents within ten days after acceptance.
 - 3. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Melton Design Group comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during

- construction with the District's permission, submit documents within ten days after acceptance.
2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by the District.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured horizontal and vertical locations of underground utilities, irrigation and appurtenances, referenced to two permanent surface improvements.
 2. Field changes of dimension and detail.
 3. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.
- C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

- D. Provide servicing and lubrication schedule, and list of lubricants required.
- E. Include manufacturer's printed operation and maintenance instructions.
- F. Include sequence of operation by controls manufacturer.
- G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- H. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Prepare data in the form of an instructional manual.
- C. Binders: Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data on 24-pound paper.
Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3.06 TRAINING

- A. Provide training and orientation of District's operating staff in proper care and operation of equipment, systems and controls.
- B. Submit three copies of certificate, signed by District's Representative, attesting to their having been instructed.

3.07 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with the District's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

SECTION 01781

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up Record Prints.
- B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Locations of concealed internal utilities.
 - i. Changes made by Change Order or Construction Work Change Directive.
 - j. Changes made following Landscape Architect's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.
 - m. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Construction Inspector. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
 - 1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 - 2. Refer instances of uncertainty to Owner for resolution.
 - 3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 - 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Owner's reference during normal working hours.

END OF SECTION

SECTION 01782

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

- 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.

- B. Related Sections include the following:

- 1. Division 1 Section "Administrative Requirements" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 3. Divisions 2 through 16 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

- A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Landscape Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.
- B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Landscape Architect will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Landscape Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Landscape Architect's comments.

1.5 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with

same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Landscape Architect.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related

- components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
- b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions.
 - 2. Performance and design criteria if Contractor is delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.

3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate

references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."
- G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 02100

DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work includes, but is not limited to the following:

1. The Contractor shall provide all equipment, tools, materials, and labor necessary to complete the Work.
2. Completely coordinate with Work of all other trades.
3. Provide protection for all existing objects or conditions designated on the Drawings to remain on the site or return to the Owner.
4. Provide protection to prevent injury or damage to persons or adjacent properties.
5. Remove and dispose of demolished materials from the site as indicated on the drawings.
6. Comply with applicable codes and ordinances concerning demolition operations.

B. Definition: The term "demolition", as used herein, includes the removal and disposal of all existing objects (except for those objects designated to remain) down to the existing grade level or subgrade level to the extent indicated or as otherwise required to permit new construction and all other Work as described in this Section necessary to complete all Demolition Work.

C. Use of explosives will not be permitted.

1.02 PERMITS, ORDINANCES, ETC.

Procure and pay for all necessary permits or certificates required to complete the Demolition Work specified. Make any and all required notifications and comply with all applicable Federal, State, and Local ordinances concerning demolition operations.

1.03 JOB CONDITIONS

Visit the site and examine the existing conditions and observe the conditions under which the Work is to be performed. Notify the Landscape Architect of unsatisfactory conditions and do not proceed with the Work until unsatisfactory conditions have been

corrected in a manner acceptable to the Landscape Architect. Note all conditions as to character and extent of Work involved.

1.04 PROTECTION

- A. Execute all Demolition Work in an orderly and careful manner with due consideration for any existing condition designated to remain. Provide protection to preserve existing items indicated to remain and to prevent injury or damage to persons or adjacent properties.
- B. Use all means necessary to protect existing conditions designated to remain and adjacent properties. Avoid any encroachment on adjacent properties. In the event of damage or loss to any existing condition designated to remain or adjacent properties, immediately make all repairs and replacements necessary to the approval of the Owner at no additional cost to Owner.
- C. Do not interfere with the normal traffic on roads, streets, walks, or use of adjacent properties. Provide alternate routes around closed or obstructed traffic ways as required by governing regulations.
- D. Protect existing trees per plans.

1.05 CUTTING AND PATCHING

Cut existing sidewalks, roads, and curbs as required to complete Demolition Work. Pavement shall be cut vertically along straight lines forming the edges of the Demolition Work and so as not to damage the adjacent pavement. Repair all pavement as specified in Sections of the specification covering the applicable trades.

1.06 DUST CONTROL

Use all means necessary to prevent the spread of dust during performance of the Work of this Section; thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

PART 2 - PRODUCTS

2.01 OTHER MATERIALS

All other materials, not specifically described but required for proper completion of the Work of this Section, shall be as selected by the Contractor subject to approval by the Landscape Architect.

PART 3 - EXECUTION

3.01 PREPARATION

A. Notification

Notify the Landscape Architect at least two (2) full working days prior to commencing the Work of this Section.

B. Site Observation

1. Prior to all Work of this Section, carefully observe the entire site for all objects designated to be removed and to be preserved.
2. Contact the Underground Service Alert (U.S.A.) at 1-800-227-2600 to stake and mark the location of all existing utilities prior to the beginning of Work.
3. Locate all existing utility lines indicated on the Drawings to remain, and determine the requirements for their protection.
4. Locate, if any, all existing utility line indicated on the Drawings to be disconnected and capped, and determine all requirements for disconnecting and capping.

C. Clarification

1. The Drawings do not purport to show all objects existing on the site.
2. Before commencing the Work of this Section, verify with the Landscape Architect all objects to be removed and all objects to preserve.

D. Scheduling

1. Schedule all Work in a careful manner with all necessary consideration for adjacent properties and the general public.
2. Avoid interference with the use of, and passage to and from, adjacent properties.
3. Conduct operations so as not to interfere with the use of adjacent roads, streets, drives, walks, service lines, etc.

E. Disconnection of Utilities

Before starting site construction, arrange for the disconnection of all utility lines designated to be removed, relocated, or capped with the appropriate utility company. Utility company services for this Work shall be paid for by the Contractor.

F. Protection of Utilities

Retain and protect in operating condition all active utilities traversing the site designated to remain.

3.02 DEMOLITION OF OBJECTS

- A. Remove and dispose of all existing objects (except for those objects designated to remain) down to existing grade level or subgrade level to the extent indicated or as otherwise required to permit new construction.
- B. Tree Demolition – remove all of tree, tree trunk and roots, including below grade.

3.03 REQUIREMENTS FOR REMOVAL OF ASPHALT AND CONCRETE PAVEMENT

- A. Remove asphalt pavement to neatly saw edges. Make saw cuts to a minimum dept of one (1) inch below the bottom surface of the pavement. Where only the surface of existing asphalt pavement is to be removed, obtain approval of method from the Landscape Architect, and provide a minimum laying depth of one (1) inch of new pavement material at the join line. Where asphalt pavement adjoins a trench, trim the edges adjacent to the trench to neat straight lines before resurfacing to insure that all areas to be resurfaced are accessible to the rollers used to compact the subgrade or paving materials.
- B. Remove concrete pavement to neatly sawed edges. Make saw cuts a minimum depth of one (1) inch below the bottom surface of the pavement. If a saw cut in concrete pavement falls within three (3) feet of an expansion joint, construction joint, cold joint or edge, move the concrete to the joint or edge. The edges of existing concrete pavement adjacent to trenches, where damaged subsequent to saw cutting of the pavement, saw cut again to neat straight lines for the purpose of removing the damaged pavement areas. Such saw cuts shall be either parallel to the original saw cuts or shall be cut on an angle which departs from the original saw cut not more than one (1) inch in each six (6) inches.
- C. Concrete curbs, gutters, cross gutters, driveways and walks: Remove concrete to neatly sawed edges, with saw cuts made to a minimum depth of one and one-half (1 - 1/2) inches. Concrete sidewalk of driveway to be removed shall be neatly sawed in straight lines, either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than thirty (30) inches in either length or width. If the saw cut in sidewalk or driveway fall

within thirty (30) inches of a construction joint, expansion joint, cold joint or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within twelve (12) inches of a score mark, the saw cut shall be made in and along the score mark. Curb and gutter shall be sawed to a depth of one (1) inch below the bottom surface in a neat line at right angles to the curb face.

3.04 BACKFILL AND COMPACTION

All excavations left by the Demolition Work shall be filled and compacted to make the surface at these points conform in contour and density to that of the surrounding ground, and as specified per plan and these special provisions.

3.05 DISPOSAL OF DEBRIS

- A. All material removed under this Contract, which is not to be salvaged or reused, or otherwise specified on the Plan shall become the property of the Contractor and be promptly disposed of. It shall be the responsibility of the Contractor to procure dumping facilities or other means of disposal for all items specified to be removed from the site. Storing or permitting refuse to accumulate on the site will not be permitted.
- B. Disposal of all materials from the site shall be done in a lawful manner. Transport all refuse materials from the site without spilling on the streets.
- C. Burning of refuse material on the site will not be permitted.

END OF SECTION

SECTION 02230
SITE CLEARING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section includes, but is not limited to the following:

1. Site preparation.
2. Tree protection.
3. Restore damaged improvements to original condition.
4. Existing Utilities.
5. Clearing and Grubbing.
6. Removing topsoil.
7. Removing existing improvements.
8. Backfill requirements.
9. Disposing of objectionable material.

- B. Related Work Specified in Other Sections

1. SECTION 02300 – EARTHWORK.

- C. Related Documents

3. Section 31 1000 – Site Clearing.

- D. Definitions

1. ANSI: American National Standards Institute.

2. CAL-OSHA: California Occupational Safety and Health Administration.
3. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2-inches in diameter; and free of weeds, roots, and other deleterious materials.

1.02 SUBMITTALS

- A. Follow Submittal procedure outlined in Section 01330 – Submittal Procedures.
- B. Project Record Documents: Record actual locations of pipe mains, valve, connections and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.03 QUALITY ASSURANCE

- A. Do not remove or prune trees without written approval from Owner.
- B. Prune to the standards of the International Society of Arborists and to ANSI 300.

1.04 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.
- B. Unidentified Materials; if unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner.
- C. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to structural backfill defined in Section 02300 – Earthwork.

PART 3 EXECUTION

3.01 SITE PREPARATION

- A. Protect and maintain benchmarks and survey control points during construction.

- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain during construction.
- D. Verify existing conditions at the site and include all work evident by site inspection whether or not shown on the Drawings.

3.02 TREE PROTECTION

- A. Erect and maintain temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
- B. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
- C. Do not permit vehicles or equipment within drip line of remaining trees.
- D. Do not excavate within drip line of remaining trees, unless otherwise indicated.
- E. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation edge as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2-inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.
- F. Also see Tree Protection requirements outlined on Construction Drawings.

3.03 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner.
- B. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, as directed by the Owner.
 - 1. Employ a qualified, licensed arborist, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as

determined by the Owner.

3.04 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.
- B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated.
- D. Coordinate utility interruptions with utility company affected.
- E. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.
- F. Excavate and remove underground utilities that are indicated to be removed.
- G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.05 CLEARING AND GRUBBING

- A. Clear the site and remove obstructions, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
- B. Remove trash, debris, logs, concrete, masonry and other waste materials.
- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18-inches below subgrade.
- E. Use only hand methods for grubbing within drip line of remaining trees.
- F. In areas not to be further excavated, fill depressions resulting from site clearing. Place and compact satisfactory soil materials per the geotechnical investigation report.
- G. Clear undergrowth and deadwood without disturbing subsoil.

3.06 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.

- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
- C. Remove trash, debris, weeds, roots, and other waste materials.
- D. Stockpile topsoil materials designated to remain on site at a location approved by the Owner at a location away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- E. Do not stockpile topsoil within drip line of remaining trees.

3.07 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

3.08 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 02300 – Earthwork.

3.09 DISPOSAL

- A. Remove surplus unsuitable soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION

SECTION 02260

LANDSCAPE GRADING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all labor, materials services and equipment indicated on Drawings and/or herein specified to complete all Landscape Grading Work
- B. Landscape grading shall consist of importing topsoil to cap turf areas, importing top soil to create landscape berming, importing top soil for tree hole back fill, ripping, establishing finish grade to conform to the contours, grades, line and shapes of rough grades established on Engineer's plans. Work may also include loosening of compacted soils created during the course of construction.
- C. Land alteration of existing topographic conditions to conform to the contours, grades, lines and shapes indicated on Engineer's and the Owner's plans.
- D. Contractor shall furnish, place and settle all required backfill material to conform to the contours, grades, lines and shapes as indicated on the Drawings, and engineer's plans

1.02 RELATED WORK

- A. SECTION 02905 - LANDSCAPE INSTALLATION

1.03 DEFINITIONS

- A. Finish grade: Finish grade: Finish grade shall mean the establishment of grades to .04 feet plus or minus.
- B. Grading intent: Spot elevations (grades) and contours are indicated based on the best available data. Landscape Architect's Drawings are referenced to provide site grading data. The intent is to maintain constant slopes between spot elevations. If a spot elevation is determined to be in error, or the difference in elevation between points change contact the Owner immediately for field adjustments of spot elevations.

1.04 JOB CONDITIONS

- A. Visit the project site and examine the existing conditions under which the Work is to be performed. Note all conditions, as to character and extent of Work involved. This may include pot holing to determine depth of bedrock

1.05 EXISTING UTILITIES

- A. Contractor is responsible to contact U.S.A (800-642-2444) to stake and mark the location of all existing utilities before commencing Work. Pot hole as required to determine and verify location and depth.
- B. Retain and protect in operating condition all active utilities traversing the site designated to remain.

1.06 PROTECTION OF EXISTING CONDITIONS and ADJACENT PROPERTIES

- A. Use all means necessary to protect existing conditions designated to remain, newly constructed conditions and adjacent properties. Avoid any encroachment on adjacent properties.
- B. Prevent damage to existing bench marks, pavement, utility lines. In the event of damage or loss immediately make all repairs and replacements required to the Owner's approval at no additional cost to the Owner.

1.07 QUALITY ASSURANCE

- A. Finish grade shall conform to contours, grades, lines and shapes, as indicated on Landscape Architect's Drawings, with uniform slopes between finish grades or between finish grades and existing grades.
- B. Establish finish landscape grades in a continuous, uniform line, resulting in a uniform surface with no ridges, birdbaths or low spots.
- C. Finish landscape grade tolerance shall be .04 feet plus or minus of final grades indicated on Drawings.
- D. Slope grade away from buildings a minimum of two (2) percent in five (5) feet horizontal distance unless otherwise indicated on Drawings, or Landscape Architect's plans.

1.08 SUBMITTALS

- A. Provide one (1) cubic foot sample of import topsoil material for the Owner's approval prior to delivery to the site, but in any case, prior to placement.
- B. Provide horticultural soils report of existing landscape soil after rough grade and submitted topsoil including information on soil texture, filtration rate, nutrient levels and organic matter. Include recommendation for amendment to be added to existing landscape soil and topsoil to mitigate any deficiencies.

PART 2 - PRODUCTS

2.01 ONSITE MATERIAL

- A. Existing onsite excavated surplus material may be acceptable fill or top soil material, if approved by the Owner or Owner's representative and upon submittal of a horticultural soils report and possible amending of existing soil to match criteria specified in this section for import top soil. Excavated surplus material not required for fill material or top soil shall be removed and legally disposed of off site.

2.02 IMPORTED TOPSOIL MATERIAL

- A. Imported topsoil material shall be of friable sandy-loam texture free of refuse, roots, heavy or stiff clays, rocks over 1" in diameter, 15% by volume rock between 1/8" and 1", sticks, other deleterious matter.
- B. Imported topsoil acidity range (Ph) shall be between 6.5 to 7.5, containing a minimum of 4% and a maximum of 25% organic matter.
- C. Imported topsoil shall be free of all noxious weeds and other seeds.
- D. Imported topsoil shall be amended as per soils report (refer to paragraph 1.08 B), at no additional cost to the Owner.
- E. Topsoil shall be stock piled on site in an area free of rock and other deleterious materials. Owner reserves the right to reject topsoil once placed in proper location per Part 3 if deleterious materials mixed in to topsoil.

PART 3 - EXECUTION

3.01 GENERAL

- A. Conduct work in an orderly manner. Dirt shall not be permitted to accumulate on streets or sidewalks nor to be washed into storm drains.
- B. Use all means required to prevent the erosion of freshly graded areas during construction and until such a time as proposed hard surfaces and landscaping have been constructed.
- C. Excess on site material after material has been used to bring site to finished grade shall be removed and legally disposed of off site.
- D. If there is not enough site material to bring site to grade, contractor shall import topsoil.

3.02 RIPPING

- A. If, during the course of construction, landscape areas become compacted to greater than 90% relative density, landscape areas with the exception of areas beneath the canopies of existing trees shall be ripped and cross ripped to a depth of 12”.
- B. Rip and cross rip to a depth of 6 inches all areas exposed by engineering cut operations. Remove all rock one inch or larger within 6 inches of finish grades in all non-hydro mulch planted areas.
- C. Rip and cross rip to a depth of 6 inches all turf areas prior to the placement of import topsoil.

3.03 TOP SOIL PLACEMENT

- A. Place topsoil to contours indicated on plans to create landscape berming.
- B. Place topsoil in any way as indicated on plans
- C. If insufficient on site soil is available, then contractor shall supply import topsoil.

3.04 FINISH LANDSCAPE GRADING

- A. Finish grade shall conform, after settling, to shapes, spot elevations and contours as indicated on Landscape Architect’s Drawings, with uniform levels or slopes between finish elevations or between finish elevations and existing elevations.
- B. Fine grade all planting areas to a smooth, loose and uniform surface. Remove all extraneous matter 1” or larger in size and dispose of off site to create a smooth surface. Finish grades shall slope to drain, without water pockets or irregularities (humps or hollows). Grades shall be or uniform slope between points of fixed elevation establishing vertical curves or roundings at abrupt changes in slope.
- C. Shrub/ground cover planting areas shall be graded two and one-half (4-1/2) inches below adjacent paved areas, sidewalks, valve boxes, headers, drains, etc. in order to receive two (4) inch depth of mulch, establishing final grade one-half (1/2) inches below these surfaces.
- D. Turf areas shall be graded one and one half (1-1/2) inches below adjacent paved areas, sidewalks, valve boxes, headers, drains, etc. in order to receive sod.

3.05 FINISH LANDSCAPE GRADING OBSERVATION

- A. Soil preparation: comply with SECTION 02905 - LANDSCAPE INSTALLATION prior to finish grading operations

- B. Finish grade shall conform, after compaction, to shapes, spot elevations and contours as indicated on Drawings, with uniform levels or slopes between finish elevations or between finish elevations and existing elevations.
- C. The Contractor is responsible to spread excess excavated soil material from plant pits in surrounding planting beds.
- D. Fine grade topsoil in all planting areas eliminating rough and low areas to insure positive drainage, to a smooth, loose and uniform surface. Maintain levels, profiles and contours of sub-grades.
- E. Remove stones, roots, grass, weeds, debris and other foreign material while spreading, in excess of one inch in diameter.
- F. Shrub/ground cover planting areas shall be graded two and one-half (4-1/2) inches below adjacent paved areas, sidewalks, valve boxes, headers, drains, etc. in order to receive two (4) inch depth of mulch, establishing final grade one-half (1/2) inches below these surfaces

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment, and services necessary to provide all work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section includes, but is not limited to the following:

1. Rough Grading of site, Excavating, backfilling and grading, as required to obtain contours and elevations indicated on the Drawings.
2. Subgrade preparation.
3. Compaction and Testing.
4. Protection.
5. Disposal.

B. Related Work Specified in Other Sections

1. SECTION 02230 – SITE CLEARING
2. SECTION 02324 – TRENCHING
3. SECTION 02741 – ASPHALTIC CONCRETE PAVEMENT
4. SECTION 02770 – CURBS AND GUTTERS

C. Related Documents

1. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 1997.
2. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2000a.
3. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2000.

4. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2000.
5. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 1994.
6. ASTM D 2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates; 1995.
7. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 1996.
8. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 1996.
9. Geotechnical Investigation for site is available in accordance with Information Available to Bidders.

D. Definitions

1. Borrow: Approved soil material imported from off-site for use as Structural Fill or Backfill.
2. Excavation: Removal of material encountered above subgrade elevations.
 - a. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans or authorized by the Owner's Representative.
 - b. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization by the Owner's Representative. Unauthorized excavation shall be without additional compensation.
4. Structural Backfill: Soil materials approved by the Owner's Representative and used to fill excavations resulting from removal of existing below grade facilities, including trees. See Section 02324 – Trenching for trench backfill.
5. Structural Fill: Soil materials approved by the Owner's Representative and used to raise existing grades.
6. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ -cubic yards or more in volume that when

tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.

7. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
8. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
9. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project. The Owner's Representative will determine if a soil material is unsuitable.
10. Utilities: underground pipes, conduits, ducts and cables.

1.02 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01330 – SUBMITTAL

PROCEDURES.

- B. Submit material certificates signed by the material producer and the Contractor, certifying that each material item complies with, or exceeds the specified requirements.
- C. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.03 QUALITY ASSURANCE

- A. Testing and Inspection Service (Owner's Representative) shall provide soil testing and inspection services for quality assurance testing during earthwork operations.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- C. Perform excavation, filling, compaction and related earthwork under the observation of the Owner's Representative. Materials placed without approval of the Owner's Representative will be presumed to be defective and, at the discretion of the Owner's Representative, shall be removed and replaced at no cost to the Owner. Notify the Owner's Representative at least 24-hours prior to commencement of earthwork and at least 48 hours prior to testing.
- D. The Owner's Representative will perform observations and tests required to enable him

to form an opinion of the acceptability of the Project earthwork. Correct earthwork that, in the opinion of the Owner's Representative, does not meet the requirements of these Technical Specifications.

- E. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces and shall replace portions that in the opinion of the Owner's Representative have been displaced or are otherwise unsatisfactory due to the Contractor's operations.
- F. Finish soil grade tolerance at completion of grading:
 - 1. Top surface of finish grade (unpaved areas): ± 0.05 feet

1.04 PROJECT CONDITIONS

- A. The Contractor shall assess and evaluate all site conditions and layout the work before any earthwork shall begin.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Protect wetland (including setback area) as shown on the plans and as directed by the Environmental Consultant.
- D. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.
- E. Temporarily stockpile fill material in an orderly and safe manner and in a location approved by the Owner.
- F. Provide dust and noise control in conformance with Division 1 General Requirements.
- G. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not

available from on-site excavations.

- B. Obtain approval of on-site soil materials and borrow materials to be used for structural fill or structural backfill from the Owner's Representative.
- C. On-Site Structural Fill and Structural Backfill: per the County of Sacramento Construction Specifications and Geotechnical Investigation.
- D. Imported Structural Fill and Structural Backfill: per the County of Sacramento Construction Specifications and Geotechnical Investigation.

PART 3 EXECUTION

3.01 GENERAL

- A. Conform to Specifications as modified by the Contract Documents and the Geotechnical Investigation.
- B. Surfaces to receive fill and soils to be compacted shall be free of standing water, and shall not be saturated with water.
- C. Do not use explosives.
- D. In asphalt concrete paved areas, neatly saw cut pavement a minimum of 24 inches beyond the limits of excavations. If edge of pavement is located within 30 inches of limit of excavation, remove pavement to existing edge.
- E. Complete clearing and stripping as indicated on Drawings and in accordance with Section 02230 Site Clearing.
- F. Remove existing utility lines that traverse the site as indicated on Drawings and in accordance with Section 02230 Site Clearing.
- G. Scarify the upper 6 inches of the exposed subgrade-to-receive fill. The loosened soils should be uniformly moisture conditioned to one to three percent over optimum and compacted to 90 ± 2 percent relative compaction per ASTM D 1557. Compact to 95 percent in uppermost six inches of soil subgrade in pavement areas.

3.02 CONTROL OF WATER AND DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- C. Obtain the Owner's Representative's approval for proposed control of water and

dewatering methods.

- D. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- E. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- F. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

- A. Do not prepare subgrade, place or compact soil materials if above moisture content indicated on the Geotechnical Investigation.
- B. If the Owner's Representative allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Owner's Representative.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Owner's Representative, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 EXCAVATION

- A. Excavate earth and rock to lines and grades shown on drawings and to the neat dimensions indicated on the Plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.

- C. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- D. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.
- E. Excavate by hand or vacuum within drip-line of trees to remain. Do not damage trees or roots. Prevent dehydration of exposed roots. Refer to Section 02230 Site Clearing for additional tree protection requirements.
- F. Replace the excavated material or any approved supplementary import material in lifts not to exceed 8 inches in loose thickness and compact per the Geotechnical Investigation.

3.06 REMOVAL OF EXISTING FILLS AND UNSUITABLE MATERIAL

- A. Over-excavate areas of existing fills and other unsuitable material encountered during mass grading as directed by the Owner's Representative.
- B. Compensation for increased removal widths and depths that are not required by the Owner's Representative will not be considered, except when such increase is necessary for protection of life and property as determined by and approved by the Owner.
- C. The Owner's Representative will provide written approval for each excavation prior to placement of fill. Allow adequate time after excavation and before filling for the Owner's Representative's review and written approval and, if necessary, time for the Owner to conduct as built survey prior to placing fill. Basis for calculating the quantity of material excavated or placed may be the difference between the grading shown on the Plan and an as built survey of the grading.

3.07 GRADING

- A. Provide smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated on Drawings, or between such points and existing grades.
- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.08 SUBGRADE PREPARATION

- A. Install underground utilities and service connections prior to final preparation of subgrade and placement of base materials for final surface facilities. Extend services so that final surface facilities are not disturbed when service connections are made.

- B. Prepare subgrades under paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- C. Prepare subgrades for paved areas, curbs and gutters by plowing or scarifying surface at least 6 inches below final subgrade elevations and 5-feet beyond edge of pavement unless specified otherwise by the Owner's Representative. Uniformly moisture condition to one to three percent over optimum moisture contents. Break clods and condition surface by harrowing or dry rolling. Remove boulders, hard ribs and solid rock. Prepare earth uniform for full depth and width of subgrade.
- D. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.
- E. Obtain the Owner's Representative's approval of subgrades prior to placing pavement.

3.09 PLACEMENT OF STRUCTURAL FILL

- A. Obtain the Owner's Representative's approval of surface to receive structural fill prior to placement of structural fill material.
- B. Place structural fill on prepared subgrade.
- C. Spread structural fill material in uniform lifts not more than 8-inches in un-compacted thickness and compact.
- D. Place structural fill material to suitable elevations above grade to provide for anticipated settlement and shrinkage.
- E. Overbuild fill slopes, as required by the Owner's Representative, to obtain required compaction. Remove excess material to lines and grades indicated.
- F. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.

3.10 COMPACTION AND TESTING

- A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification as indicated below.
- B. Percentage of Maximum Density Requirements: Compact soil to no less than the following percentages of maximum density in accordance with ASTM D 1557.
 - 2. Lawn or Planter Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 85 ± 2 percent relative compaction.
 - 3. Vehicular pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 ± 2 percent relative compaction. The upper 6 inches

of pavement subgrade soils shall be compacted to at least 95 percent relative compaction.

- C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
 - 1. Remove and replace or scarify and air dry soil material that is too wet to permit compaction to specified density.
 - 2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.
- D. Compact soils at water content specified in the Geotechnical Investigation. Aerate material if it is too wet. Add water to material if it is too dry. Thoroughly mix lifts before compaction to ensure uniform moisture distribution.
- E. Perform compaction using rollers, pneumatic or vibratory compactors or other equipment and mechanical methods approved by the Owner's Representative.

3.11 PROTECTION

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.
- C. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.12 DISPOSAL

- A. Stockpile suitable excess soil material per the Drawings and as directed by the Owner.
- B. Lawfully dispose of all unsuitable excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 02316

FILL AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling and compacting for concrete paving and rigid concrete pavements subject to traffic loadings.
- B. Backfilling and compacting for utilities to utility main connections.

1.02 RELATED SECTIONS

- A. General Conditions and Special Provisions for Air and Water Pollution Control and Dust Control
- B. Section 02260 – Landscape Grading
- C. Section 02515 – Site Concrete
- D. Section 02811 – Irrigation: Trenching and Backfill

1.03 REFERENCES

- A. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 1996a.
- B. ASTM D 1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 1991 (Reapproved 1998).
- C. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System); 1998.
- D. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 1996.
- E. ASTM D 2974 - Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils; 1996.
- E. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 1996.
- F. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 1998.

1.04 PROJECT CONDITIONS

- A. Provide sufficient quantities of fill to meet project schedule and requirements. When necessary, store materials on site in advance of need.
- B. Verify that survey benchmarks and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Engineered Fill: Subsoil excavated on-site.
 - 1. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 2. Conforming to ASTM D 2487 Group Symbol CL, ML, SM, SP.
- B. Engineered Fill: Imported borrow.
 - 1. Graded in accordance with ASTM C 136, within the following limits:
 - a. 3 inch sieve: 100 percent passing.
 - b. 3/4 inch sieve: 70 to 100 percent passing.
 - c. No. 4 sieve: 50 to 100 percent passing.
 - d. 40 sieve: 30 to 100 percent passing.
 - e. 50: 30 to 100 percent passing.
 - f. No. 200: 30 to 70 percent passing.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 3. Conforming to ASTM D 2487 Group Symbol CL, ML, SM, SP.
 - 4. Liquid limit < 30. Plasticity Index < 12.
 - 5. Organic content less than 3%.
 - 6. Expansion potential (UBC 18-2) less than 20.
 - 7. Maximum Dry Density more than 105 pcf.
- C. Topsoil: See Section 02260.
- D. Class 2 Aggregate Base: See Section 02721 Aggregate Base Course.

2.02 SOURCE QUALITY CONTROL

- A. Where import fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 02260 for additional requirements.

3.02 PREPARATION

- A. Scarify all areas to receive engineered fill and subgrade surfaces to a depth of 12 inches.
- B. During wet weather or unstable soil conditions, the Contractor shall have the Landscape Architect observe all areas to receive engineered fill and subgrade surfaces prior to implementation of remedial measures.

1. Upon approval of the Landscape Architect, all unstable areas to receive engineered fill and subgrade surfaces shall be disked or ripped to a minimum depth of 24 inches to allow exposed soil to dry. Depth and frequency of disking and ripping shall be determined by the Landscape Architect upon observation of the unstable soil conditions.
 2. Upon approval of the Landscape Architect, all unstable areas to receive engineered fill and subgrade surfaces shall be over excavated 12 to 24 inches below existing grade and be replaced with aggregate base or coarse gravel underlain by geotextile fabric. Final depth of removal shall be determined by the Landscape Architect upon observation of the unstable soil conditions. The geotextile fabric shall be Amoco 2016 (woven) or approved equivalent, placed in accordance with manufacturer's recommendations.
- C. The Contractor shall have the Landscape Architect observe and probe bottom of finish subgrade for its stability within existing trench fill extending to a width of 15 feet on each side of existing sanitary sewer pipelines beneath new pavement improvements.
1. If loose or soft material is encountered, the existing trench fill shall be removed to a depth of two feet below finished subgrade elevation. The Contractor shall have the Landscape Architect observe and probe the bottom of the excavation for its stability prior to placing compacted engineered fill. If loose or soft material is encountered, geotextile/stabilizing fabric, Amoco 2016 (woven) or approved equivalent, shall be placed at the bottom of the excavation.
- D. Recompect between 88 and 92 percent of maximum dry density at a uniform moisture content between 2 and 5 percent above optimum moisture content at the time of compaction.
- E. Recompect to 95 percent of maximum dry density at a uniform moisture content between 2 and 5 percent above optimum moisture content at the time of compaction in the upper 6 inches of subgrade in all areas to support asphalt or rigid concrete pavements.
- F. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Uniformly moisture-conditioned to between 2 and 5 percent above optimum moisture content of fill materials to attain required compaction density.
- F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches loose thickness.
- G. Correct areas that are over-excavated.
- H. Compaction Density Unless Otherwise Specified or Indicated:
 1. Between 88 and 92 percent of maximum dry density at a uniform moisture content between 2 and 5 percent above optimum moisture content at the time of

- compaction.
- 2. At 95 percent of maximum dry density in the upper 6 inches of subgrade in all areas to support asphalt or rigid concrete pavements.
- I. Reshape and re-compact fills subjected to construction vehicular traffic.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use engineered fill unless otherwise specified or indicated.
- B. Engineered fill at areas to receive rigid concrete pavements:
 - 1. Fill up to subgrade elevations.
 - 2. Maximum depth per lift: 8 inches, loose thickness.
 - 3. Between 88 and 92 percent of maximum dry density at a uniform moisture content at between 2 and 5 percent above optimum moisture content at the time of compaction.
 - 4. Compact upper 6 inches of subgrade to minimum 95 percent of maximum dry density at between 2 and 5 percent above optimum moisture content at the time of compaction.
- C. At Lawn Areas: See Section 02260 Landscape Grading
- D. At Planting Areas Other Than Lawns: See Section 02260 Landscape Grading
- E. Trench Backfilling:
 - 1. See Storm Drain Pipe, Potable Water Supply Specifications
 - 2. See Section 02811 Irrigation

3.05 TOLERANCES

- A. Top Surface of General Filling: See Section 02260 Landscape Grading
- B. Top Surface of Filling Under Paved Areas: Plus or minus 0.05 foot from required elevations.

3.06 FIELD QUALITY CONTROL

- A. Compaction density testing will be performed on compacted fill in accordance with ASTM D2922.
- B. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 1557 ("modified Proctor").

END OF SECTION

SECTION 02324

TRENCHING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section includes, but is not limited to the following:

1. Section includes trenching, backfilling and compacting for water and storm drain utilities.

B. Related Work Specified in Other Sections

1. SECTION 02300 – EARTHWORK
2. SECTION 02510 – WATER DISTRIBUTION
3. SECTION 02630 – STORM DRAINAGE

C. Related Documents

1. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³); 2000.
2. County of Sacramento Standard Construction Specifications.
3. Geotechnical Investigation for site is available in accordance with Information Available to Bidders.
4. Office of Safety and Health Act (OSHA) Construction Safety Orders.
5. California Code of Regulations Title 8: Construction Safety Orders.

D. Definitions

1. Bedding: Material from bottom of trench to bottom of pipe.
2. Initial Backfill: Material from bottom of pipe to 12-inches above top of pipe.
3. Relative Compaction: Ratio, expressed as a percentage of field dry density as compacted to a maximum dry density of representative sample of the same material determined by American Society for Testing and Materials (ASTM) Test Method D1557 (c).

4. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of $\frac{1}{2}$ the outside diameter measured from the top or bottom of the pipe.
5. Subsequent Backfill: Material from 12-inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.
6. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.
 - a. Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans or authorized by the Owner's Representative.
 - b. Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions without authorization by the Owner's Representative. Unauthorized excavation shall be without additional compensation.

1.02 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01330 – SUBMITTAL PROCEDURES.
- B. Product Data: Provide data for Products specified.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- F. Submit name of imported materials source.
- G. Deliver samples of backfill and fill materials to Owner's Representative in quantities sufficient for testing. Deliver at least 15 days prior to use.

1.03 QUALITY ASSURANCE

- A. Conform all work and materials to the recommendations or requirements of these Technical Specifications and plans and meet the approval of the Owner's Representative.
- B. Conform all work to the appropriate portion(s) of County of Sacramento Standard Construction Specifications.

- C. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- D. The Owner's Representative will perform observations and tests required to enable him to form an opinion of the acceptability of the trench backfill. Correct the trench backfill that, in the opinion of the Owner's Representative, does not meet the requirements of these Technical Specifications.
- E. Provide materials of each type from same source throughout the Work.

1.04 PROJECT CONDITIONS

- A. The Contractor shall assess and evaluate all site conditions and layout the work before any earthwork shall begin.
- B. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.
- D. Provide dust and noise control in conformance with Division 1 General Requirements.

1.05 WARRANTY

- A. The Contractor shall warrant against settlement for a period of one year after the date of final acceptance, and shall repair damage caused by settlement within that time. For the purpose of this Specification, settlement will be deemed to have occurred if on paved surfaces, the depression falls 3/8-inches below the average of the sides of the uncut portion.

PART 2 PRODUCTS

2.01 PIPE BEDDING AND INITIAL BACKFILL

- A. Conform to Sacramento County Standards

2.02 WARNING TAPE

- A. See Section 33 1300 – Water Distribution.

2.03 SUBSEQUENT BACKFILL

- A. Conform to on-site or imported structural backfill in Section 02300 – Earthwork.

2.04 CONTROLLED DENSITY FILL (CDF) (in trenches)

- A. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than 3/8-inch top size. The 3/8-inch aggregate shall not comprise more than 30% of the total aggregate content.
- B. Cement: Conform to the standards as set forth in ASTM C-150, Type II Cement.
- C. Fly Ash: Conform to the standards as set forth in ASTM C-618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.
- D. Air Entraining Agent: Conform to the standards as set forth in ASTM C-260.
- E. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.
- F. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.
- G. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.
- H. Mix design shall meet the Owner's Representative's approval.

2.05 CONCRETE STRUCTURE BEDDING AND BACKFILL

- A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill, or other material approved by the Owner's Representative.
- B. Poured-in-Place Structures:
 - 1. Bedding: Bedding shall meet the approval of the Owner's Representative. In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.
 - 2. Side Backfill: On-site or imported structural fill meeting the requirements given in Section 02300.

2.06 FILTER FABRIC

A. Filter Fabric:

1. Mirafi 140N (Mirafi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

PART 3 EXECUTION

3.01 PREPARATION AND EXAMINATION

- A. Underpin adjacent structures, which may be damaged by excavation Work, including utilities.
- B. Maintain trench crossings for vehicular and pedestrian traffic at street crossing, driveways and fire hydrants.
- C. Identify required lines, levels, contours, and datum locations.
- D. Locate, identify, and protect utilities that remain and protect from damage.
- E. See Section 02300 Earthwork for additional requirements.

3.02 TRENCHING AND EXCAVATION

- A. Existing PCC or AC Areas: Cut PCC or AC to full depth at a minimum distance of 12-inches beyond the edge of the trench.
- B. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.
- C. Excavation Depth for Bedding: Minimum of 4-inches below bottom of pipe or as otherwise allowed or required by the Owner's Representative, except that bedding is not required for nominal pipe diameters of 2-inches or less.
- D. Excavation Width at Springline of Pipe:
 1. Up to a nominal pipe diameter of 24-inches: Minimum of twice the outside pipe diameter, or as otherwise allowed or required by the Owner's Representative.
 2. Nominal pipe diameter of 30-inches through 36-inches: Minimum of the outside pipe diameter plus 2-feet, or as otherwise allowed or required by the Owner's Representative.
 3. Nominal pipe diameter of 42-inches through 60-inches: Minimum of the outside pipe diameter plus 3-feet, or as otherwise allowed or required by the Owner's Representative.

- E. Over-Excavations: Backfill trenches that have been excavated below bedding design

subgrade, with approved bedding material.

- F. Comply with the Owner's limitations on the amount of trench that is opened or partially opened at any one time. Do not leave trenches open overnight without the approval of the Owner.
- G. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.
- H. Bottoms of trenches will be subject to testing by Owner's Representative. Correct deficiencies as directed by the Owner's Representative.
- I. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

3.03 CONTROL OF WATER AND DEWATERING

- A. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be necessary to control ground water and seepage to the satisfaction of the Owner's Representative and the Owner until backfilling is completed.
- B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- C. Obtain the Owner's Representative's approval for proposed control of water and dewatering methods.
- D. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.
- E. Maintain dewatering system in place until dewatering is no longer required.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Owner's Representative, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted,

together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the Owner.

- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

3.05 PIPE BEDDING

- A. Obtain approval of bedding material from the Owner's Representative.
- B. Pipe Bedding shall be per the City of Sacramento Standards and per the Geotechnical Investigation report.
- C. Upon completion of bedding operations, and prior to the installation of pipe, notify the Owner's Representative, who will inspect the bedding layer. Do not commence pipe laying until the Owner's Representative has approved the bedding.

3.06 WARNING TAPE

- A. Install in accordance with Section 033 1100 – Water Distribution.

3.07 BACKFILLING

- A. Obtain approval of backfill material from Owner's Representative.
- B. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Initial Backfill shall be per the City of Sacramento Standards and per the Geotechnical Investigation report. Jetting or ponding of initial backfill material will not be permitted.
- C. Bring subsequent backfill to subgrade or finish grade as indicated. Subsequent Backfill shall be per the City of Sacramento Standards and per the Geotechnical Investigation report. Jetting or ponding of subsequent backfill material will not be permitted.
- D. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive pipe displacement or damage the pipe.
- E. Utility backfill shall be inspected and tested by the Owner's Representative during placement. Cooperate with the Owner's Representative and provide working space for such tests in operations. Backfill not compacted in accordance with these specifications shall be re-compacted or removed as necessary and replaced to meet the specified requirements, to the satisfaction of the Owner's Representative and the Owner prior to proceeding with the Project.

3.08 CLEANUP

- A. Leave unused materials in a neat, compact stockpile during progress of work.
- B. Remove unused stockpiled materials. Leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Owner.
- D. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.
- E. The Contractor shall remove and dispose of all excess excavated material to a suitable site. The proper and legal disposal shall be the responsibility of the Contractor.

END OF SECTION

SECTION 02470

SITE FURNISHINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

The work included in this section generally consists of providing all labor, equipment and materials necessary to install all site furnishings complete as shown on the plans and as described herein.

1.02 RELATED SECTIONS

A. Section 02515 - Concrete Paving

1.03 SUBMITTALS

Submit 6 copies of manufacturer's cut sheet and specification for approval within two weeks of notice to proceed.

1.04 DELIVERY, STORAGE AND HANDLING

Contractor assumes all responsibility for storage of all materials relative to this project. Owner assumes no liability for losses or damages from any cause as a result of such storage.

1.05 PROJECT CONDITIONS – PROTECTION

A. After site furnishings are installed, all damage to surrounding paving, turf, and irrigation system shall be repaired by the contractor at the contractor's expense.

B. All trees and shrubs in and around the project site shall be protected by the contractor and, if damaged, replaced at the contractor's expense. This provision is in effect until acceptance by owner of the complete project

1.06 LOCATION INSPECTION

No equipment, apparatus or foundations for same shall be placed until location stakes have been inspected and accepted by the Owner.

1.07 GUARANTEE & LIABILITY INSURANCES

A. Manufacturer shall guarantee all materials and workmanship for a period of one (1) year exclusive of vandalism.

B. The manufacturer will be required to provide complete installation drawings including specifications and a replacement parts list for all products.

- C. Contractor shall provide a written guarantee on his firm's letterhead for all materials and workmanship for a period of one (1) year, exclusive of vandalism. Written guarantee shall be submitted to the Owner at the final inspection prior to final acceptance of the work.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated; free of surface blemishes and complying with the following:
1. Rolled or Cold-Finished Bars, Rods, and Wire: ASTM B 211 (ASTM B 211M).
 2. Extruded Bars, Rods, Wire, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 3. Structural Pipe and Tube: ASTM B 429.
 4. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 5. Castings: ASTM B 26/B 26M.
- B. Steel and Iron: Free of surface blemishes and complying with the following:
1. Plates, Shapes, and Bars: ASTM A 36/A 36M.
 2. Steel Pipe: Standard-weight steel pipe complying with ASTM A 53, or electric-resistance-welded pipe complying with ASTM A 135.
 3. Tubing: Cold-formed steel tubing complying with ASTM A 500.
 4. Mechanical Tubing: Cold-rolled, electric-resistance-welded carbon or alloy steel tubing complying with ASTM A 513, or steel tubing fabricated from steel complying with ASTM A 1011/A 1011M and complying with dimensional tolerances in ASTM A 500; zinc coated internally and externally.
 5. Sheet: Commercial steel sheet complying with ASTM A 1011/A 1011M.
 6. Expanded Metal: Carbon-steel sheets, deburred after expansion, and complying with ASTM F 1267.
 7. Malleable-Iron Castings: ASTM A 47/A 47M, grade as recommended by fabricator for type of use intended.
 8. Gray-Iron Castings: ASTM A 48/A 48M, Class 200.
- C. Stainless Steel: Free of surface blemishes and complying with the following:
1. Sheet, Strip, Plate, and Flat Bars: ASTM A 666.
 2. Pipe: Schedule 40 steel pipe complying with ASTM A 312/A 312M.
 3. Tubing: ASTM A 554.
- D. Fiberglass: Multiple laminations of glass-fiber-reinforced polyester resin with UV-light stable, colorfast, nonfading, weather- and stain-resistant, colored polyester gel coat, and manufacturer's standard finish.
- E. Plastic: Color impregnated, color and UV-light stabilized, and mold resistant.

1. Polyethylene: Fabricated from virgin plastic HDPE resin.
- F. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials; commercial quality, tamperproof, vandal and theft resistant, concealed, recessed, and capped or plugged.
- G. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107; recommended in writing by manufacturer, for exterior applications.
- H. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.
- I. Galvanizing: Where indicated for steel and iron components, provide the following protective zinc coating applied to components after fabrication:
 1. Zinc-Coated Tubing: External, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, polymer film. Internal, same as external or consisting of 81 percent zinc pigmented coating, not less than 0.3 mil (0.0076 mm) thick.
 2. Hot-Dip Galvanizing: According to ASTM A 123/A 123M, ASTM A 153/A 153M, or ASTM A 924/A 924M.

2.02 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Preservative-Treated Wood Components: Complete fabrication of treated items before treatment if possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces.

- E. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- F. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.03 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.04 ALUMINUM FINISHES

Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

2.05 STEEL AND GALVANIZED STEEL FINISHES

- A. Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.
- B. PVC Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness.

2.06 IRON FINISHES

Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

2.07 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish.

- B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

PART 3 – EXECUTION

3.01 LAYOUT

Contractor shall stake/mark locations for all slabs and foundations and shall obtain the approval of their location from Landscape Architect prior to commencing any digging. Locations shall be adjusted to provide minimum clear distances required from all edges of slabs, trees, irrigation heads, or other obstructions.

3.02 CONCRETE WORK

All concrete work shall conform to the Standard Plans, and those of Section 02515. Contractor shall obtain the approval of all forming from the Landscape Architect prior to pouring any concrete slabs. Foundations holes shall be inspected and approved by the Public Works Inspector prior to pouring concrete.

3.03 INSTALLATION

- A. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- B. Install site furnishings level, plumb, true, and securely anchored and positioned at locations indicated on Drawings.
- C. .Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and 3/4 inch (19 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.
- D. All site furnishings shall be installed with vandal-proof hardware or made vandal-proof (deforming or peening).
- E. Maintain specific required distance between top of paving and product, drinking fountain, bench, etc).
- F. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- G. All products to be installed according the manufacturers' specifications. If discrepancies occur, notify Owner's Representative as soon as possible before proceeding with installation.

- H. Contractor to repair, repaint all minor damage during installation.

3.04 PROTECTION OF EXISTING IMPROVEMENTS

Contractor shall protect all existing improvements from damage. All disturbed turf areas shall be fine graded filling all depressions, wheel ruts and irregularities and shall be reseeded with seed mix specified by the Landscape Architect. Contractor shall make all repairs and restore all damaged turf areas at his sole expense.

3.05 CLEAN-UP

- A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.
- B. Contractor shall clean up and legally dispose of all unused materials, excess soil, and debris at regular intervals throughout the duration of the work, and as directed by the Owner.

END OF SECTION

SECTION 02510
WATER DISTRIBUTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section includes, but is not limited to the following:

1. Pipe and fittings for site domestic water.
2. Valves and appurtenances.

- B. Related Work Specified in Other Sections

1. SECTION 02324 – TRENCHING

- C. Related Documents

1. American Water Works Association (AWWA) C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; 2003 (ANSI/AWWA C104/A21.4).
2. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; 2000 (ANSI/AWWA C111/A21.11).
3. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; 2002 (ANSI/AWWA C151/A21.51).
4. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS; American Water Works Association; 2001 (ANSI/AWWA C508).
5. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; 2001 (ANSI/AWWA C509).
6. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution; American Water Works Association; 1997 (ANSI/AWWA C900/C900a).

1.02 SUBMITTALS

- A. See Section 01330 - SUBMITTAL PROCEDURES.
- B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Restraint Calculation: Provide calculations for mechanical restraint distances for all pipe joints. Provide data acknowledging that calculations provided conform to manufacturer's recommendations for size of pipe, type of pipe, and site soil type.
- E. Project Record Documents:
 - 1. Record location of pipe runs, connections, valves, restraints and invert elevations.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.03 QUALITY ASSURANCE

- A. Comply with requirements of utility supplying water. Do not operate existing valves or tap existing piping without written permission and/or presence of utility company representative.
- B. Comply with the following requirements and standards:
 - 3. NSF 61: "Drinking Water System Components-Health Effects" for materials for potable water.
 - 4. NFPA 24: "Installation of Private Fire Service Mains and Their Appurtenances" for materials, installations, tests, flushing, and valve and hydrant supervision.
 - 5. NFPA 70: "National Electric Code" for electrical connections between wiring and electrically operated devices.
- C. Provide listing/approval stamp, label, or other marking on piping and specialties made to a specified standard.

1.04 MATERIAL DELIVERY, STORAGE AND HANDLING

- A. Preparation for Transport: Prepare valves, according to the following:
 - 1. Ensure that valves are dry and internally protected against rust and corrosion.
 - 2. Protect valves against damage to threaded ends and flange faces.

3. Set Valves in best position for handling. Set valves closed to prevent rattling.
- B. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage and handling to prevent pipe end damage and to prevent entrance of dirt, debris and moisture.
- C. Handling: Use slings to handle valves whose size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
- D. During Storage: Use precautions for valves according to the following.
 4. Do not remove end protectors, unless necessary for inspection, then reinstall for storage.
 5. Protection from Weather: Store indoors and maintain temperature higher than ambient dew-point temperature. . Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- E. Do not store plastic pipe and fittings in direct sunlight.
- F. Protect pipe, fittings, flanges, seals and specialties from moisture, dirt and damage.
- G. Protect linings and coatings from damage.
- H. Handle precast boxes, vaults and other precast structures according to manufacturer's written instructions.
- I. Protect imported bedding and backfill material from contamination by other materials.

1.05 COORDINATION

- A. Coordinate connection to existing water mains with Owner
- B. Coordinate piping materials, sizes, entry locations, and pressure requirements with building domestic water distribution piping and fire protection piping.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

- A. Ductile Iron: Ductile Cast Iron cement lined pressure class 350.
- B. Plastic - 4 inches and over: PVC pipe shall be minimum Class 200 AWWA C900 (minimum Class 165 AWWA C905 for pipes 16 inches and larger). Underwriters' Laboratories, Inc. (UL) listed, Factory Mutual and National Sanitation Foundation (NSF) approved. Pipe shall be furnished in minimum standard lengths of 20 feet

1. Fittings: AWWA C111, cast iron mechanical joint type, 250 pound working pressure, ductile iron, mechanical joints with SBR rubber ring gaskets. Flanged outlets shall conform to ANDI B16.1, 125 pounds.
2. Bolts and nuts for flanges shall be Type 304 stainless steel, American Society for Testing and Materials (ASTM) A193, Grade B8M hex head bolts and American Society for Testing and Materials A194, Grade 8M, hex head nuts. Washers shall be of the same material as the bolts.

2.02 VALVES

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Valves 2 inches through 12 inches:
 1. Gate valve: per City of Winters Standards

2.03 BEDDING AND COVER MATERIALS

- A. Bedding and Cover: As specified in Section 312333 Trenching and Backfilling.

2.04 COUPLINGS AND SLEEVES

- A. General: All couplings and sleeves shall be a minimum of 250 psi working pressure-rated unless otherwise noted.
- B. For DIP and PVC pipe:
 1. Unless otherwise noted, couplings and sleeves for DIP and PVC shall be ductile iron conforming to AWWA C153, size 3 through 24 inch and AWWA C110 greater than 24 inch, and shall be 350 psi working pressure rated. AWWA C100 fittings shall be ductile iron only. Couplings, sleeves, and accessories shall be manufactured by U.S. Pipe TrimTyte, Union Foundry, Tyler; or equal.
 2. Unless otherwise noted, flanges on all DIP spools shall conform to AWWA C115.
 3. Push-on joints shall have SBR rubber ring gaskets.
 4. All fittings shall be restrained joints. Pipes shall be restrained using a wedge-action, self-actuating lug type restraint device as manufactured by EBAA Iron Sales, StarGrip, or equal. Concrete thrust blocks are not permitted except at connections to existing unrestrained pipe or fittings or at fire hydrants.
 5. All pipe joints within the minimum distances listed in the following table shall be restrained. Restraint shall be by use of locking gasket for ductile iron pipe. Restraint for PVC pipe shall be by use of a restraint harness EBAA Series 2800, StarGrip, or equal.

Pipe Diameter, inches	Minimum Restraint Length, feet						
	Horizontal Elbows				Tee, Run & Branch	One-Size Reducer	Dead End
	11.25	22.5	45	90			
3	1	2	3	8	8		24
4	1	2	4	10	10	9	29
6	1	3	6	14	14	21	42
8	2	4	7	18	18	23	55
10	2	4	9	21	21	22	66
12	2	3	7	17	17	26	53
14	2	4	8	20	20	16	61
16	2	4	9	22	22	16	69
18	2	5	10	25	25	16	77
20	3	5	11	27	27	16	84
24	3	6	13	32	32	30	100
30	4	8	16	38	38	42	121
36	4	9	18	45	45	43	143

2.05 ACCESSORIES

A. Mechanical Restraints:

1. PVC Pipes: Certain Teed Certa Lock, Romac Grip Rings, or equal.
2. Ductile Iron Pipes: Field Lock Gaskets, Mega Lug 1100 series, TR Flex, or equal.

B. Valve Boxes: Precast concrete with cast iron traffic covers with the word WATER embossed on the top surface of the lid. Christy G5 or equal. Cover shall be painted light blue (ICI Devoe DC41000 semi gloss or equal). For all valves an identification number shall be welded onto valve box rim. Identification number shall be assigned in advance by Owner.

C. Miscellaneous nuts and bolts shall be stainless steel.

D. Rods and Clamps: Socket clamps shall be stainless steel, four bolt type, equipped with stainless steel socket clamp washers and nuts Grinnell Fig. 595 and 594, Elcen Fig. 37 and 37X, or equal.

1. Rods shall be stainless steel, 3/4 inch diameter.

E. All underground water piping shall be accompanied by a Solid Core #10 copper tracer wire. Both ends of tracer wire shall be accessible at all utility valve boxes.

F. Line Marker: Underground-type conductive line marker, permanent, brightly colored, continuous-printed plastic tape, intended for direct burial service; not less than 6 inches wide by 4 mils thick. Provide blue tape with "CAUTION WATER LINE BURIED BELOW" in black letters; Allen Systems Inc., Emed Co. Inc., or equal.

- G. Tapping Sleeve: Cast iron or stainless mechanical joint type sleeve, sized specifically for actual O.D. and piping material, Mueller, Clow, or equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.02 TRENCHING

- A. See Section 02324 - TRENCHING for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Buried pipe shall have at least 36 inches of cover and 12 inches of clearance from other utilities.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, and then complete backfilling.

3.03 INSTALLATION - PIPE

- A. Have on hand all installation manuals, brochures, and procedures for the equipment and materials concerned.
- B. Follow manufacturer instructions, where such are provided, in all cases that cover points not shown on the Drawings or specified herein. Manufacturer's instructions do not take precedence over the Drawings and Specifications. Where manufacturer's instructions are in conflict with the Drawings and Specification, submit the conflicting instructions to the Owner's Representative for clarification before performing the work.
- C. Use fittings to make all changes in direction and size unless otherwise indicated on the Drawings.
- D. Maintain factory plastic end covers on the pipe during storage. Caps shall be removed upon installation of pipe to insure cleanliness.
- E. Lay piping on a bed of the specified sand, at least 6-inches thick, on firm undisturbed earth. Remove loose rock, clods, and debris from the trench before placing bedding sand and before laying any pipe.
- F. The piping shall be made up with the pipe barrel bearing evenly along its full length on the sand bed on the bottom of the trench.

- G. In the case of steel or other rigid joint piping, excavate holes under joints and connections for access for making up, welding, testing and wrapping joints.
- H. Thoroughly clean out each section of pipe and fitting before lowering into the trench. Clean each pipe or fitting by swabbing-out, brushing-out, blowing-out with compressed air, washing-out with water, or by any combination of these methods necessary to remove all foreign matter.
- I. If cleaned pipe sections and fittings cannot be placed in the trench without getting dirt into the open ends, tie tightly woven canvas or other type of approved cover over the ends of the pipes and fittings until they have been lowered into position in the trench. After removal of the covers in the trench, completely remove foreign matter from the pipe ends and fittings.
- J. Do not lower any pipe or fitting into a trench that contains water. Pump water from wet trenches, and keep the trenches dry until the joints have been completed and the open ends of the pipes have been closed with watertight plugs or bulkheads. Do not remove the plug or bulkhead unless the trench is dry.
- K. Assemble lengths of PVC that are joined by couplings, Tyton type push-on joints, Ring-Tite, Fluid-Tite, or equal, such that centerline of two pipes being joined do not form an angle exceeding 2 inches in any plane. In addition, the angle formed in the vertical plane shall not exceed 1-1/2 inch.
- L. Install trace wire on top of pipe.
- M. Install continuous line marker 18 inches above top of pipe; coordinate with Section 02324 - TRENCHING.

3.04 INSTALLATION - VALVES

- A. Set valves on solid bearing.
- B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.05 CONNECTIONS TO EXISTING WATER SYSTEM

- A. Under no circumstances shall existing lines or utilities be interrupted without prior approval of the Owner. Submit a request for this approval to the Owner's Representative, and also state the maximum duration of shutdown. The Contractor may have to adjust work or perform during off-hours.
- B. Schedule all outages for utility tie-in work well in advance, and by written notice to the Owner at least 7 working days in advance of the desired shutdown.
- C. In preparation for tie-ins to the utility systems, the Contractor shall coordinate with the Owner's Representative before draining and/or blowing the existing piping prior to start of tie-in work by the Contractor. In all cases, the Owner will close the appropriate valves to isolate the area of work.

3.06 FLUSHING

- A. The entire piping system shall be thoroughly flushed out until acceptance of the Owner's Representative. All tests shall be conducted at such times as directed by and in the presence of the Owner's Representative.

3.07 PIPE TESTING

- B. Water piping shall be hydrostatically tested at 150 psi pressure for four hours and proven watertight. Provide all instruments, facilities, and labor to conduct testing and placing in operation.
- C. Piping shall be tested in sections. Testing under this Section of the work shall be done before final connections to existing utility piping is made, with the provision that subsequent leaks, if developed, at these conditions shall be corrected.
- D. Any part of the system, including all accessories, that shows failure during testing shall immediately be repaired or replaced with new materials. The system shall be completely retested after repair for replacement. This procedure shall be repeated, if necessary, until all parts of the system withstand the specified tests. All retesting costs shall be part of the Contract.
- E. Leakage rate shall not exceed 1.5 gallons/hour/1000 feet of pipe over a 2-hour test period.
- F. Tests shall be witnessed by the Owner's Representative. At least 48 hours advance notice before testing shall be given to Owner's Representative.

3.08 DISINFECTION

- A. All domestic water piping shall be disinfected upon installation according to the City of Chico Standards.

3.09 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with City of Chico Standards.

3.10 DISPOSAL

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION

SECTION 02515

SITE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

Furnish all labor, materials and equipment required for the reinforcement, formwork and the construction of cast-in-place concrete sidewalks, driveways, porches and mow curbs including all other work required to produce a finished project in accordance with the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02321 Fill and Backfill
- B. Section 02721 Aggregate Base Course
- C. Section 02764 Pavement Joint Sealants

1.03 QUALITY ASSURANCE

- A. Comply with ASTM A-615 "Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement," and "Manual of Standard Practice for Detailing Reinforced Concrete Structures," publication ACI 315-65 of the American Concrete Institute.
- B. Comply with all pertinent recommendations contained in American Concrete Institute (ACI), "Recommended Practice of Concrete Formwork, ACI-347."
- C. Construct forms to sizes, shapes, lines and dimensions indicated on Drawings, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finish. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- D. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, and tight enough to avoid any leakage or washing out of cement mortar.

1.04 JOB CONDITIONS

- A. Temperature: All concrete design mixes and methods of protecting concrete shall be resubmitted to the Landscape Architect for review when the following temperatures are anticipated:
 - 1. The temperature is below 40° F, or when conditions indicate that the temperature will fall below 40° F within seventy-two (72) hours.

2. The placing temperature of the concrete is, or anticipated to be, above 80° F.

1.05 COORDINATION

- A. Secure all pipe sleeves, anchors and bolts, including those for angle frames, inserts, ties and other materials in connection with concrete construction, in position before concrete is placed.
- B. Obtain information and instructions from other Trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying the project.
- C. Make cutting and/or patching made necessary by failure or delay in complying with these requirements at no cost to the Owner.

1.06 FORM CONSTRUCTION TOLERANCES

- A. Set form to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work so that forms can remain in place at least twenty-four (24) hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:
 1. Top of forms not more than one-eighth (1/8) inch in ten (10) feet vertical elevation.
 2. Vertical face on longitudinal axis not more than one-fourth (1/4) inch in ten (10) feet horizontal width.

1.07 SMOOTHNESS TOLERANCE

- A. Cement finish surfaces shall be of such smoothness and evenness that they shall contact the entire length of a 10-foot straight edge laid in any direction, with an allowable tolerance of 1/8 inch. Any operations necessary to achieve this result should be performed by the Contractor, at no additional cost to the Owner.
- B. No patching will be permitted to correct defective work; defective sections shall be removed and replaced. No extensions of time will be allowed for correcting defective work.

1.08 INSPECTIONS

- A. Inspections will be required. Contractor shall call for inspection a minimum of 48 hours (two working days) prior to need.
- B. The contractor shall call for inspection during specific phases of construction. They shall include the following, each prior to pour:
 1. All Form Work
 2. All Footings
 3. Subgrade

4. Steel Reinforcing

- C. Contractor shall notify the Landscape Architect 48 hours prior to each concrete pour.
- D. Any work covered prior to inspection shall be opened to view by the Contractor at his expense.

1.09 TESTING

All testing shall be as required by the Standard Specifications and these Contract Documents.

1.10 MOCK-UPS

- A. Contractor shall provide a 4'x4' sample pour of finish work for review and approval by Architect prior to installation of remainder of concrete finish work.
- B. Ensure that each mock-up contains joint types specified on project, i.e. construction, contraction, and isolation.
- C. Locate mock-ups in a conveniently accessible and protected place. At contractor's cost, additional mock-ups shall be provided as needed until approved. Approved mock-ups will be standard for future installation review.

1.11 SUBMITTALS

- A. See Section 01300 – Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's data on manufactured products for approval.
- C. Shop drawings: Indicate formwork, dimensions, reinforcement, accessories and control and expansion joint layout.
- D. Mix design: Submit each class of concrete to approved inspection and testing firm and the Owner for review prior to commencement of concrete operations.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

PART 2 - PRODUCTS

2.01 CONCRETE REINFORCEMENT

- A. Reinforcing Bars: Deformed Billet Steel Bars, ASTM A-615, Grade 40 or Grade 60.
- B. Welded Wire Mesh: ASTM A-186 plain type and uncoated finish.
- C. Tie Wires: Black annealed, ASTM A-82, minimum 16 gauge.

- D. Chains, Bolsters, Bar supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.
- E. Stirrup Steel: ASTM A-82.
- F. Smooth dowel steel bars for construction joints: ASTM A-29, Grade 60.
 - 1. Where indicated, provide dowel sleeve at one end of greased dowel to permit longitudinal movement of dowel within concrete section.
 - 2. Provide for movement which equals joint width plus one-half (1/2) inch.

2.02 CONCRETE FORM MATERIALS

- A. Slabs, Walks, Walls, Columns and Concrete edges: Steel, wood or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
 - 1. Use flexible spring steel forms or laminated boards to form radius bends and foam templates for detailed edges as required.
 - 2. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.
- B. Forms for Exposed Finish Concrete: Unless otherwise shown, construct formwork for exposed concrete surfaces with plywood, to provide continuous, straight, smooth, exposed surfaces. Provide plywood in largest practicable sizes to minimize number of joints. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Provide solid backing and form supports to insure stability of forms. On any length of wall the difference in form piece size shall not be greater than 25% plus or minus the dimension of the smallest piece and in no case smaller than two (2) inches in width.
 - 1. Use five (5) ply exterior plywood complying with U.S. Product Standard PS 1-66, "B-B (Concrete Form) Plywood," Class 1, Exterior Grade or better, with each piece bearing legible inspection trademark.
 - 2. Use form material in largest practicable sizes to minimize number of form joints. Arrange form joints orderly and symmetrically with minimum number of joints.
- C. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least two (2) edges and on one side for tight fit that is fir or pine, No. 2 common or better.

- D. Circular Concrete Footings or Columns: All round concrete footings or columns, size as indicated on Drawings, shall be formed with seamless "SONOTUBE" fiber forms as manufactured by Sonoco Products Company of Hartsville, South Carolina.
- E. Forms for Curved Exposed Surfaces: Forms shall be built up with hand sawn two (2) inch stringers, sized and carefully fitted to desired form, with segmental tacking. Exposed face surfaces shall be sheet metal, oil tempered hardboard, or one-quarter (1/4) inch waterproof plywood facing.
- F. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties (break back cone ties), designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal. All form ties to be used on unexposed concrete surfaces.
- G. Chamfer Exposed Corners and Edges: Chamfer exposed corners and edges as indicated on Drawings using wood chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- H. Radius Exposed Corners: Apply concrete radius tooled edges to exposed concrete corners as dimensioned and sized on Drawings.
- I. Rough Hardware: Pipe, conduit, bolts, anchors, etc., as indicated on Drawings or needed shall be furnished and set.
- J. Chamfer Horizontal Reveal: Chamfer concrete wall horizontal reveals, as indicated on Drawings, using wood chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

2.03 CONCRETE ACCESSORIES

- A. Bonding Agent: ASTM C 1059, Type II acrylic non-redispersable type.
- B. Epoxy Bonding System: ASTM C 881, type as required by project conditions.
- C. Vapor Retarder: 6 mil (0.5 mm) thick clear polyethylene film, type recommended for below grade application.
- D. Chemical Hardener: Fluosilicate solution designed for densification of cured concrete slabs.
- E. Non-Shrink Grout ASTM C 1107; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,400 psi (17 MPa).
 - 2. Minimum Compressive Strength at 28 Days: 7,000 psi (48 MPa).
- F. Moisture-Retaining Cover: ASTM C 171; white burlap-polyethylene sheet.

G. Liquid Curing Compound: ASTM C 309, Type 1, clear or translucent with guarantee not to leave surface residue.

H. Waterproof Barrier: Thoroseal waterproof cement-based coating, color gray.

2.04 JOINT DEVICES AND MATERIALS

A. Expansion Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard of felt, 1/4 inch thick and full depth of concrete less 1/2 inch.

B. Construction Joint Devices: Integral extruded plastic; 1/4 inch thick, formed to tongue and groove profile, with removable top strip exposing sealant trough, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

C. Joint Cap: Plastic joint size to match expansion joint size by Sealtight or approved equal

D. Elastomeric Sealant: Joint sealer color to match concrete.

E. See Section 02764 Pavement Joint Sealers for additional specifications.

2.05 CONCRETE

A. Concrete Mix:

1. Mix concrete in accordance with ASTM C-94 and with aggregates complying with ASTM C-33 and Portland Cement ASTM C-150, Type II.
2. All concrete mixes shall be designed by a testing laboratory approved by the Owner's Representative or Landscape Architect. All mixes shall conform to applicable building code requirements listed herein or on the Drawings. All mix designs shall be submitted to the Landscape Architect for approval before being used. Mix design shall show proportions of cement, fine and coarse aggregate, and water and gradation of combined aggregates. Calcium chloride shall not be added at any mix.
3. Alteration of approved concrete mixes is not acceptable. Installation of concrete other than approved mixes shall be replaced at the expense of the contractor.

4. Concrete shall be as specified:

<u>Item</u>	<u>Minimum Cement Content</u>	<u>28-Day Minimum Strength</u>	<u>Max. Slump</u>	<u>Max. Aggregate Size</u>	<u>Gal/Bag Water to Cement Ratio Max.</u>
Slabs on Grade, Curbs, Exterior Walkways	540 lb/cu. yd.	3,500 PSI	4 in.	3/4 in.	SIX
Walls	540 lb/cu. yd.	4,000 PSI	2-1/2 in.	3/4 in.	FIVE

2.06 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C 685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C 94/C 94M.

2.07 ADMIXTURES

- A. Chemical admixtures shall conform to the requirements, of Section 90-4.04 through 90-4.07 of the State Standard Specifications.
- B. See Site Colored Concrete Section 03330

2.08 PORTLAND CEMENT CONCRETE

Shall conform to the provisions in Standard Specifications Section 90 "Portland Cement".

2.10 EXPANSION JOINTS

Shall be as shown on plans and details. Submit samples of preformed material and sealant for approval by the Owner.

2.11 CONCRETE CURING COMPOUND

Plast-A-Cure Heavy Duty Curing Compound or Approved Equal: Concrete curing compound shall be a white-pigmented curing compound conforming to the requirements of Section 90-7.01 B, "Curing Compound Method" of the State Standard Specifications and shall be a product conforming to ASTM C 309, Type 2, Class B.

2.12 SCORE JOINT

Score joints shall be as shown on the drawings and details, or as called for in the specifications.

PART 3 - EXECUTION

3.01 GENERAL

- A. All work shall conform to the foundation investigation report. Slab thicknesses, reinforcement, compaction requirements, and base recommendations shall take precedence over details and plan callouts.
- B. All concrete slabs shall slope to drain. Depressions in the slab surface that hold water ("bird baths") will not be acceptable.
- C. Install concrete and cement finish work true to lines, dimensions and levels.
- D. Protect all finished concrete from graffiti. Contractor shall be responsible for providing concrete watchmen. A graffiti finish will not be acceptable.
- E. Remove and replace defective concrete or cement work with new materials. Permission to patch any defective area shall not be a waiver of the Owner's right to require complete removal of defective work if patching does not restore quality and appearance of work.
- F. Verify lines, levels, and dimensions before proceeding with work of this section.
- G. No advertising impression, stamp, or mark of any description will be permitted on surface of concrete or cement finish.

3.02 CONCRETE REINFORCEMENT PLACEMENT

- A. Fabricate reinforcement in accordance with ACI-315, providing a minimum concrete cover of two (2) inches.
- B. Place all reinforcement in the exact position shown on the Drawings and secure in position during the placing and compacting of concrete. Wire bars together with No.16 gauge wire with ties at all intersections except where spacing is less than twelve (12) inches in each direction, in which case tie alternate intersections.
- C. Overlap welded wire mesh one square plus six (6) inches to maintain a uniform strength, and securely fasten at the ends, edges and support to maintain clearances.
- D. Place all sleeves, inserts, anchors and embedded items required for adjoining work or for its support prior to concreting. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.
- E. Give all contractors and subcontractors whose work is related to concrete or supported by it, ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.

3.03 CONCRETE FORMWORK CONSTRUCTION

- A. Construct support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete.
- B. Contractor assumes full responsibility in the removal of forms. The length of time forms must remain in place depends on the rate of time required for concrete to obtain a proper strength. Remove forms after the concrete is sufficiently hard to prevent damage to concrete.
- C. Reuse of Forms:
 - 1. Do not reuse forms if there is any evidence of surface wear or defect which would impair quality of surface.
 - 2. Thoroughly clean and properly coat forms before reuse.

D. Earth Forms

Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement *of* concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in or passing through concrete work.
- B. Locate and secure in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, inlets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement

3.06 FORM REMOVAL

Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

- A. Field Quality Control:

1. Observe formwork continuously while concrete is being placed to see that there are no deviations from desired elevation, alignment, plumbness or camber.
2. If during construction any weakness develops and falsework shows undue settlement or discoloration, stop work, remove affected construction if permanently damaged, and strengthen falsework.
3. Verify that forms are clean and free of rust before applying release agent.

3.07 CONCRETE PLACEMENT AND FINISHES

A. Placing Concrete:

1. Place concrete in accordance with ACI-304 and Section 2605 of the Uniform Building Code. Immediately after depositing, compact concrete thoroughly by mechanical vibration. No vibrating of form is allowed. Mixing shall be continuous, with no interruptions from the time the truck is filled until the time it is emptied. Concrete shall be placed within one hour of the time water is first added.
2. Insure anchors, seats, plates, and other items to be cast into concrete are placed, held securely and will not cause hardship in placing concrete.
3. Insure reinforcement, inserts, embedded parts, etc. are not disturbed during concrete placement.
4. Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur, unless otherwise indicated on the Drawings.
5. Lines and Grades: Elevations requiring accurate placement shall be set by a competent instrument man, using a professional type instrument.
3. For all concrete placed on soil, the subgrade shall be wet and compacted prior to placing.
4. Before placing concrete mixing, conveying and finishing equipment, forms and reinforcing shall be well-cleaned. Wet form before placing concrete, unless oiled forms are used.
5. Notify Landscape Architect at least 48, hours prior to commencement of concrete placement operations.
6. Repair vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches (150 mm) and seal watertight.
7. Install joint devices in accordance with manufacturer's instructions.

8. Install construction joint devices in coordination with concrete slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
9. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
10. Place concrete continuously between predetermined expansion, control, and construction joints.
 - a. Do not interrupt successive placement; do not permit cold joints to occur

B. Concrete Finishing

1. Exterior Slabs and Sidewalks:
 - a. Finish per plan.
 - b. All exterior slabs, sidewalks and top of walls to have non-slip uniform surface per plan.
 - c. After concrete has been placed, consolidate strike off and screed uniformly to the required grades. Float concrete to a uniform surface, then steel trowel lightly to compact surface. Finish exterior slabs and sidewalks as detailed on Drawings. Exterior slabs and sidewalks shall be formed with slopes as indicated, as directed or as necessary to insure proper drainage. Exterior slabs and sidewalks adjacent to buildings shall drain away from buildings.
2. Exterior Walls:
 - a. Finish per plan
 - b. Consolidate by vibration so that concrete is thoroughly worked around reinforcement, embedded items and into corners of forms to eliminate air or stone pockets. As-cast concrete surfaces obtained with form material as detailed on Drawings. Provide uniform concrete finish to walls as detailed on Drawings. Lightly sandblast concrete surfaces where required to eliminate form seams and marks. Fill all snap tie holes to match surrounding finish.
 - c. Repair surface defects, including tie holes, immediately after removing formwork.
3. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch (6 mm) or more in height.

3.04 CURING

- A. Beginning immediately after placement, protect concrete from premature drying, from excessively hot or cold temperatures, and from mechanical injury. Maintain

concrete with minimal moisture loss at relatively constant temperature for a period necessary for hydration of cement and hardening of concrete.

1. Normal concrete: Not less than 7 days.
 2. Hairline fissures and cracks developed in first ninety (90) days shall result in replacement of concrete.
- B. Comply with requirements of ACI 308 and ASTM C171. Immediately after placement protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Cover with white burlaps-polyethylene sheet.
- C. Initial curing shall be moist curing or moisture covering and shall continue for at least 188 cumulative hours (not necessarily consecutive), during which the concrete has been exposed to air temperatures above 50 degrees F. Avoid rapid drying at the end of the curing period.
- D. Use water that is free of impurities that could etch or discolor concrete surfaces.
- E. Do not use liquid membrane curing compounds on surfaces which are to be covered with a coating material applied directly to the concrete or with a covering material bonded to the concrete, such as other concrete, liquid floor hardener, waterproofing, damp-proof flooring, painting, and other coatings and finish materials, unless otherwise acceptable to the Inspector.
- F. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
Surfaces Not in Contact with Forms:
1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 2. Begin final curing after initial curing but before surface is dry.
 - a. Moisture-retaining cover. Seal in place with waterproof tape or adhesive.
 - b. Curing compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.05 WATERPROOF BARRIER

Place, protect and repair waterproof barrier according to manufacturer's written instructions.

3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests as determined necessary by Owner, as specified in Section 01400.

- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- D. Compressive Strength Tests: ASTM C 39/C 39M. If a test is directed by Architect, Contractor shall mold and cure three concrete test cylinders. When tests are ordered by Architect, Contractor shall obtain test samples for every 100 cu yd (76 cu m) or less of each class of concrete placed.
- E. At direction of Architect, perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.

3.07 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to the Owner and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Owner. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Contractor to be responsible for epoxy grouting repair of any cracks occurring in the concrete which exceed 1/8" as directed by Landscape Architect.
- E. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of the Landscape Architect for each individual area.

3.08 COORDINATION

Bench posts, bike rack posts, drinking fountain, etc. shall be set in cured footings prior to placing concrete slab. Block outs will not be permitted.

END OF SECTION

SECTION 02630

STORM DRAINAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section includes, but is not limited to the following:

1. Storm drainage piping, fittings, and accessories.
2. Connection of drainage system to existing drainage system.
3. Inlets.

- B. Related Work Specified in Other Sections

1. SECTION 02324 – TRENCHING

- C. Related Documents

1. ASTM:
 - a. ASTM D 3034 - Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings; 2004a.
 - b. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2005.

1.02 SUBMITTALS

- A. See Section 01330 - SUBMITTAL PROCEDURES.
- B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents:

1. Record location of pipe runs, connections, inlets, manholes and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Do not store plastic structures, pipe and fittings in direct sunlight.
- B. Protect pipe, fittings, and seals from dirt and damage.
- C. Handle precast concrete pipe, manholes and other precast structures according to manufacturer's written instructions.
- D. Protect imported bedding and backfill material from contamination by other materials.

PART 2 PRODUCTS

2.01 DRAINAGE PIPE MATERIALS

- A. Plastic Pipe: ADS N-12, AASHTO M52 or approved equal, inside nominal diameter as indicated on Drawings.
- B. Plastic Pipe Joint Seals: Pipe shall be joined using a bell & spigot joint meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306.
- C. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required. Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

2.02 PIPE ACCESSORIES

- A. Line Marker: Provide warning detectable tape; permanent, bright-colored, continuous-printed plastic tape, intended for direct burial service; not less than 6 inches wide by 4 mils thick. Provide green tape with "CAUTION STORM LINE BURIED BELOW" in black letters.

2.03 CATCH BASINS

- A. Catch Basins in turf areas: 18" or as indicated on Drawings.
- B. Catch Basins in non-turf areas: 12" or as indicated on Drawings

C. 2.04 FLARED END SECTION

- B. Flared end section: Precast concrete as indicated on Drawings. Hanson Pipe & Precast or approved equivalent.

2.05 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 02324 – TRENCHING.
- B. Pipe Cover Material: As specified in Section 02324 – TRENCHING.

PART 3 EXECUTION

3.01 TRENCHING

- A. See Section 02324 – TRENCHING for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

- A. Lay piping beginning at low point of system, true to grades and alignment indicated on Drawings, with unbroken continuity of invert.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 - 1. Plastic Pipe: Also comply with ASTM D 2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Install continuous line marker 18 inches above top of pipe; coordinate with Section 02324 – TRENCHING.

3.03 INSTALLATION - CATCH BASINS

- A. Provide as recommended by manufacturer.

3.04 PIPE PENETRATIONS

- A. For pipe penetrations through existing manholes, core through, provide gasket around pipe, grout penetration on both sides and provide a minimum of 6 inches around collar outside of the manhole or inlet structure penetration.

3.05 TAP CONNECTIONS

- A. Make connections to existing piping and underground structures so that finished Work will conform as nearly as practicable to requirements specified for new Work.

- B. Into underground structures or pipes 24 inches and larger: Cut opening into unit sufficiently large to allow 3 inches of concrete to be packed around entering connection. Cut ends of connection passing through pipe or structure wall to conform to shape of and be flush with inside wall. On outside of pipe or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground. Provide 3000 pounds per square inch concrete. Use epoxy bonding compound as interface between new and existing concrete and piping materials.
- C. Take care while making tap connections to prevent concrete or debris from entering existing pipe or structure. Remove debris, concrete, or other extraneous material, which may accumulate.

3.06 CLEANING

- A. Clean pipe to be tested by propelling a snug fitting inflated rubber ball through the pipe with water to remove any debris.

3.07 LEAK TESTING

- A. Testing of all portions of the storm drain system including manholes is required.
- B. For either exfiltration or infiltration test, the maximum leakage shall not exceed 250 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the contractor shall repair, overhaul, or rebuild the defective portion of the sewer line. After repairs have been completed by the Contractor, the line shall be retested as specified above.
- C. Manholes shall be filled with water to the rim of the frame casting and shall lose no more than 2 inches over a period of 30 minutes.
- D. The final test shall be performed after the line has been laid and all backfill placed and compacted. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted. In the event that the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the storm drain line where such conditions are encountered will be tested for infiltration. The Owner's Representative shall determine whether the exfiltration or infiltration test will be used.
- E. Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.
- F. Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the Owner's Representative. The

following procedure shall be used for air testing:

1. Plug all pipe outlets with suitable test plugs. Brace each plug securely.
2. If the pipe to be tested is submerged in ground water, insert a pipe probe, by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount.
3. Add air slowly to the portion of the pipe installation under test until the internal pressure is raised to 5.0 psig.
4. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.
5. After an internal pressure of 5.0 psig. is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.
6. After the two minute period, disconnect the air supply and start stopwatch. The pressure of 5.0 psig. shall be maintained for 5 minutes.
7. As an alternate, the contractor may request the air testing procedure as presented in Section 306-1.4.4 of the 1997 edition of the "Greenbook" Standard Specifications.

3.08 DEFLECTION TESTING (PIPES GREATER THAN 8 INCHES ONLY)

- A. After pipe installation and placement and compaction of backfill, but prior to placement of pavement, all PVC and HDPE pipe shall be cleaned and then mandrel tested for obstructions, such as, but not limited to, deflections, joint offsets and lateral pipe intrusions. A rigid mandrel shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. All obstructions encountered by the mandrel shall be corrected by the Contractor. Obstructions due to deflection shall be corrected by replacement of the overdeflected pipe. Mechanical re-rounding is not permitted.
- B. If a section of pipe fails to meet the mandrel test and is reinstalled and fails the second time, said section(s) of pipe shall be replaced with rigid pipe material approved by the Owner's Representative.

3.09 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 02721

AGGREGATE BASE COURSE – SITE CONCRETE PAVING AND FOOTINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Paving aggregates.

1.02 RELATED SECTIONS

- A. Section 02260 – Landscape Grading.
- B. Section 02316 - Fill and Backfill.
- C. Special Provisions: Aggregate Base, Asphalt Concrete, Storm Drain Pipe, Sanitary Sewer, Sewer and Storm Drain Manholes, Potable Water Supply and Miscellaneous Concrete Construction
- D. Section 02515 – Site Concrete
- E. Section 02811 – Irrigation: Trenching and Backfill

1.03 REFERENCES

- A. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 1996a.
- B. ASTM D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 1991 (Reapproved 1998).
- C. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System); 1998.
- D. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 1996.
- E. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 1996.

1.04 SUBMITTALS

- A. Materials Sources: Submit name of imported materials source.
- B. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- C. Compaction Density Test Reports.

1.05 PROJECT CONDITIONS

- A. Provide sufficient quantities of aggregate to meet project schedule and requirements.

When necessary, store materials on site in advance of need.

- B. Verify that survey benchmarks and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate Base: Coarse aggregate, conforming to Section 26 of the State of California Highway Department Standards for 3/8-inch maximum Class 2 Aggregate Base.

2.02 SOURCE QUALITY CONTROL

- A. If tests indicate materials do not meet specified requirements, change material and retest.
- B. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify subgrade has been inspected, gradients and elevations are correct, and is moist but not pumping.

3.02 PREPARATION

- A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.
- C. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Under Concrete Paving and Footings:
 - 1. Place aggregate base to a total compacted thickness as indicated on the Project Drawings.
 - 2. Compact to 95 percent of maximum dry density.

3.04 TOLERANCES

- A. Variation From Design Elevation: Within 0.05 feet.

3.05 FIELD QUALITY CONTROL

- A. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D2922 and ASTM D3017.

- B. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- C. Proof roll compacted aggregate at surfaces that will be under paving.

3.06 CLEAN-UP

- A. Remove unused stockpiled materials, leave area in a clean and neat condition in accordance with Section 02260.

END OF SECTION

SECTION 02764

PAVEMENT JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

- 1. Expansion and contraction joints within cement concrete pavement.
 - 2. Joints between cement concrete and asphalt pavement.

- B. Related Sections include the following:

- 1. Section 02515 Site Concrete for constructing joints in concrete pavement.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

- B. Samples for Verification: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

- C. Qualification Data: For Installer and testing agency.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 - 2. When joint substrates are wet or covered with frost.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Landscape Architect from manufacturer's full range.

2.3 COLD-APPLIED JOINT SEALANTS

A. Multicomponent Jet-Fuel-Resistant Sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements for formulation and with ASTM C 920 for type, grade, class, and uses indicated:

1. Urethane Formulation: Type M; Grade P; Class 12-1/2; Uses T, M, and, as applicable to joint substrates indicated, O.

a. Products:

1) Pecora Corporation; Urexpan NR-300.

2. Coal-Tar-Modified Polymer Formulation: Type M; Grade P; Class 25; Uses T and, as applicable to joint substrates indicated, O.

a. Products:

1) Meadows, W. R., Inc.; Sealtight Gardox.

3. Bitumen-Modified Urethane Formulation: Type M; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.

a. Products:

1) Tremco Sealant/Waterproofing Division; Vulkem 202.

B. Single-Component Jet-Fuel-Resistant Urethane Sealant for Concrete: Single-component, pourable, coal-tar-modified, urethane formulation complying with ASTM C 920 for Type S; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.

1. Products:

a. Sonneborn, Div. of ChemRex, Inc.; Sonomeric 1.

C. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.

1. Products:

a. Crafcro Inc.; RoadSaver Silicone.

b. Dow Corning Corporation; 888.

- D. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.

1. Products:

- a. Crafcro Inc.; RoadSaver Silicone SL.
- b. Dow Corning Corporation; 890-SL.

- E. Multicomponent Low-Modulus Sealant for Concrete and Asphalt: Proprietary formulation consisting of reactive petropolymer and activator components producing a pourable, self-leveling sealant.

1. Products:

- a. Meadows, W. R., Inc.; Sof-Seal.

2.4 HOT-APPLIED JOINT SEALANTS

- A. Jet-Fuel-Resistant Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3569.

1. Products:

- a. Crafcro Inc.; Superseal 444/777.
- b. Meadows, W. R., Inc.; Poly-Jet 3569.

- B. Jet-Fuel-Resistant Sealant for Concrete and Tar Concrete: Single-component formulation complying with ASTM D 3581.

1. Products:

- a. Crafcro Inc.; Superseal 1614A.
- b. Meadows, W. R., Inc.; Poly-Jet 1614.
- c. Meadows, W. R., Inc.; Poly-Jet 3406.
- d. Meadows, W. R., Inc.; Poly-Jet 3569.

- C. Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3406.

1. Products:

- a. Crafcro Inc.; Superseal 444/777.
- b. Meadows, W. R., Inc.; Poly-Jet 3406.

D. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 3405.

1. Products:

- a. Koch Materials Company; Product No. 9005.
- b. Koch Materials Company; Product No. 9030.
- c. Meadows, W. R., Inc.; Sealtight Hi-Spec.

2.5 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

2.6 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of backer materials.
 - 2. Do not stretch, twist, puncture, or tear backer materials.
 - 3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses provided for each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealants from surfaces adjacent to joint.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION

SECTION 02811

IRRIGATION

PART 1 - GENERAL

1.01 CONDITIONS

- A. The general provisions of the Contract, including General and Supplementary Conditions and Special Provisions (if any) apply to the work specified in this Section.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, processes, and equipment necessary to complete the irrigation system work as indicated on the Drawings and specified herein.
- B. Test the entire irrigation system to assure proper operation.
- C. Furnish all labor, materials, and equipment necessary to restore all disturbed areas resulting from the work as indicated on the Drawings and specified herein.
- D. All incidental parts, which are not shown on the plans or specified herein and are necessary to complete or modify the existing system shall be furnished and installed as though such parts were shown on plans or specifications. All systems shall be in satisfactory operation at the time of completion.

1. Related work specified in other sections:

- a. Section 01600 – **PRODUCT REQUIREMENTS**
- b. Section 01780 - **CLOSEOUT SUBMITTALS**
- c. Section 02100 - **DEMOLITION**
- d. Section 02905 - **LANDSCAPE INSTALLATION**
- e. Section 02970 - **LANDSCAPE MAINTENANCE**

1.03 QUALITY ASSURANCE & REQUIREMENTS

- A. Permits and Fees: The Contractor shall obtain and pay for all permits and all observations as required.
- B. Manufacturer's Directions: Manufacturer's directions and detailed Drawings shall be followed in all cases where the manufacturers of articles used in this Contract furnish directions covering points not shown in the Drawings and Specifications
- C. Ordinances and Regulations

- A. All local, municipal and state laws, rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these Specifications and their provisions shall be carried out by the Contractor.
- B. All rules and regulations governing or relating to the California Code of Regulations, Title 23, Division 2, Chapter 2.7, 2015 Updated Model Water Efficient Landscape Ordinance are hereby incorporated into and made a part of these Specifications and their provisions shall be carried out by the Contractor.
- C. The materials and work of this section shall conform to all applicable provisions of the latest editions of the Uniform Plumbing Code, the National Electrical Code, and all codes properly governing the materials and work at the project site.
- D. All electrical materials and work shall conform to California Administrative Code, Title 23, Part 3, Basic Electrical Regulations, and Article 18 E 110-16.
- E. Anything contained in these Specifications shall not be construed to conflict with any of the above rules and regulations or requirements of the same. However, when these Specifications and Drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of the Specifications and Drawings shall take precedence.

D. Explanation of Drawings

- 1. Not all offsets, fittings, sleeves, main line, lateral, etc., which may be required are shown on plans. Carefully investigate the structural and finish conditions affecting all the work and plan the 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. Due to the scale of the Drawings, it is not possible to indicate all offsets, fittings, sleeves, etc., which may be required to complete the irrigation system.
- 2. Before proceeding with any work, the Contractor shall check and verify all dimensions, quantities, pressures and flows and shall immediately inform the District of any discrepancy between the drawing and/or the Specifications and actual conditions. No work shall be done in any area where there is such a discrepancy until the District has given written approval for the same. The Contractor shall assume full responsibility for work installed without approval.
- 3. The materials and work shall be installed in such a manner as to avoid conflicts between irrigation system and planting, existing or proposed utilities, and all other construction features.
- 4. Contractor shall verify prior to and during construction, that his contract documents reflect the latest revisions and change orders. Contractor shall be able to produce such documents at the request of the District.
- 5. Pipe sizes indicated on the Drawings are minimum allowable.

1.04 EXISTING CONDITIONS

- A. The Contractor shall exercise due care to protect all existing facilities, structures and utilities both above ground and underground on the site.
- B. The contractor shall also exert every effort to maintain amenities, including specimen trees and natural areas integral to the aesthetic of the park design.
- C. Information on the Drawings, relative to existing conditions, is approximate only. Deviations found necessary during construction to conform to actual conditions, as approved by the District, shall be made without additional cost.
- D. Where it is necessary to excavate in areas of existing utilities, the contractor shall take care to confirm exact locations of existing utilities. Exercise extreme care in excavating and working near existing utilities. The Contractor shall be responsible for all damages to existing utilities that are caused by his operation or neglect. In case of interruption of utilities caused by the contractor's operations or neglect, the contractor shall be responsible to have the utilities in service as soon as possible and in no case shall the interruption be longer than a twenty-four (24) hour period. In such case that the contractor needs more than a twenty-four (24) hour period, prior approval shall be acquired from the District in writing.
- E. Excavation in proximity to existing trees shall conform to the Tree Protection Measures per Contract Documents.

1.05 EXISTING IRRIGATION SYSTEM

- A. All existing sprinklers, rotors, controllers, quick coupler valves, undamaged utility boxes, remote control valves, isolation valves shall be removed and salvaged by the Contractor. Deliver only salvageable items to District maintenance yard in stackable plastic bins. All salvaged products shall be inventoried by Contractor prior to delivery. All other items shall be disposed of by the Contractor.
- B. Existing pipelines shall be abandoned in place except in those areas designated to retain and protect. If an existing irrigation pipe is encountered during the installation of new pipe, a section of the existing pipe shall be cut and removed. Remove two (2) feet of the existing pipeline on both sides of the new pipe and/or to a depth of eighteen (18) inches, whichever comes first.

1.06 SUBMITTALS

- A. Material List
 - 1. Contractor shall furnish the articles, equipment, materials, or processes specified by name in the Drawings and Specifications. Product names are used as standards only; other materials or methods shall not be used unless approved in writing by the District. Burden of proof as to equality of proposed material shall be on the Contractor; the District's decision is final. Only one request for substitution shall be considered for each item. Equipment capacities specified are minimum acceptable.

2. A complete material list (6 copies) shall be submitted to the District for approval prior to performing any work. The material list shall clearly identify the manufacturer, model number and description of materials and equipment to be used, including but not limited to the following:
 - a. Irrigation Controller and Accessories
 - b. Hand Held Remote Control
 - c. Isolation Valves
 - d. Master Valve and Flow Sensor
 - e. Remote Control and Drip Valves
 - f. 2-Wire Valve and Sensor Decoders
 - g. Concrete Valve Boxes and Security Lids
 - h. Gear Drive Rotors
 - i. Pop Up Sprinklers and Nozzles
 - j. Bubblers and Riser Assemblies
 - k. Drip Irrigation Tubing and Fittings
 - l. Swing Joint Assemblies
 - m. PVC Gasketed Main Line Pipe
 - n. Main Line Fittings and Joint Restraints
 - o. PVC Solvent Weld Lateral Pipe and Fittings
 - p. PVC and HDPE Sleeves
 - q. PVC Conduit
 - r. PVC Solvent Cement and Primer
 - s. 2-Wire Decoder Cable
 - t. Water Proof Wire Connectors
 - u. Controller and Decoder Earth Ground Systems
3. The contractor shall provide additional submittals as required for products not listed above but which are used on site. Approval of submittals is required before installation.
4. Equipment or materials installed or furnished without prior approval of the District shall be rejected and the Contractor shall be required to remove such materials from the site at his own expense.
5. Approval of any item, alternate or substitute indicates only that the product or products apparently meet the requirements of the Drawings and Specifications based on the information or samples submitted.

B. Record Drawings

1. The Contractor shall dimension from two (2) permanent points of reference, building corners, sidewalks, or road intersections, etc., the location of the following items:
 - a. Connection to Irrigation and Potable Water Lines (Note Depth)
 - b. Electrical Power Connection and Conduits (Note Depth)
 - c. Irrigation Controller
 - d. Main Line Valves – Isolation, Quick Coupler and Air Release
 - e. Master Valves and Flow Sensors

- f. Remote Control and Drip Valves
 - g. Routing of irrigation pressure lines; dimension maximum 100' along routing and at turns in direction and utility crossovers. (Note Depth)
 - h. Routing of conduit and 2-wire decoder cable when not adjacent to main line.
 - i. Main Line, Lateral and Electrical Sleeves at both ends (Note Depth)
 - j. Electric pull/splice boxes (note decoder identification addresses)
 - k. Other related equipment as directed by the District.
2. Two (2) weeks prior to the date of the final observation, the Contractor shall deliver reproducible record drawings and digital media to the Landscape Architect for review. Delivery shall not relieve the Contractor of the responsibility of furnishing required information that may be omitted from the plans or digital media or from the requirements of the Close Out Documents.

C. Controller Charts

1. The District shall approve record Drawings before controller charts are prepared.
2. Provide one (1) controller chart for each controller supplied.
3. The chart shall show or explain the area controlled by the automatic controller and shall be the maximum size that the controller door will allow.
4. The chart shall be either a reduced drawing or a written description of the actual record drawing system. In the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that is readable.
5. When completed and approved, the chart shall be hermetically sealed between two (2) pieces of plastic, each piece being a minimum ten (10) mils thick.
6. These charts shall be completed and approved prior to final observation of the irrigation system.

D. Operation and Maintenance Manuals

1. Prepare and deliver two (2) operation manuals as specified and as follows:
 - a. Approved irrigation material list as described in Section 1.05.A.2
 - b. Parts lists for approved irrigation material list.
 - c. Operation manuals for approved irrigation material list.
3. Guarantee Statement for Irrigation System
4. Landscape Irrigation Water Audit

- E. Before final observation can occur, the above-mentioned material submittals, record drawings, controller charts, operations and maintenance manuals, guarantee statement for irrigation system, central control certificate and landscape irrigation water audit shall be turned over to the District.

1.06 Equipment to be Furnished:

A. Irrigation Products to be Furnished

1. Supply as a part of this Contract the following tools:
 - a. Two (2) key sets for locking irrigation controller.
 - b. Two (2) valves of each size and type used.
 - c. Two (2) decoders of each type used.
 - d. Five (5) rotors of each type used.
 - e. Five (5) pop up sprinklers of each type used.
 - f. Five (5) complete nozzle sets of each type used.
 - g. Five (5) bubblers of each type used.
 - h. One Hundred (100) feet of drip tubing for each type used.
 - i. Ten (10) drip emitters for each type used.
 - j. Two (2) sets of special tools required for removing, disassembling and adjusting each type of sprinkler used
 - k. Two (2) sets of special tools required for removing, disassembling and adjusting each type of joint restraint used.
 - l. Two (2) lock and key sets for controller enclosures (keyed as per District specifications)
 - m. Two (2) quick coupler keys and matching hose swivels
 - n. Two (2) 60" isolation valve opening keys
 - o. Four (4) Security keys for concrete valve boxes
 - p. Two (2) hand-held remote-control transmitters and cases
 - q. Two (2) hand-held decoder programmers
2. The above-mentioned equipment shall be turned over to the District at the conclusion of the project. Written evidence that the District has received materials must be provided to the Landscape Architect prior to scheduling final observation.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

Handling of PVC Pipe and Fittings: The Contractor is cautioned to exercise care in handling, loading, unloading, and storing of PVC pipe and fittings. All PVC pipe shall be transported in a vehicle that allows the length of pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded and if installed replaced with new.

1.08 GUARANTEE

1. The guarantee for the irrigation system shall be made in accordance with the form shown on the following page. A copy of the guarantee form shall be included in the operations and maintenance manual. The guarantee form shall be re-typed onto the Contractor's letterhead and contain the following information:

GUARANTEE FOR IRRIGATION SYSTEM

We hereby guarantee that the irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the Drawings and Specifications, ordinary wear and tear and unusual abuse or neglect excepted. We agree to repair or replace any defects in material or workmanship, which may develop during the period of one (1) year from date of final acceptance and to repair or replace with originally specified materials. Any damage resulting from the repairing or replacing of such defects shall be replaced and repaired by the contractor at no additional cost to the District. We shall make such repairs or replacements within a 48-hour period, after receipt of written notice. In the event of our failure to make such repairs or replacements within said period after receipt of written notice from the District, we authorize the District to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT: _____

LOCATION: _____

SIGNED: _____

ADDRESS: _____

PHONE: _____

DATE OF ACCEPTANCE: _____

PART 2 - PRODUCTS

2.01 MATERIALS

A. Trench Backfill

1. Native Material

- a. Native backfill material, if approved by the District, shall be used for backfill material.
- b. Native Backfill: Prepared as necessary to be non-expansive, free of debris, organic material and lumps larger than three (3) inches, rocks larger than two (2) inches,
- c. Unless otherwise specified in the Special Provisions, the Contractor has the option to use imported granular material for trench backfill in place of native material excavated at the work site.
 - 1.) The optional use of imported granular material for trench backfill will be at the Contractor's expense.

2. Imported Soil

- a. Imported Backfill: Non-expansive soil, free of debris, organic material and lumps larger than three (3) inches, rocks larger than two (2) inches, with a liquid limit no greater than 40 and a plasticity index no greater than 15.

3. Graded Sand

- a. Graded sand backfill must be free from vegetable matter, lumps, balls of clay, or adherent films of clay, and must have a minimum Cleanliness Value of 60 as determined by California Test 227.
- b. The percentage composition by weight of graded sand must conform to the following gradations:

Sieve Size	Percentage Passing by Weight
9.5 mm (3/8")	100
4.75 mm (#4)	92-100
2.36 mm (#8)	90-100
1.18 mm (#16)	80-100
600 µm (#30)	65-100
300 µm (#50)	40-80
150 µm (#100)	0-40
75 µm (#200)	0-12

4. Crushed Rock or Gravel

- a. Crushed rock or gravel backfill material shall be graduated so that 100 percent will pass the 3/4 inch sieve and not more than 15 percent will pass the number 8 sieve.
- b. Clean crushed rock must have a minimum Cleanliness Value of 60 as determined by California Test 227. At least 75 percent of the crushed rock particles must have 2 or more fractured faces.

B. Woven Geotextile Fabric

1. The woven geotextile fabric must be a high modulus woven fabric consisting of long chain polymeric monofilaments, slit film tapes, or multifilaments of tape and nonwoven yarn of polypropylene, polyester or nylon, and must be inert to commonly encountered chemicals, rotproof and resistant to ultraviolet light exposures, insects, and rodents.
2. The fabric must be woven into a stable network and the edges of the fabric must be selvaged or surged in such a way that fabric will not unravel or fray during installation or usage.
3. The geotextile must conform to the physical property requirements as below:
 - a. Grab tensile strength (any direction), lb. ASTM D 4632 200 lbs.
 - b. Weight, oz/yd³ ASTM D 5261 6.0 oz/yd³
 - c. Permittivity, sec-1 ASTM D 4491 0.5 sec-1
 - d. Mullen Burst strength, psi ASTM D 3786 400 psi
 - e. The fabric must have an Equivalent Opening Size no larger than U.S. Standard Sieve Number 50 as determined by U.S. Corps of Landscape Architects Specification CW-02215.

C. Irrigation Pipe Sleeve

1. Irrigation Sleeve 4" and smaller shall be PVC Schedule 40 with solvent-weld joints.
 - a. Pipe shall be made from NSF approved Type I, Grade I, PVC compound conforming to ASTM resin specification D1785. All pipes shall meet requirements set forth in Federal Specification PS-21-70. (Solvent-weld Pipe)
2. Irrigation Sleeve 6" and larger shall be corrugated HDPE with smooth interior wall.
 - a. HDPE shall be made from high-density polyethylene with an integrally formed smooth interior conforming to AASHTO M252, AASHTO M294, Type S.

D. PVC Pipe and Fittings

1. Main Line Pressure Pipe and Fittings.

- a. Pressure main line piping four (4) inch and larger shall be PVC Class 200, rubber ring joint type.
 - 1.) Couplings with grooves for sealing rings either shall be a separate machined part with two (2) sealing rings or manufactured as an integral part at one end of each pipe length. Pipe shall be made from an NSF (National Sanitation Foundation) approved Type I, Grade I, PVC compound conforming to ASTM resin specification D2241. All pipes shall meet requirements as set forth in Federal Specification PS22-70, with an appropriate standard dimension ratio (S.D.R. Pipe).
 - 2.) Lubricant for assembling gasketed pipe and fittings shall be as per manufacturer's specifications.
 - 3.) Main line fittings and valves two and one half (2-1/2) inch and larger shall be mechanically restrained using integral joint restraints or approved equal.
- b. Pressure main line piping three (3) inch to two and one half (2-1/2) inch shall be PVC Class 315 and two (2) inch and smaller shall be PVC Schedule 40.
 - 1.) Main line fittings three (3) inch and smaller shall be PVC Schedule 80
- c. All PVC pipe shall be marked continuously and permanently with the following information: Manufacturer's name, nominal pipe size, schedule or class of pipe, pressure rating in P.S.I. extrusion, NSF approval and date of extrusion.
- d. All PVC fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.S. schedule and NSF seal of approval.

2. Lateral Non-Pressure Pipe and Fittings

- a. PVC pipe 2-1/2 inch and larger shall be PVC Class 315.
- b. PVC pipe 2 inch and smaller shall be PVC Schedule 40.
- c. Pipe shall be made from NSF approved Type 1, Grade PVC compound conforming to ASTM resin specification 1785. All pipes shall meet requirements as set forth in Federal Specification PS-21-70. (Solvent-weld pipe).
- d. Lateral pipe fittings downstream of remote control valves shall be solvent welded PVC Schedule 40 unless otherwise noted in details and drawings.

E. Main Line Joint Restraints

1. All gate valves, ductile iron bends, reducers, tees and pipe bell and gasket joints adjacent to restrained joints shall be mechanically restrained in accordance to the manufactures recommended design criteria and guide. Concrete thrust blocks are not to be used.
2. The mechanical joint restraint shall be capable of securing the PVC pipe directly to the gate valve, ductile iron bends, reducers and tees without the use of bolts, links and adapters.
3. Joint restraints shall be manufactured from ductile iron, grade 65-45-12 in accordance with ASTM A-536.
4. Bolts and nuts used on joint restraints shall be provided as part of the restraint assembly.
5. All joint restraints shall be installed using methods recommended by the manufacturer. All bolts and nuts shall be tightened as per manufacturer's recommended torque ratings.

F. Main Line Detectable Marking Tape

1. Detectable marking tape shall consist of a 5.0 mil (0.005") thickness, five-ply composition, ultra-high molecular weight, 100 percent virgin polyethylene and acid, alkaline and corrosion resistant.
2. The tape tensile strength is in accordance with ASTM D882-80A and will not be less than 7800 PSI. The tape will have a 2.0 mil (0.0020") solid aluminum foil core, encapsulated within 2.55 mil (0.00255") polyethylene backing.
3. Tape width shall be three (3) inch minimum width or as specified by manufacturer for pipe size.
4. Detectable marking tape for irrigation water shall be blue in color with "Caution: Irrigation Water Line Buried Below"

G. Concrete

1. ASTM Class B concrete shall be used for fill concrete.
2. Concrete shall have a 3,500-PSI compressive strength at 28 days and shall have maximum water to cement and dispersing agent ration of 56%. Concrete shall have a minimum cement content of 470 lbs. (5 bags) per cubic yard concrete. Nominal maximum size of coarse aggregate shall be three-quarter (3/4) inch.

H. PVC Threaded Nipples:

1. PVC Schedule 80 nipples shall be produced from extruded stock grade PVC compounds.
 - a. No molded nipples shall be used.

- b. PVC Schedule 80 nipples shall be made from NSF approved PVC compound conforming to ASTM D1784, Cell Classification 12454

I. Manual Valves

- 1. All mainline valves shall be resilient wedge and conform to AWWA C153 standards.
 - a. Material shall be ductile iron per ASTM A-536, Grade 65-45-12.
 - b. Epoxy coating on all interior and exterior surfaces shall be fusion bonded epoxy, 12-14 mil thickness.
 - c. Gate valves shall be available in spigot x bell and bell x bell models to mechanically connect to fittings or plastic pipe. Valve bell end shall be deep bell, gasket and equipped with cast joint restraint clamps to securely fasten to plastic pipe.
 - d. Restraints shall have blunt cast serrations. Machined threaded restraints will not be allowed.
 - e. Valves shall have a shroud around the 2" operating nut to accept IPS PVC sleeve which provides dirt-free access to actuate the valve.
- 2. Valves two (2) inch and smaller shall be bronze, full port ball valve with threaded ends.
 - a. Ball valves shall be equipped with a cast bronze cross or tee handle.

J. Quick Coupling Valves

- 1. Quick coupling valves shall have a brass two-piece body designed for working pressure of 150 P.S.I. operable with quick coupler key. Key size and type shall be as shown on the Drawings.

K. Remote Control Valve

- 1. Remote control valves shall be of the same type, manufacturer and model shown on drawings.
- 2. Remote control valves shall be operated by a 2-wire decoder with a separate decoder address for each valve station and be of the same type, manufacturer and model as shown on the drawing.
- 3. Remote control valves shall be labeled with a valve identification tags of the same type, manufacture and model shown on drawings.

L. Valve Identification

1. Remote control valve tags shall be of the same type, manufacturer and model shown on drawings.
2. Remote control valve tags shall be manufactured from polyurethane Behr Desopan, with a reinforced attachment hole and will be 2-1/4" x 2.3/4" in size.
 - a. Remote control valve identification tags shall be yellow in color with double sided stamped controller and valve designation.
 - b. Manual and remote-control valve identification tags shall be blue in color with double sided stamped "Non-Potable Water" on both sides.

B. Wiring

1. Two-wire cable shall be a twisted, solid-core wire suitable for direct burial, color-coded red and blue.
2. All connections in the two-wire path shall be made with 3M DBRY-6 waterproof connectors or approved equal.
3. Two-wire cable earth grounding shall be per manufacture's specifications.

C. Irrigation Controller

1. The irrigation controller shall be of the same type, manufacture and size as shown on the drawing.
2. The irrigation controller shall operate the remote-control valves using a two-wire path.
3. The irrigation controller shall have a minimum of six (6) sensor outputs.
4. The irrigation controller shall be equipped with two (2) hand held remote programmers that use wireless induction to program and communicate with decoders in the field.
5. Irrigation Controller shall have a five (5) year manufacturer's warranty.

D. Master Valve and Valve Flow Sensor Assembly

1. The master valve and flow sensor assembly shall be of the same type, manufacture and size as shown on the drawing.
2. The master valve shall be operated by a 2-wire decoder.
3. The Flow Sensor shall be connected to the controller through a 2-wire path sensor decoder as per manufacture specification.

E. Earth Ground

1. Earth Grounding for electronic irrigation controller shall be made in accordance with Article 250 of the National Electrical Code (NEC) and manufacturer written specifications. At the very minimum, the grounding circuit shall include a copper clad steel ground rod, a solid copper ground plate and one hundred (100) pound of PowerSet earth contact material or approved equal.
2. Ground Rods shall be 5/8" diameter by 10' length copper clad with a surface area of 238 square inches.
3. Copper Ground Plates shall be 12" by 36" by 1/16" solid copper with a surface area of 870 square inches.
 - a. Copper Ground Plates shall come with 25 feet of 6AWG copper wire welded to the plate.
 - b. Copper Ground Plates shall conform to N.E.C. requirements.
4. Bare Copper Wire shall be soft-annealed, uncoated copper, 6AWG and conforming to UL standard 719.
 - a. Bare Copper Wire shall be permanently welded to ground rods and ground plates, so the connection doesn't loosen or corrode.
 - b. Exothermic reaction welding process shall be used and shall conform to N.E.C. requirements.
5. Earth Contact Backfills shall be superior conductive material, non-hardening or hardening such as PowerFill or PowerSet or approved equal.

F. Irrigation Heads

1. All irrigation heads shall be of the same size, type and deliver the same rate of precipitation with the diameter (or radius) of throw, pressure, and discharge as shown on the plans and/or specified herein or approved by the District.
2. Rotor heads shall be gear drive with stainless steel riser and factory installed check valve.
3. Pop Up Sprinkler bodies shall be equipped with pressure regulation, heavy-duty spring and factory installed check valve.
 - a. Pop Up Sprinklers shall come equipped with rotary nozzles and matched precipitation.
4. All irrigation heads of similar functions shall be of common manufacture and shall be marked with the manufacturer's name and model identification in a position where they may be identified without being removed from the system.

G. Valve and Electric Boxes

1. Valve boxes installed in decomposed granite areas shall be tan colored; valve boxes installed in planter areas shall be green colored.
2. Valve boxes shall be per plans and details with bolt down kit and a skid resistant marked surface.
3. Valve box lids shall be per plans with diamond plated surface texture with a locked and secure improved wing design securely locking the cover in place from inside the enclosure.
 - a. Valve box lids shall come equipped with a vandal resistant security bolt and a specialized key to open.
 - b. Valve box lids shall have a welded identification plate attached by the manufacturer to say irrigation.

PART 3 - EXECUTION

3.01 GENERAL

A. Appoint a competent resident superintendent to be onsite whenever the WORK is in progress. The superintendent shall not be replaced without notice to the Landscape Architect.

B. Contractor is responsible for locating and avoiding underground utilities, for notifying all appropriate agencies prior to beginning excavation, and for any damage caused by Contractor. Contractor is required to notify Landscape Architect and the utility company should there be any damage to utilities.

3.02 SITE CONDITIONS

1. Contractor shall protect all existing site development including, but not limited to, existing buildings, equipment, underground utilities, walls, materials, etc. Any existing site development damaged by willful or negligent acts of Contractor or any of Contractor's employees shall be replaced or repaired at no expense to District and in a manner satisfactory to Landscape Architect before Project acceptance is given. This provision applies to onsite damage as well as to that which may occur to adjacent properties
2. All scaled dimensions are approximate. The Contractor shall check and verify all site dimensions and notify the District if site conditions have changed from those specified in the drawings.
3. The Contractor shall check and verify all site water and electrical services and notify the District if site conditions have changed from those specified in the drawings.
4. The Contractor shall carefully check all grades to satisfy him that he may safely proceed before starting work on the irrigation system.

5. The contractor shall obtain permits and call for inspections as required by local codes and regulation. All installations shall conform to local codes and accepted construction practices.

3.03 PREPARATION

A. Physical Layout

1. Locations on Drawings are diagrammatic and approximate only and shall be changed and adjusted as necessary and as directed by the District to meet existing conditions and obtain complete water coverage.
2. Prior to installation, the Contractor shall stake out points of connection, power connections to controllers, location of mainlines, valve groupings and obtain review by the District before installation. The District prior to installation shall approve all layouts in writing. If equipment is incorrectly located without said approval, it is the Contractor's responsibility to relocate it as per the District's directions without additional cost.
3. Prior to installation in Turf Fields, the Contractor shall stake out points of connection to main line, location of mainlines, valves groupings and sprinkler heads that define the layouts of the Turf Fields and obtain review by the District before installation.
4. The Contractor shall install and extend the system as shown on the Drawings, and as necessary to carry out the intent of the Drawings and Specifications.

3.03 WATER, ELECTRICAL AND TELEPHONE SERVICES

A. Water Supply

1. Coordinate with the District the irrigation water supply point of connection as indicated on the Drawings. Field verify connection location and size. The contractor is responsible for any changes caused by actual site conditions. Notify the District of any discrepancies prior to beginning construction.

B. Electrical Supply

1. Contractor shall provide all materials and connections to supply electrical power to the irrigation controller(s) and other electrical components as needed.
2. Connection shall be made at approximate location(s) as indicated on the Drawings. The Contractor is responsible for minor changes caused by actual site conditions and for the coordination of all electrical service connections to the controllers.
3. A licensed Electrical Contractor shall perform electrical work. Materials and workmanship for electrical service shall conform to the latest edition of the National Electric Code and local codes, ordinances and governing authorities having jurisdiction.

3.04 INSTALLATION

A. Trenching

1. Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on the Drawings and as noted.
2. Provide for twenty-four (24) inches cover for all pressure lines. Contractor shall be responsible to review Grading Plan to control depth of mainline.
3. Provide eighteen (18) inches cover for rotor and sprinklers on non-pressure lines.
4. Provide for a minimum of twelve (12) inches cover for drip manifolds on non-pressure lines.
5. Provide for twenty-four (24) inches cover for all control wiring.
6. Provide twenty-four (24) inches of cover for all pressure lines, non-pressure lines and control wiring under auto traffic areas.
7. Trench width shall be as needed to provide minimum horizontal clearance between pipes and minimum of four (4) inches of clearance between edge of pipes and edges of trench.
8. No pipe shall be laid directly over another pipe.

B. Laying and Jointing Geotextile

1. Placed geotextile directly on prepared subgrade in the trench to conform loosely to the shape of the trench. The geotextile shall be laid flat, but not stretched on the soil, avoid folds and creases.
2. Overlap geotextile side-to-side minimum one and one half (1-1/2) feet. Apart from the one longitudinal overlap no longitudinal joints shall be permitted.
 - a. Curves may be accomplished by folding or cutting the fabric to conform to the curve.
 - b. Staple overlap at four (4) foot longitudinal intervals using six (6) inch galvanized U-shaped landscape pins.
3. Successive sheets shall be overlapped to form transverse field splices. The splices shall have a minimum overlap of 500 mm and shall be anchored with securing pins to ensure this required overlap is maintained. Alternatively, sewn joints will be accepted subject to the approval of the Landscape Architect.
4. Where outlet pipe passes through the geotextile, a separate piece of geotextile of sufficient size shall be wrapped around the pipe and flared against the side of the geotextile wrapped pipe.

C. Backfilling

1. Excavate bottom of trench to uniform grade to achieve stable trench conditions and satisfactory compaction of foundation or bedding materials. Pipes must have firm, uniform bearing for the entire length of each pipe line. Wedging or blocking of pipe will not be permitted
2. Place Geotextile to prevent particle migration from the in-situ into open graded embedment materials.
3. Place sand backfill six (6) inches in depth below the pipe and compact to 85 percent of the maximum dry density determined according to ASTM D 698.
4. Manually spread sand backfill around the pipe to provide uniform bearing and side support when compacted. Perform placement and compaction directly against the undisturbed soils in the trench sidewalls.
5. Place sand backfill six (6) inches in depth above the pipe and compact by at least two passes manual tamping to 85% relative compaction. Ponding or jetting methods will not be permitted.
6. Backfill lateral lines with approved backfill material. Backfill material shall be free from organic materials, large clods of earth or rocks larger than three (3) inches in diameter, trash, debris, rubbish, broken cement, asphalt material or other objectionable substances.
7. If settlement occurs and subsequent adjustments in pipe, valves, sprinklers heads, lawn or planting, or other construction are necessary, the Contractor will make all the required adjustments at Contractor's expense.

D. Trenching and Backfilling Under Paving

1. Trenches located under areas where paving, asphaltic concrete or concrete shall be installed, shall be backfilled with sand, a layer six (6) inches below the pipe and six (6) inches above the pipe and compacted in layers to 85% compaction, using manual or mechanical tamping devices. All trenches shall be left flush with the adjoining grade. The Contractor shall set in place; cap and pressure test all piping under paving prior to the paving work.
2. Generally piping under existing walks is done by jacking, boring or hydraulic driving, but where any cutting or breaking of sidewalks and/or concrete is necessary, it shall be done and replaced by the Contractor as part of the Contract cost. Permission to cut or break sidewalks and/or concrete shall be obtained from the District in writing. No hydraulic driving shall be permitted under concrete paving.

E. Sleeving

1. Sleeving shall be installed for irrigation pressure main line pipe, non-pressure lateral pipe and electrical wiring that crosses pavement, walkways, paths, mow curbs, concrete, and other hardscape elements as needed whether shown on drawing or not.
2. Install irrigation and electrical sleeving as needed whether indicated on the Drawings. Contractor shall coordinate the installation of sleeving with the work of other trades. Sleeving shall extend a minimum of six (6) inches past hardscape.
3. Sleeves shall be sized to easily accommodate piping and/or control wiring as called for in the drawings leaving a minimum of 25% void space inside sleeve.
 - a. The contractor shall be responsible to verify sleeving sizes based on field verification of pipe and wire crossings.
4. Separate sleeves shall be provided for:
 - a. Main line and lateral piping.
 - b. 120V electric service
 - c. Irrigation 2-wire decoder cable
 - d. Irrigation ground wire.
5. Sleeves shall have both ends capped during installation to prevent dirt and debris from entering the sleeve.
6. Identify location of sleeve ends from two permanent points of reference and mark on record drawings.
7. When utilizing existing sleeving, the contractor will remove existing pipe and wire and remove debris from sleeve prior to installing new irrigation components.

F. PVC Pipe

1. Routing of irrigation pipe as indicated on the Drawings is diagrammatic. Install lines, stub outs and valve manifolds to conform to the details shown on the drawings.
2. Install irrigation main line a minimum of five (5) feet from tree locations to avoid conflict with mature rooting systems.
3. Install no multiple assemblies on plastic lines. Provide each assembly with its own outlet.
4. Changes in directions and depth on irrigation main line shall be made with 45° bends. No 90° bends shall be used.
5. Install all assemblies specified herein in accordance with respective detail. In absence of detail Drawings or specifications pertaining to specific items required to complete work, provide shop drawing in accordance with best standard practice to Landscape Architect for review and approval prior to installation.

6. PVC pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before installation. Installation shall be as recommended by the pipe and fitting manufacturer.
7. PVC pipe shall be installed so that there will be a small amount of excess length in the pipe to compensate for contraction and expansion of the pipe. This shall be accomplished by "snaking" the pipe in the trench during installation.
8. Center load pipe with small amounts of backfill to prevent arching and slopping under pressure. Leave joints exposed for inspection during testing.
9. No water shall be permitted in the pipe until inspections have been completed and a period of at least 24 hours has elapsed for solvent weld setting and curing.
10. Plastic to metal connections shall be made with plastic male adapters and female metal adapter, hand tightened, plus one turn with a strap wrench. Teflon tape or approved equal shall be used on all threaded PVC to metal joints.
11. Gasket Joint: Use gasket lube as recommended by pipe manufacturer.
12. Solvent Weld Joint: The Contractor must make solvent weld joints with non-synthetic bristle brush in the following sequence:
 - a. Apply a liberal, even coat of purple PVC primer to the pipe and fitting immediately before applying the solvent.
 - b. Apply a liberal even coat of solvent to the inside of the fitting and then to the outside of the pipe, making sure that the coated area is equal to the depth of the fitting socket. Section 20 - Landscaping 20.15 1/1/16 3.
 - c. Insert the pipe quickly into the fitting and turn the pipe approximately one-quarter (1/4) turn to distribute the solvent and remove air bubbles. Hold the joint for approximately fifteen (15) seconds so the fitting does not push off the pipe.
 - d. Use a clean rag and wipe off all excess solvent.
 - e. To prevent disturbing the last completed joint, the pipe must not be twisted when making subsequent joints.
 - f. Allow at least fifteen (15) minutes setup time for each welded joint before moving.
13. Threaded joints shall be wrapped with Teflon tape as per manufacturer's instructions.
14. Flush all debris out of pipe prior to installing valves and heads.

15. Install detectable marking tape 12" above main line pipe along the entire length of the main line run, including main line branches and irrigation crossover sleeves.
16. When utilizing existing main line, make connections to new main line using long-barrel self-restraint repair couplers.

G. Line Clearance

1. Irrigation lines shall have a minimum horizontal and vertical clearance of four (4) inches from each other. Parallel lines shall not be installed directly over one another.
2. Horizontal and vertical clearance of irrigation lines from lines from other trades shall be as per local codes and regulations.
3. Line clearances shall be inspected and approved by the District prior to backfilling trenches.

H. Joint Restraint System

1. Install Joint Restraint System as per details and manufacturer's specifications.

I. Gate Valves

1. Install as gate valves as per details and manufacturer's specifications.
2. Install where shown on Drawings. Locate, in valve boxes, twelve (12) inches from walk, curb, header board, etc., for easy access unless otherwise noted on drawings.
3. Install one gate valve per valve box. Provide extension units as required as per details. Install valve boxes in shrub planting areas whenever possible.
4. Install a T. Christy I.D. water quality tag on all gate valves. Attach the identification tags to the valve stem using a nylon cable tie.
5. It is the intent of the irrigation design to minimize valve boxes within the turf field area. When valve boxes are required to be installed in the soccer field, the contractor shall submit proposed locations to Landscape Architect to review and approve prior to installation

J. Quick Coupler Valve

1. Install as quick coupler valve as per details and manufacturer's specifications.
2. Install where shown on Drawings. Locate, in valve boxes, twelve (12) inches from walk, curb, header board, etc., for easy access unless otherwise noted on drawings.

3. Install one quick coupler valve per valve box. Provide extension units as required as per details. Install valve boxes in shrub planting areas whenever possible.
4. Install a T. Christy I.D. water quality tag on all gate valves. Attach the identification tags to the valve stem using a nylon cable tie.
5. It is the intent of the irrigation design to minimize valve boxes within the turf field area. When valve boxes are required to be installed in the turf field, the contractor shall submit proposed locations to Landscape Architect to review and approve prior to installation

K. Electric Remote-Control Valves

1. Install with 2-wire decoder and pressure regulator as per details and manufacturer's specifications.
2. Install where shown on Drawings. Locate valve boxes twelve (12) inches from, and perpendicular to walk, curb, header board, etc., for easy access.
3. Install one (1) remote control valve per valve box as per detail. Provide extension units as required so as valve is protected by adjacent native soil.
4. Install valve boxes in shrub planting areas wherever possible.
5. Provide twenty-four (24) inch expansion loop at all electrical connections wrapped neatly along interior wall of valve boxes.
6. Install a T. Christy I.D. tags on all valves identifying the controller and station number of the valve and water quality. Attach the identification tags to the valve stem using a nylon cable tie.
7. It is the intent of the irrigation design to minimize valve boxes within the turf field area. When valve boxes are required to be installed in the turf field, the contractor shall submit proposed locations to Landscape Architect to review and approve prior to installation

L. Master Valve and Flow Sensor

1. Install shall be in accordance with the corresponding detail in the Standard Drawings.
 - a. Install with a minimum upstream and downstream length of straight pipe per manufacturer's specifications
2. Install with 2-wire decoder and sensor decoder per details and manufacturer's specifications.
3. Install a T. Christy I.D. tags on all valves identifying the controller and station number of the valve and water quality. Attach the identification tags to the valve stem using a nylon cable tie.

4. Contractor shall be responsible to calibrate flow sensor per manufacturer's specifications.
 - a. Run flow test on each completed irrigation remote control valve to identify actual field flow using the controller learned flow system capabilities. Contractor shall work with manufacturer's representative as needed to perform accurate flow test.
 - b. Contractor shall use field flow test results to schedule flow zones on controller system as part of schedule programming.

M. Automatic Controller

1. Install as per manufacturer's specifications, drawings and details.
2. Controller shall be securely mounted in the location as indicated on the Drawings or approved by the District in such a manner that all normal operations can be conveniently made by the operator.
3. The Contractor shall properly ground the controllers per contract documents and in accordance with N.E.C and local codes and as per manufacturer's specifications.
4. The Contractor shall take all decoder cables to the controller and make all required connections for their installation.
5. Contractor shall be responsible to program controller per contract documents. Run flow test for each control valve and use to program flow zones. Schedule remote control valves to maximize system pump efficiency and minimize system run times.
 - a. The irrigation schedule provided per contract documents shall be used as a guide only. It is the Contractor's responsibility to adjust controller watering schedules based on actual site conditions including but not limited to plant species, soil conditions, slope, weather, irrigation application method, etc.
 - b. At no time shall the contractor allow the pooling or runoff of water on the site due to length of irrigation cycle. Adjust run and soak times as needed to avoid pooling of water and runoff.

N. 2-Wire Decoder Cable

1. Install 2-wire decoder cable in conduit. Route along supply line piping wherever practical.
2. No cable splices shall be allowed between controller and valves and between valve to valve that are less than 500 feet apart.

3. Use one waterproof splice pack per splice. Indicate all splices on the “As-built” plan. Cable splice connections shall be per manufacture specifications.
4. Where control wires pass under paving, they shall pass through a Schedule 40 PVC sleeve.
5. Ground decoder 2-wire cable per manufacturer’s specifications.
6. Install twenty-four (24) inch service loop neatly coiled inside the perimeter of the valve box to allow for valve, decoders and splices to be pulled to surface for servicing. Coil service loop neatly along inside wall of valve box.

O. Conduit

1. PVC Schedule 40 conduit with 2-wire decoder cable shall be installed as shown on plans and adjacent to irrigation mainline wherever possible.
2. The ends of the conduits, whether shop or field cut, shall be reamed to removed burrs and rough edges. Cuts shall be made square and true.
3. Install conduit couplers onto pipe ends when in direct contact with 2-wire decoder cable.
4. The ends of the conduit shall be capped until the pulling of wiring is started. Conduit shall be free of soil and debris.
5. Conduit bends, except factory bends, shall have a radius of not less than six times the inside diameter of the conduit.
6. Install a one-quarter (1/4) inch polypropylene pull tape in conduit. Loop pull tape into each valve box and splice box.
7. When utilizing existing conduit, the contractor will remove existing control wire, vacuum debris from conduit prior to installing new 2-wire cable through existing conduit. Install electric boxes as shown and as needed to facilitate installing new 2-wire cable in existing conduit.

P. Controller Earth Ground

1. Install earth grounding in accordance to Article 250 of the National Electrical Code and as per manufacturer’s specifications.
2. Ground rods shall be driven a minimum of ten (10) feet into the ground in a vertical or oblique position. The angle of the rod relative to the vertical shall be no more than 45-degree angle.
3. Ground plates shall be installed in a horizontal position a minimum of 30” below ground level.

4. Grounding conductors shall be installed to avoid sharp bends. When bends are required to pass through buildings and equipment, they must have a minimum angle of 90° and a minimum radius of 8", which equates to a standard 1-1/2" PVC sweep conduit elbow.
5. Ground rods shall be installed in soils with minimum moisture content of 15% within the sphere of influence. Use supplemental irrigation as needed to meet this requirement.
6. Use "Earth Contact Materials" as needed and as per manufacturer's specifications to obtain desired soil resistivity.
7. Use permanent welded connections to connect grounding conductors to ground rods. Solder shall not be used for this connection.
8. The grounding grid shall be field tested to verify that resistance readings are no more than 10 ohms.

Q. 2-Wire Decoder Earth Ground

1. Install 2-wire decoder system earth grounding in accordance manufacturer's specifications.

R. Valve Boxes

1. Valve boxes installed in decomposed granite areas shall be tan colored; valve boxes installed in planter areas shall be green colored.
2. Install valve boxes in shrub planter areas wherever possible.
3. Install valve boxes in groupings as shown to facilitate long-term maintenance. Contractor to stake out dimensions of each valve box bank location for review and approval by Landscape Architect prior to installation.
4. Install valve boxes as per details unless otherwise noted on plans.
5. It is the intent of the irrigation design to minimize valve boxes within the soccer field area. When valve boxes are required to be installed in the soccer field, the contractor shall submit proposed locations to Landscape Architect to review and approve prior to installation

S. Electric Pull Boxes

1. Pull boxes must be installed at the following locations:
 - a. At all 2wire decoder cable splices, except splices made in valve boxes.
 - b. At every 5th bend or at intervals not to exceed one hundred and fifty (150) feet (150') along any 2wire decoder cable path, whichever comes first.

- c. Within five feet (5') of irrigation controllers or within five feet (5') of cabinets housing one (1) or more controllers.
 - d. At conduit stub outs.
 - e. At the ends of conduit crossover sleeves. Include eighteen-inch (18") of 2-wire decoder cable loop along inside of pull box.
 - f. At other locations shown on the Plans.
 - g. The tops of all pull boxes must be flush with the surrounding finished grade.
 - h. When utilizing existing conduit to install new 2-wire decoder cable, Contractor shall be responsible to install electric pull boxes as needed to facilitate installation.
 - i. It is the intent of the irrigation design to minimize electric boxes within the turf field area. When electric boxes are required to be installed in the turf field, the contractor shall submit proposed locations to Landscape Architect to review and approve prior to installation.
2. When approved by the District, the Contractor may install additional pull boxes to facilitate the work. Additional pull boxes installed for the contractor's convenience will be at the Contractor's expense.

T. Irrigation Heads

- 1. Install irrigation heads as detailed on the Drawings. Irrigation heads to be installed in this work shall be as per approved submittals.
- 2. Irrigation heads shall be installed plumb and vertical to finish grade unless otherwise noted on plan.
- 3. Replace all clogged nozzles with new nozzles.
- 4. Adjust rotor, rotator arcs and radii as needed to prevent overspray onto hardscapes, walkways, buildings, etc.
- 5. Spacing of heads shall not exceed the maximum indicated on the Drawings. In no case shall the spacing exceed the maximum recommended by the manufacturer. Adjust radii to obtain head to head coverage as per manufacturer's specifications.
- 6. Swing joints shall be in accordance with the details and approved submittals.
- 7. Swing joints for heads shall be the same size as the inlet opening of the sprinkler body.
- 8. Add additional heads as needed to provide head to head coverage with no additional cost to the District.

U. Irrigation Head Replacement – Turf Field

1. The contractor shall remove existing irrigation heads, clean and return to District per drawing notes.
2. Cap existing swing joint risers to prevent dirt and debris from entering irrigation system piping.
3. Flag or mark by approved methods location of irrigation head to be replaced.
4. After finished grade is established in soccer fields, install new rotors per contract documents.
5. Flush irrigation lines clear of dirt and debris prior to installing nozzles.
6. Install nozzles and adjust radii and arc as per plan.
7. Contractor shall be responsible to make final head layout adjustments as needed based on actual field conditions at no additional cost to District.

3.05 SYSTEM ADJUSTMENT

- A. The Contractor shall flush and adjust all irrigation heads for optimum performance and to prevent over-spray onto walks, windows, roadways, and buildings as much as possible.
- B. If it is determined that adjustments in the irrigation equipment shall provide proper and more adequate coverage, the Contractor shall make such adjustments after written approval by the District. Adjustments shall include changes in head locations, nozzle size and degrees of arc as required without additional contract costs.
- C. If it is determined that any irrigation equipment is improperly installed, the contractor shall reinstall the equipment to conform to construction documents.
- D. All irrigation heads shall be set perpendicular to finished grades unless otherwise designated on the Drawings.

3.06 TESTING OF THE IRRIGATION SYSTEM

The Contractor shall request the presence of the District at least two (2) working days in advance of testing or as noted below.

A. Existing Main Line Pressure Test in Turf Fields - BASELINE

1. Contractor shall perform baseline pressure test on existing main line in soccer field to be retained and protected prior to start of work.
 - 1.) Contractor shall provide a proposed method to perform pressure test based on requirements listed here within to Landscape Architect for approval prior to start of work.

2.) Contractor shall comply to contract document requirements for Main Line Pressure Test.

B. Main Line Pressure Test

1. Except for non-rigid pipelines and lateral irrigation lines, pressure testing for leakage must be performed on all supply lines installed by the Contractor.
2. Pipelines must be tested in place and all open ends of the pipeline and fittings must be plugged or capped prior to testing.
3. The Contractor must notify the District at least twenty-four (24) hours prior to performing any pressure test. Pressure test must be performed only between the hours of 8:00 a.m. and 5:00 p.m. except that no pressure tests shall be made on Saturdays, Sundays, or legal holidays unless otherwise approved in writing by the District.
4. Test all pressure lines and connections to remote control valves and gate valves under hydrostatic pressure of one hundred and twenty (120) pounds per square inch.
5. Pipelines to be tested must be filled with water, and a pressure gauge must be connected to the pipeline. The pipe must then be placed under a pressure of one hundred twenty (120) pounds per square inch, after which the source of pressure must be cut off, leaving the line under the required pressure.
6. The pressure gauge must be calibrated from zero (0) to two hundred (200) pounds per square inch (psi) in five (5) pound increments and must be accurate within a tolerance of two (2) pounds.
7. The Contractor must provide the necessary pump and equipment required for this test.
8. The pipeline must be tested under the required pressure for a period of two (2) hours. The pressure gauge must remain in place until each test period has been completed.
 - a. Leaks that develop in the tested portion of the system must be located and repaired after each test period when a drop of more than two (2) pounds is indicated by the pressure gauge when testing pipe over one hundred feet (100') in length. There must be no pressure drop permitted when testing pipe from one (1) foot to one hundred feet (100') in length.
 - b. After such leaks have been repaired, the two (2) hour pressure test must be repeated and additional repairs made until pressure test passes.
9. If testing by means of water pressure, air must be expelled from the pipe prior to testing.

10. Tests on pressure lines must be completed prior to backfilling; however, sufficient backfill must be placed in trenches between fittings to insure the stability of the line under pressure.
 - a. In all cases, fittings and couplings must be open to visual inspection for the full period of the test. No testing shall be done until the last solvent welded joint has had twenty-four (24) hours to cure.
11. All hydrostatic tests shall be made only in the presence of the District. No pipe shall be backfilled, except for center loading, until it has been observed, tested and approved in writing by the District.
 - a. Should any work be covered up before such observation and tests are completed, the Contractor shall, at his own expense, uncover the work; and after it has been observed, tested and approved, he then shall make all repairs with such materials as required to restore all work disturbed to original and proper condition.
12. Contractor must disinfect potable water lines according to AWWA standards.

C. Repairs and Coverage

1. All leaks that develop and all defective material in any portion of the irrigation system installed by the Contractor must be repaired or replaced by the Contractor.
2. The entire system must be checked and, if necessary, adjusted for uniform and complete coverage after installing the sprinklers.
3. The risers for sprinklers on slopes must be set approximately perpendicular to the slope. Each series of sprinklers must be installed, and test operated. Nozzles of all sprinklers and bubblers must be adjusted for proper rate of flow and coverage. Sprinklers and/or bubblers must be relocated as required to produce uniform coverage.
4. A coverage test shall be performed after the irrigation system is completed, an irrigation water audit has been performed and recommended adjustments to the irrigation system have been made.
5. Furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from the Drawings or where the system has been willfully installed as indicated on the Drawings, when it is obviously inadequate without bringing this to the attention of the District.
6. The sprinkler coverage test shall be completed and approved before landscape material is planted.

3.07 TEMPORARY REPAIRS

- A. The District reserves the right to make temporary repairs as necessary to keep the irrigation system in operating condition. The exercise of this right shall not relieve

the Contractor of his responsibilities under the terms of the guarantee as herein specified.

3.08 IRRIGATION WATER AUDIT

- A. The Contractor shall conduct an Irrigation Water Audit using a Certified Irrigation Auditor after the final field observation has been completed and all irrigation components are installed in accordance with the plans and specifications and the irrigation system is accepted by the District.
- B. The Irrigation Water Audit shall be conducted in accordance with the latest California Code of Regulations, Title 23, Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.
- C. Contractor shall incorporate Irrigation Water Audit results while programming Irrigation Controller for specific control zones including but not limited calculations for Zone Flow, Precipitation Rates, Irrigation Efficiency and Distribution Uniformity.
- D. The Irrigation Water Audit shall be included in a binder complete with:
 - 1. Cover Sheet with Location, Date, Owner and Certified Irrigation Auditor contact information.
 - 2. Irrigation System Evaluation Checklist
 - 3. Sprinkler Evaluation Data Sheet for each zone
 - 4. Other information as required by latest California Code of Regulations, Title 23, Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.
- E. Contractor shall be responsible to make recommended adjustments to the irrigation system based on Irrigation Water Audit Report, at no additional cost to owner when adjustments required are due to the Contractors installation inaccuracies of irrigation head placement.
- F. Submit Irrigation Water Audit with Close Out Documents.

3.09 MAINTENANCE

Provide maintenance as per SECTION 02970 - **LANDSCAPE MAINTENANCE.**

3.10 CLEAN-UP

Clean up shall be made as each portion of work progresses. Refuse and excess dirt shall be removed from site. All walks and paving shall be broomed or washed down, and any damage sustained to the work of others shall be repaired to original conditions acceptable to the District.

3.11 OBSERVATION PRIOR TO FINAL ACCEPTANCE

- A. The Contractor shall operate each system in its entirety for the District at time of final observation. Any items deemed not acceptable shall be reworked to the complete satisfaction of the District.

- B. The Contractor shall show evidence to the District that the District has received all accessories, charts, Record Drawings and equipment as required before final observation can occur.

3.12 INSPECTION SCHEDULE

- A. The Contractor shall be responsible for notifying the Landscape Architect in advance for the following observations according to the time indicated:
 - 1. Staking points of connection, power connections to controllers, location of irrigation main lines, remote control valves— two (2) working days
 - 2. Staking of laterals and irrigation heads - two (2) working days
 - 3. Sprinkler head coverage test and finish grade review prior to planting - two (2) working days
- B. No site visits shall commence without all items noted in previous Observation Reports, either completed or remedied, unless such compliance has been waived. Failure to accomplish punch list tasks or prepare adequately for desired observations shall make the Contractor responsible for reimbursing the Landscape Architect at his current billing rates per hour, plus transportation costs.
- C. Normal progress observations shall be requested by the Contractor from the Landscape Architect as per observations listed in specifications SECTION 02905 - **LANDSCAPE INSTALLATION**.
- D. No final observation shall commence without Record Drawings. In the event the Contractor calls for an observation without Record Drawings, without completing previously noted corrections or without preparing the system for observations, he shall be responsible for reimbursing the District at the hourly rate in effect at the time of the observation (plus transportation costs) for the inconvenience. No further observations will be scheduled until this charge has been paid.

3.13 FINAL TEST

A final test of the irrigation system shall be made in the presence of the Landscape Architect at the end of the landscape maintenance period. The system will be accepted only when the entire system performs as set forth on the drawings and specifications and all contract documentation has been received and approved.

A. CLOSE OUT DOCUMENTS

- G. Record Drawings; The Contractor must maintain neat and accurate record drawings in conformance with these specifications.
 - 1. Drawings shall be subject to the inspection of the District at all times and must be kept current with all work instructions, change orders, substitutions, and construction adjustments shown thereon and initialed by the inspector.

2. Immediately following the start of the Plant Establishment Period, the Contractor must submit to the District one (1) full size set of Record Drawings.
 - a. Record drawings will be reviewed by the Landscape Architect and shall be returned to the Contractor with comments for revisions, if necessary.
 - b. Notes and dimensions must be drafted on the record drawings in a neat and legible manner. Drawings must be of sufficient quality to allow further black and white reproduction of the original to be clear.
 - c. Illegible, inaccurate, or incomplete record drawings will be returned to the Contractor for revisions.
 3. The work will not be formally accepted until the Record Drawings are approved by the Landscape Architect. Upon approval by the Landscape Architect, two (2) bond sets of record drawings must be delivered to the District in good and acceptable condition prior to final acceptance of the Work.
- H. Controller Charts: The Contractor must provide two (2) sets of 11" x 17" charts for each controller. One copy must be placed on the inside of the controller enclosure door. The second copy must be provided to District maintenance personnel.
1. The base plan for the controller charts must be the approved irrigation Record Drawings.
 2. Each controller chart must show the as-built condition of the area controlled by the automatic controller.
 3. All symbols must be readable at the final reduced size.
 4. The controller chart must include:
 - a. Connections to existing water lines (point-of-connections).
 - b. Location of backflow preventer(s) and controller(s)
 - c. Routing of pressure lines and sleeves (show typical station offset and/or dimensions on record drawings)
 - d. Routing of irrigation conduit and pull boxes
 - e. Locations of remote control valves, gate valves, and quick coupling valves (show station offset and/or dimensions on record drawings)
 - f. Other items as directed by the District.
 5. The chart must be color-coded to easily identify each valve and the respective hydrozone area it irrigates.

6. When completed and approved, the chart must be hermetically sealed between two (2) pieces of 10 mil plastic, minimum.
7. Each chart must be completed and approved prior to final inspection of the irrigation system.
- I. Operation and Maintenance Manual: The Contractor must provide two (2) binders complete with the following information for all irrigation components installed on project:
 1. Operating instructions
 2. Parts list and breakdown diagram
 3. Complete copy of "Approved" irrigation submittals
 4. Controller charts and irrigation scheduled for plan establishment and mature water requirements.
 5. Irrigation audit report.
 6. Acceptance letter that Owner has received "Equipment to be Furnished" and "Training" from contractor as per contract documents.
 7. Certificate of Completion
 8. Written guarantee and certificate of insurance from the Contractor.
- D. Equipment to be Furnished: The Contractor must deliver all tools and equipment called for on the plans and described herein to the District.
 1. Two (2) key sets for locking irrigation controller.
 2. Two (2) valves of each size and type used.
 3. Two (2) decoders of each type used.
 4. Five (5) rotors of each type used.
 5. Five (5) pop up sprinklers of each type used.
 6. Five (5) complete nozzle sets of each type used.
 7. Five (5) bubblers of each type used.
 8. One Hundred (100) feet of drip tubing for each type used.
 9. Ten (10) drip emitters for each type used

10. Two (2) sets of special tools required for removing, disassembling and adjusting each type of sprinkler used.
 11. Two (2) sets of special tools required for removing, disassembling and adjusting each type of joint restraint used.
 12. Two (2) lock and key sets for controller enclosures (keyed as per District specifications)
 13. Two (2) quick coupler keys and matching hose swivels
 14. Two (2) 60" isolation valve opening keys
 15. Four (4) security keys for locking valve boxes
 16. Two (2) hand-held remote-controls transmitters and cases
 17. Two (2) hand-held 2-wire decoder programmers
- E. System Walkthrough and Training with District: After the system has been installed and approved and close out documents have been received by the District, the Contractor shall schedule an onsite system walkthrough and training with the District. The system walkthrough will be no less than 2 hours and shall cover the following:
- a. Operation of controller system including programing of features and alert systems.
 - b. Operation of hand held remote for remote operation of field valves include testing of field valves.
 - c. Operation of field decoder programmer including programing sample decoder.
 - d. Calibration of flow sensor and running flow test.
 - e. Maintenance requirements for valves, sprinklers and nozzles.

END OF SECTION

SECTION 02905

LANDSCAPE INSTALLATION

PART I - GENERAL

1.01 CONDITIONS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any) apply to the work specified in this Section.

1.02 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all landscape work, complete in place, as indicated on Drawings and specified herein.

Work specified in this Section, but is not limited to the following:

1. Soil preparation
2. Decomposed Granite Paving
3. Planting
4. Fertilizer
5. Tree Staking
6. Sodding
7. Clean-up

- B. Related Work Specified in Other Sections

1. SECTION 02260 - **LANDSCAPE GRADING**
2. SECTION 02811 - **IRRIGATION SYSTEM**
3. SECTION 02970 - **LANDSCAPE MAINTENANCE**

1.03 QUALITY ASSURANCE

- A. Source Quality Control

1. Submit documentation to the Owner at least sixty (60) days prior to start of planting that all plant material has been ordered. Arrange procedure for observation of plant material with the Owner at time of submission.

2. Plants shall be subject to observation and approval of the Owner upon delivery for conformity to specifications. Such approval shall not impair the right of observation and rejection during progress of the work.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery

1. The Contractor, upon request by the Owner, shall provide receipts, delivery tickets, load tickets, etc. of all items delivered to the job site to verify products and total quantities.
2. Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name trademark, and conformance to State Law.
3. Deliver plants with legible identification labels.
 - a. Label trees, evergreens, bundles of containers of like shrubs, or ground cover plants.
 - b. State correct plant name and size indicated on plant list.
 - c. Use durable waterproof labels with water-resistant ink which will remain legible for at least sixty (60) days.
6. Protect plant material during delivery to prevent damage to root ball or desiccation of leaves.
7. The Contractor shall notify the Owner forty-eight (48) hours in advance of delivery of all plant materials for observation either at the site or at the local nursery.

B. Storage

1. Store plant material in shade and protect from weather.
2. Maintain and protect plant material. Contractor shall be responsible for replacement of material due to theft or vandalism.

C. Handling

1. Do not drop plant materials.
2. Do not pick up container plant material by stems or trunks.

1.05 JOB CONDITIONS

- A. Planting: Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

- B. Scheduling: Install trees, shrubs, and ground cover plant material before lawn areas are installed and after irrigation system is operable.
- C. Protect work and materials from damage due to construction operations by other contractors and trades and by vandalism. Maintain protection during installation.

1.06 SAMPLES AND TESTS

- A. The Owner reserves the right to take and analyze samples of materials for conformity to specifications at any time. The Contractor shall furnish samples upon request by Owner. Rejected materials shall be immediately removed from the site at Contractor's expense. Cost of testing of materials not meeting specifications shall be paid by the Contractor.
- B. Existing soils report provided at end of section 02905.
- C. Provide horticultural soils report of existing landscape soil after rough grade and submitted topsoil including information on soil texture, filtration rate, nutrient levels and organic matter. Include recommendation for amendment to be added to existing landscape soil and topsoil to mitigate any deficiencies.

1.07 GUARANTEE AND REPLACEMENT

- A. Guarantee: All plant material and other materials installed under the Contract shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship for a period of one (1) year. Any plant found to be dead or not in a satisfactory or healthy condition due to faulty materials, workmanship, or improper maintenance as determined by the, shall be replaced by the Contractor at his expense.
- B. Replacement: Any materials found to be dead, missing or not in a satisfactory or healthy condition during the Contract period shall be replaced immediately. The Owner shall be the sole judge as to the condition of material. Material to be replaced within the guarantee period shall be replaced by the Contractor within fifteen (15) days of written notification by the Owner. All replacement materials and installation shall comply with the Drawings and Specifications.

PART 2 - PRODUCTS

2.01 GENERAL

All materials shall be of standard, approved and first-grade quality and shall be in prime condition when installed and accepted. Any commercially processed or packaged material shall be delivered to the site in the original unopened container bearing the manufacturer's guaranteed analysis. The Contractor shall supply the Owner with a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance of bearing the manufacturer's guaranteed analysis.

2.02 PRODUCTS

- A. Soil Conditioner

1. Gro-Power Plus: Humus (bacteria included based fertilizer and soil conditioner with soil penetrant shall consist of the following percents by weight:

5 % nitrogen
3 % phosphoric acid
1 % potash
50 % humus
15 % humic acids

B. Soil Amendment

1. Nitrogen Stabilized Shavings: 0.56 to 0.84% N based on dry weight for fir bark mulch, treated with relative form of nitrogen (NH₃).
 - a. Particle Size: 95% - 100% passing 6.35 mm standard sieve.
80% - 100% passing 2.33 mm standard sieve.
 - b. Salinity: The saturation extract conductivity shall not exceed 3.5 mil/centimeter at 25 degrees (25°) centigrade as determined by saturation extract method.
 - c. Iron Content: Minimum 0.08% dilute acid soluble Fe on dry weight basis.
 - d. Ash: 0 - 6.0% (dry weight)

C. Fertilizer

1. Fertilizer: Shall be Gro-Power Plus (bacteria included) with soil penetrant and shall consist of the following percents by weight:

5% nitrogen
3% phosphoric acid
1% potash
50% humus
15% humic acid

2. Fertilizer: Shall consist of the following percents by weight:

6% nitrogen
20% phosphoric acid
20% potash

3. Ammonia Sulfate: Shall consist of the following percents by weight:

21% nitrogen
0% phosphoric acid
0% potash

4. Turf Starter Fertilizer: Shall consist of the following percents by weight:

16% nitrogen

6% phosphoric acid
8% potash

5. Planting Tablets: Slow-release 21 gram tablets as manufactured by Agriform or approved equal, containing the following percent-ages of nutrients by weight:

20 % nitrogen
10 % phosphoric acid
5 % potash

6. Inoculum: Shall be Grow-Life Mycorrhizal Inoculum / Soil Conditioner

D. Imported Soil

1. Imported soil shall be obtained from a source approved by the Landscape Architect.
2. Imported topsoil shall be of friable sandy-loam texture free of refuse, roots, heavy or stiff clay, rocks, sticks, brush or other deleterious materials. Topsoil acidity range (pH) shall be between 6.5 to 7.5 containing a minimum of 4% and a maximum of 25% organic matter. Topsoil shall be free of all noxious weeds. Topsoil samples and analysis shall be submitted to the Landscape Architect for approval prior to delivery of any soil to the project site. Should the Landscape Architect reject any portion of the delivered soil, for any reason, it shall be removed immediately at no cost to the Owner.
3. Topsoil, if rejected, shall be amended to meet specifications. Submit amended topsoil analysis to Landscape Architect for verification.
4. See also Landscape Grading Section 02260.

E. Plant Material

1. The plant material indicated on the Drawings by the listed names shall conform to "Standardized Plant Names", second edition, except for names not covered there in, the established customs of the nursery trade is followed. All plants shall be true to name, above one of each bundle or lot shall be tagged with the name and size of the plant, in accordance with the standards of practice recommended by the American Association of Nurserymen. All plant materials shall meet the specifications of Federal, State and County laws, requiring observation for plant diseases and insect infestations. Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant diseases, insect pests or other eggs, and shall have healthy, normal root systems, while filling their containers, but not to the point of being root bound. Use only plant materials that are first class representative of the species and cultivars specified and that conform to all State and local laws governing the sale, transportation, and observation of plant materials. Plants shall have straight, single trunks, unless otherwise specified on the plans. Those specified to be multi-trunk shall have at least three (3) main leaders from the base. Any and all plants that have any

encircling roots (not root bound) shall have root balls lightly slashed on a minimum of three (3) sides to stop encircling root growth. The height and spread of all plant materials shall be measured with branches in their normal position. Sizes of plants shall be as stated on the plant list, five and fifteen (5 & 15) gallon can container stock shall have been grown in that container not less than six (6) months, but shall not have been overgrown in the containers so as to have become root bound.

2. The size of the plants will correspond with that normally expected for species and variety of commercially available nursery stock or as specified in the Special Conditions or Drawings. The minimum acceptable size of all plants, measured before pruning with the branches in normal position, shall conform with the measurements, if any, specified on the Drawings in the list of plants to be furnished. Plants larger in size than specified may be used with the approval of the Owner, but if the use of larger plants is approved, the ball of earth or spread of roots for each plant will be increased proportionally. Plant material shall conform to the following Specifications for container stock:

SHRUBS

<u>SIZE</u>	<u>TYPE</u>	<u>EXAMPLE</u>	<u>HEIGHT</u>	<u>SPREAD</u>	<u>CALIPER</u>
1 Gal.	low growing	Pitt. tobira - etc.	8-10"	6-8"	
1 Gal.	tall growing	Pitt. eugen. - etc.	10-12"	6-8"	
5 Gal.	low growing	Pitt. tobira - etc.	15-18"	15-18"	
5 Gal.	tall growing	Pitt. eugen. - etc.	24-30"	15-18"	
15 Gal.	low growing	Pitt. tobira - etc.	30-36"	30-36"	
15 Gal.	tall growing	Pitt eugen. - etc.	42-48"	36-42"	

TREES

5 Gal.	slow growing	Quercus - etc.	5-6'	12-18"	1/4 - 1/2"
5 Gal.	fast growing	Euc. - Prunus - etc.	6-7'	12-18"	1/2 - 3/4"
15 Gal.	slow growing	Quercus - Pyrus - etc.	7-8'	24-30"	3/4 - 1"
15 Gal.	fast growing	Euc. - Prunus - etc.	8-10'	30-36"	1- 1 1/4"
24" Box	slow growing	Quercus - Pyrus - etc.	8-10'	3-4'	1 1/2-1 3/4"
24" Box	fast growing	Euc. - Prunus - etc.	10-12'	4-5'	1 3/4-2 1/2"
30" Box	slow growing	Quercus - Pyrus - etc.	12-14'	6-7'	2 1/2 - 3"
30" Box	fast growing	Euc. - Prunus - etc.	12-14'	6-7'	2 1/2 - 3"
36" Box	slow growing	Quercus - Pyrus - etc.	14-16'	8-10'	2 1/2 - 3"
36" Box	fast growing	Euc. - Prunus - etc.	14-16'	8-10'	2 1/2 - 3"
36" Box	fast growing	Euc.- Prunus - etc.	14-16'	8-10'	2 1/2 - 3"

3. All plants not conforming to the requirements herein specified, shall be considered defective and such plants, whether in place or not, shall be marked as rejected and immediately removed from the site of the work and replaced with new plants at the Contractor's expense. The plants shall be of the species, variety, size, and condition specified herein or as shown on the Drawings. Under no conditions will there be any substitution of plants or sizes listed on the plans, except with the expressed written approval of the Owner.
4. At no time shall trees or plant materials be pruned, trimmed or topped prior to delivery and any alteration of their shape shall be conducted only with the

approval and when in the presence of the Owner and/or as noted on the Planting Specifications.

5. Nursery Grown and Collected Stock

- a. Plant materials shall conform with the best edition of ANSI Z60.1-1990 American Standard for Nursery Stock.
- b. Grown under climatic conditions similar to those in locality of project.
- c. Container-grown stock in vigorous, healthy condition, not root bound or with root system hardened off.
- d. Use only linear stock plant material which is well established in removable containers or formed homogeneous soil sections.

6. Ground Cover: Ground cover plants shall be grown in flats, peat pots, or taken as cuttings, as indicated on the plans. Flat grown plants (rooted cuttings) shall remain in those flats until transplanting. The flat's soil shall contain sufficient moisture so that it will not fall apart when lifting the plants. If plants from peat pots are used, the pots shall be protected at all times prior to planting to prevent unnecessary drying of the rootball.

F. Tree Staking Material

1. Stakes for Tree Support

- a. Wood Tree Stakes: Lodge pole pine stakes full-length treated with copper naphthanate. Minimum nominal size: two inches in diameter x eight feet (2"x 8') long and pointed at one (1) end (adjust length to fit tree). Stakes shall be free from knots, checks, splits, or disfigurements.

2. Ties

- a. 24" length cinch tie as manufactured by V.I.T. Company 1-714-871-2309 or approved equal.

3. Duckbill Total System tree anchor kit with white vinyl coated cable by Foresight Products, Inc., 1-800-325-5360.

- a. Safety sleeve one-half (1/2) inch black polyethylene tubing.

G. Mulch

1. Mulch shall be walk-on fir bark mulch as manufactured by Lassen Forest Products, Red Bluff CA., 1-800-621-8557 or approved equal.

2. The mulch shall consist of fir bark mulch with a particle range of three-quarter to one and one-half (3/4 -1 1/2) inch in diameter. Shredded redwood bark ("gorilla hair") is not acceptable.

H. Sod

1. Sod varieties shall be as specified on Drawings. Sod shall be healthy, weed free, and obtained from a certified sod growing nursery or farm.
2. All sod shall be cut within twenty-four (24) hours prior to installation.

L. Fungicide

1. "Subdue" (Cibiba-Geigy) or approved equal.
2. Sod Planting – Fungicide labeled for fungi known to effect turf grass in Northern Central Valley or Northern California.

M. Pre-emergent

1. Pre-emergent, as approved by the Landscape Architect - prevent annual weed development in hydromulch applications. Do not use in hydromulch mixes incorporating annual wildflower or grass seeds.

N. Weed Control

1. Use Enide (Upjohn), Dymid (Elanco Products Co.), Treflan, Eptan, Surflan or approved equal.

O. Root Barrier

1. By Deep Root Corp. model numbers UB-18-2 or approved equal.

P. Miscellaneous Materials

1. Sand: wash river sand or equal.
2. Tree wound paint: as approved. Morrison Tree Seal, Cabot Tree Paint, or approved equal.

PART 3 - EXECUTION

3.01 OBSERVATION

The Owner's Representative to verify that topsoil has been imported, and final grades have been established prior to beginning planting operations. The Owner to observe, shrubs and liner stock plant material for injury, insect infestation and trees and shrubs for improper pruning. Do not begin planting of trees until deficiencies are corrected or plants replaced.

3.02 LAYOUT OF PLANTING AREAS

- A. Stake or mark with lime locations for plants and outline of planting beds on ground. Do not begin excavation until plant locations and plant beds are acceptable to the Landscape Architect. The irrigation system shall be operational and approved prior to planting.
- B. Locations for plants and outlines of areas to be planted shall be marked on the ground by the Contractor before any plant pits are dug. All such locations shall be approved by the Landscape Architect. If an underground construction or utility line is discovered prior to work, other locations for planting may be selected by the Landscape Architect.

3.03 INSTALLATION

A. Preparation of planting areas areas:

- 1. Amend soil per recommendations of soil analysis outlined in Section 02905 Paragraph 3.07.
- 2. All soil areas shall be compacted and settled by application of heavy irrigation to a minimum depth of twelve (12) inches.
- 3. After grading and de-rocking, and prior to planting, add 3" of imported soil in turf areas, and incorporate amendments in Section 02905 Paragraph 2.02. to a depth of four (4) inches.
- 4. At time of planting, the top six (6) inches of all areas to be planted shall be free of stones, stumps, or other deleterious matter one (1) inch in diameter or larger, and shall be free from all wire plaster, or similar objects that would be a hindrance to planting and maintenance. All rock larger than 1 inch to be removed by mechanical means, either by sieve for loose rock and by heavy equipment if solid bedrock.

B. Final Grades

- 1. Finished grading shall insure proper drainage of the site. Conform to specification SECTION 02260 - **LANDSCAPE GRADING**.
- 2. The following areas shall be graded so that the final grades shall be established below adjacent paved areas, sidewalks, valve boxes, clean outs, area drains, curbs, etc. as follows:
 - a. Shrub/ground cover areas: 2-1/2 inches
 - b. Sod areas: 1-1/2 inches
- 3. Surface drainage shall be away from all building foundations, where applicable.
- 4. Dispose of excess or unacceptable soil from the site.

3.04 PLANT INSTALLATION

A. General

1. Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice, as approved by the Owner.
2. Only as many plants as can be planted and watered on that same day shall be distributed in a planting area.
3. Container shall be opened and plants shall be removed in such a manner that the ball of earth surrounding the roots is not broken and they shall be planted and watered as herein specified immediately after removal from the containers. Containers shall not be opened prior to placing the plants in the planting area.

B. Layout of Major Plantings

1. Locations for plants and outlines of areas to be planted shall be marked on the ground by the Contractor before any plant pits are dug. All such locations shall be approved by the Owner. If an underground construction or utility line is discovered prior to work, other locations for planting may be selected by the Owner.

C. Planting of Trees and Shrubs

1. Excavation for planting shall include the stripping and stocking of all acceptable topsoil encountered within the areas to be excavated for trenches, tree holes, plant pits and planting beds.
2. Excess soil generated from the planting holes and not used as backfill or in establishing the final grades shall be removed from the site.
3. Excavating for Planting:
 - a. Shape
 - i. Vertical sides and flat bottom.
 - ii. Plant pits to be square for box material, circular for canned material.
 - iii. Scarify sides and bottom of each pit.
 - b. Size: All trees and shrubs shall have planting pits dug twice the diameter of the root ball. Backfill around the root ball with prepared backfill mix.
4. Protect all areas from excessive compaction when trucking plants or other materials to planting site.
5. Install Root Barrier at all locations where tree is with 5'-0" of concrete or other hardscape.
6. Can Removal

- a. Cut cans on two (2) sides with an acceptable can cutter.
 - b. Do not injure the root ball.
 - c. Do not cut cans with spade or ax.
 - d. Carefully remove plants without injury or damage to root ball.
 - e. After removing plant, manually scarify root ball to loosen perimeter roots.
7. Box Removal
 - a. Remove bottom of plant boxes before planting.
 - b. Remove sides of box without damage to root ball after positioning plant and partially backfilling.
8. Center plant in pit.
9. Face plants with fullest growth into prevailing wind.
10. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball roots.
11. Remainder of planting pit shall be backfilled with:
 - a. Amended soil per Soil Analysis and Drawing Detail.
 - b. Grow Power-Plus per rate of manufacture's recommendations.
 - c. Specified type and quantity of planting tablets
12. All plants which settle shall be raised to the correct level. After the plant has been placed, additional backfill shall be added to the hole to cover approximately one-half (1/2) of the height of the root ball. Water shall be added to the top of the partly filled hole to thoroughly saturate the root ball and adjacent soil.
13. After the water has completely drained, planting tablets shall be placed adjacent to but not in contact with root ball:

One (1) tablet per 1-gallon container
Two (2) tablets per 5-gallon container
Three (3) tablets per 15-gallon container
Four (4) tablets per 24" box
Five (5) tablets per 30" box
Six (6) tablets per 36" box
Seven (7) tablets per 42" box
Eight (8) tablets per 48" box and larger box sizes
14. The remainder of the hole shall be backfilled.

15. After backfilling an earthen basin shall be constructed around each plant. Each basin shall be of a depth sufficient to hold at least two (2) inches of water. Basin shall be of a size suitable for the individual plant. In no case shall the basin for fifteen (15) gallon plant be less than four (4) feet in diameter; a five (5) gallon plant less than three (3) feet in diameter. The basins shall be constructed of amended backfill materials and shall not be constructed for trees in turf areas. Edge of planter to be 2-1/2" below finish grade to allow for bark and prevent spilling onto sidewalk and existing parking lot.
16. Pruning: Pruning shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for loss of roots during transplanting, but never to exceed one-third (1/3) of the branching structure. Upon approval of the Owner, pruning may be done before delivery of plant, but not before plants have been observed and approved. Cuts over three-quarter (3/4) inch in diameter shall be painted with tree wound paint.
17. Staking and Guying
 - a. Staking of all trees shall conform to tree staking and tree guying details.
 - b. Flagging: All guys are to be flagged 90% of the wire length and shall be covered with black polyethylene one-half (1/2) inch diameter tube.
 - c. One (1) tree of each size shall be staked and approved by the Owner prior to continued staking.

D. Planting of Ground Cover

1. Ground cover shall be planted in straight rows and evenly spaced, unless otherwise noted, and at intervals called out in the Drawings. Triangular spacing shall be used unless otherwise noted on the Drawing.
2. Each rooted plant shall be planted with its proportionate amount of flat soil or in a peat pot in a manner that will insure minimum disturbance of the root system, but in no case shall this depth be less than two (2) nodes. To avoid drying out, planting shall be immediately irrigated after planting until the entire area is soaked to the full depth of each hole, unless otherwise noted on the Drawing.
3. Care shall be exercised at all times to protect the plants after planting. Any damage to plants by trampling or other operations of this Contract shall be repaired immediately.

E. Sod Planting

1. Soil Preparation: As per paragraph 3.03 A.
2. Grading and Rolling: Carefully smooth all surfaces to be sodded. Roll area to expose soil depressions or surface irregularities. Regrade as required.

3. Fertilizing: Spread turf fertilizer (16-6-8) onto the soil evenly at the rate of four (4) pounds per 1,000 square feet of lawn area.
4. Laying sod: Lay first strip of sod along a straight line (use a string in irregular areas). Butt joints tightly, but do not overlap edges. On second strip, stagger joints. Use a sharp knife to cut sod to fit curves, edges and irrigation heads.
5. Watering: Do not lay whole lawn before watering. When a conveniently large area has been sodded, water lightly to prevent drying. Continue to lay sod and to water until installation is complete.
6. Rolling sod: After laying all sod, roll lightly to eliminate irregularities and to form good contact between sod and soil. Avoid a very heavy roller or excessive initial watering which may cause roller marks.
7. Irrigation: Water thoroughly the completed lawn surface. Soil should be moistened at least eight (8) inches deep. Repeat irrigation at regular intervals to keep sod moist at all times until rooted. After sod is established, decrease frequency and increase amount of water per application as necessary.
8. Replacement: Replace all dead or dying sod with equal material as directed by the Owner.

H. Weed Control

1. Apply weed control to all non-turf areas after completion of all planting and one (1) complete watering (to "set" plants).
2. Apply as per manufacturer's specifications.

I. Fungicide

1. Apply fungicide to all turf following installation
2. Apply as per manufacturer's specifications.
3. After initial application apply at two-week intervals as required to prevent fungus until end of Contract period.

J. Hardpan Conditions

1. Where hardpan exists, whether it is in the form of caliche or other impervious clay, and it is within the top two-and-one-half feet (2-1/2') of soil, use powered equipment to break through completely at each plant location to allow drainage and root growth. Remove hardpan at least one-and-one-half feet (1-1/2') greater than the rootball diameter of plant. Backfill with soil mix as specified.
2. Where hard pan is within the first twelve (12) inches of soil, it shall be completely penetrated for all trees and shrubs.

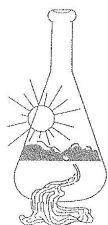
3.05 OBSERVATION SCHEDULE

- A. The Contractor shall be responsible for notifying the Owner in advance for the following observations according to the time indicated:
1. Pre-construction conference - 7 days.
 2. Rough grade review - 48 hours.
 3. Controller and backflow preventer installation review - 48 hours.
 4. Irrigation pressure line and lateral line installation and testing - 48 hours.
 5. Irrigation sprinkler coverage test - 48 hours.
 6. Finish grade review - 48 hours.
 7. Plant material review - 48 hours.
 8. Plant layout review - 48 hours.
 9. Soil preparation, plant layout, and planting operations. One (1) tree with each type of specified shall be approved prior to planting of trees - 48 hours.
 10. End of landscape installation - 48 hours.
 11. Final Acceptance - 48 hours
- B. No site visits shall commence without all items noted in previous Observation Reports either completed or remedied, unless such compliance has been waived. Failure to accomplish punch list tasks or prepare adequately for desired observations shall make the Contractor responsible for reimbursing the Owner at his current billing rates per hour, plus transportation costs.

3.06 CLEAN UP

After all planting operations have been completed; remove all trash, excess soil, empty plant containers or rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. The Contractor shall pick-up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week, and/or the last working day of each week. All trash shall be removed completely from the site. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition acceptable to the Owner.

3.07 SOIL ANALYSIS



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 02/26/2020
Date Submitted 02/19/2020

To: Jenna Johnson
Melton Design Group
820 Broadway
Chico, CA 95928

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : CENTENNIAL PARK Site ID : 1.
Thank you for your business.

* For future reference to this analysis please use SUN # 81515-170210.

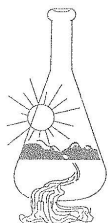
SOIL ANALYSIS

Saturation Percent (SP)	34	Soil Texture	Sandy Loam
pH	6.44		
E.C.	0.14 mmho/cm		
Tot.Dissolved Salts	89.6 ppm		
Infiltration Rate (0% Slope)	0.75 in/hr		
% Organic Matter	9.5		
C.E.C.	15.9 meq/100g		
Sodium Absorption Ratio (SAR)	1.7		
Exchangable Sodium Percent (ESP)	1.3		
Gypsum Req. (CaSO4*2H2O)	None Required		
est. Nitrogen Release	2.7 #/1000 sq.ft.		

Nitrate	0.62	ppm
Phosphorus	6.68	ppm
Potassium	96.21	ppm
Sulfur	3.29	ppm
Chloride	4.02	ppm
Carbonates	44.83	ppm
Sodium	46.36	ppm
Calcium	1867.78	ppm
Magnesium	740.79	ppm
Boron	0.32	ppm
Copper	2.53	ppm
Iron	49.73	ppm
Manganese	32.35	ppm
Zinc	0.87	ppm

*

Very	Low	Adequate	Excessive
Low			



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170210

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 1

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL pH (Acidity and Alkalinity)

The pH of this sample indicates the soil is moderately acid and should be modified for non acid-tolerant plants. Apply 11 pounds of Lime per 1000 sq.ft. and work into ground before planting.

DISSOLVED SALTS (Indicated by E.C. & TDS)

These conditions are in the normal range for plant growth.

SOIL TEXTURE AND RATE OF WATER INFILTRATION

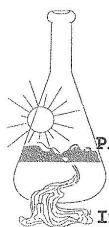
The infiltration rate for all soil textures decreases with increasing ground slope. At 0 to 4%, 5 to 8%, 9 to 12%, 13 to 16% and above 16% the infiltration rate of this sample decreases from 0.75 to 0.60, 0.45, 0.30, 0.19, respectively. Infiltration rate also decreases with percent of ground cover and by compaction.

WATER PENETRATION OF SOIL DUE TO CHEMICAL CHARACTERISTICS

When exchangeable Sodium increases in the soil, water penetration decreases. Based on SAR and ESP values this sample has no penetration problem due to soil Sodium. No Gypsum required.

ORGANIC MATTER

Organic matter provides a slow nitrogen release and aids water retention. This sample has a moderate Organic Matter content. No further organic matter is essential, a 2-3 in. top dressing will aid water retention.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

PAGE #2

DATE 02/26/2020
SUN NUMBER 170210

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 1

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL BORON

Boron concentrations are in a range allowing normal plant growth.

SOIL MICRONUTRIENTS

Micronutrients, Copper, Iron, Manganese and Zinc, in soil are present in small amounts. However, they play a necessary role in plant metabolism. Without appropriate amounts plants will not thrive. Apply the following per 1000/ sq.ft. Do not mix micronutrients during application (use a separate application for each element indicated).

Because copper, manganese and zinc are in very small amounts, dissolve (each) in 2 gallons of water and use a sprayer to obtain an even application.
Apply , 0.5 # Zinc Sulfate and water.

SOIL MACRONUTRIENTS : NITROGEN-PHOSPHORUS-POTASSIUM (N-P-K)

GENERAL N-P-K RECOMMENDATION

Use ONE of these NPK preparations for the first fertilizer application.

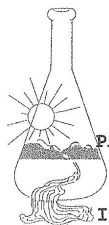
Standard NPK Fertilizer Preparations	6-20-20	5-20-10	16-16-16	0-10-10	28-3-4	21-0-0	Customer Choice
-----	-----	-----	-----	-----	-----	-----	-----
#/1000 sq.ft.	21	25	N/A	N/A	N/A	N/A	**

GRASS OR SOD PREPARATION

Till in organic matter, N,P,K and micro nutrients in addition to any lime gypsum or sulfur as directed above. Smooth soil surface and follow seed or sod producers direction for moisture and product application.

TREES AND SHRUBS

Excavate holes for planting shrubs and trees to at least twice the volume of the container. Prepare backfill for tree and shrub planting holes by mixing three parts of native soil (or imported top soil) with one part organic amendment (preferably nitrogen and iron fortified) and 2.5 pounds of 6-20-20 per yard of mix. For extended fertilization, place slow release fertilizer tablets in each hole per manufacturer's instructions. If 6-20-20 was not directly added to backfill mix, during backfill apply uniformly 1/2 oz of 6-20-20 per gallon containers, 2.5 oz per 5 gallons, 6 oz per 24 inch boxes.



PAGE #3

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170210

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 1

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

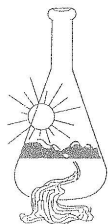
Summary and Suggested Sequence of Soil Improvements (#/1000 Sq.Ft.)

=====

Lime	11	#	
Organic Amendment	None presently required		
N-P-K Fertilizer	See above chart		
Micro Nutrients			
Zinc	0.5	#	Zinc Sulfate
Sulfate-Sulfur	2	#	Ammonium Sulfate

Maintenance Fertilization

Apply 5 pounds of Ammonium sulfate (21-0-0) per 1000 sq.ft. every month until plants become established. After established, apply 28-3-4 (or similar preparation) to provide desired growth rate and color.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 02/26/2020
Date Submitted 02/19/2020

To: Jenna Johnson
Melton Design Group
820 Broadway
Chico, CA 95928

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : CENTENNIAL PARK Site ID : 3 TOP 10 INCH.
Thank you for your business.

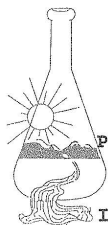
* For future reference to this analysis please use SUN # 81515-170211.

SOIL ANALYSIS

Saturation Percent (SP)	36	Soil Texture	Sandy Loam
pH	6.36		
E.C.	0.37	mmho/cm	
Tot.Dissolved Salts	236.8	ppm	
Infiltration Rate (0% Slope)	0.75	in/hr	
% Organic Matter	10.2		
C.E.C.	16.3	meq/100g	
Sodium Absorption Ratio (SAR)	1.2		
Exchangable Sodium Percent (ESP)	0.5		
Gypsum Req. (CaSO ₄ *2H ₂ O)	None Required		
est. Nitrogen Release	2.9	#/1000 sq.ft.	

Nitrate	0.37	ppm	*
Phosphorus	19.72	ppm	*****
Potassium	329.55	ppm	*****
Sulfur	2.61	ppm	****
Chloride	5.41	ppm	*****
Carbonates	158.53	ppm	*****
Sodium	20.45	ppm	*****
Calcium	2071.26	ppm	*****
Magnesium	615.66	ppm	*****
Boron	0.31	ppm	*****
Copper	1.66	ppm	*****
Iron	65.07	ppm	*****
Manganese	57.50	ppm	*****
Zinc	2.26	ppm	*****

Very	Low	Adequate	Excessive
Low			



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

PAGE #2

DATE 02/26/2020
SUN NUMBER 170211

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 3 TOP 10 INCH

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL BORON

Boron concentrations are in a range allowing normal plant growth.

SOIL MICRONUTRIENTS

Micronutrients, Copper, Iron, Manganese and Zinc, in soil are present in small amounts. However, they play a necessary role in plant metabolism. Without appropriate amounts plants will not thrive. Soil has adequate amounts - no application needed.

SOIL MACRONUTRIENTS : NITROGEN-PHOSPHORUS-POTASSIUM (N-P-K)

GENERAL N-P-K RECOMMENDATION

Use ONE of these NPK preparations for the first fertilizer application.

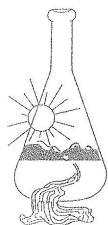
Standard NPK Fertilizer Preparations	6-20-20	5-20-10	16-16-16	0-10-10	28-3-4	21-0-0	Customer Choice
-----	-----	-----	-----	-----	-----	-----	None
#/1000 sq.ft.	21	25	8	N/A	N/A	N/A	**

GRASS OR SOD PREPARATION

Till in organic matter, N,P,K and micro nutrients in addition to any lime gypsum or sulfur as directed above. Smooth soil surface and follow seed or sod producers direction for moisture and product application.

TREES AND SHRUBS

Excavate holes for planting shrubs and trees to at least twice the volume of the container. Prepare backfill for tree and shrub planting holes by mixing three parts of native soil (or imported top soil) with one part organic amendment (preferably nitrogen and iron fortified) and 2.5 pounds of 6-20-20 per yard of mix. For extended fertilization, place slow release fertilizer tablets in each hole per manufacturer's instructions. If 6-20-20 was not directly added to backfill mix, during backfill apply uniformly 1/2 oz of 6-20-20 per gallon containers, 2.5 oz per 5 gallons, 6 oz per 24 inch boxes.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170211

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 3 TOP 10 INCH

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL pH (Acidity and Alkalinity)

The pH of this sample indicates the soil is moderately acid and should be modified for non acid-tolerant plants. Apply 15 pounds of Lime per 1000 sq.ft. and work into ground before planting.

DISSOLVED SALTS (Indicated by E.C. & TDS)

These conditions are in the normal range for plant growth.

SOIL TEXTURE AND RATE OF WATER INFILTRATION

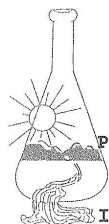
The infiltration rate for all soil textures decreases with increasing ground slope. At 0 to 4%, 5 to 8%, 9 to 12%, 13 to 16% and above 16% the infiltration rate of this sample decreases from 0.75 to 0.60, 0.45, 0.30, 0.19, respectively. Infiltration rate also decreases with percent of ground cover and by compaction.

WATER PENETRATION OF SOIL DUE TO CHEMICAL CHARACTERISTICS

When exchangeable Sodium increases in the soil, water penetration decreases. Based on SAR and ESP values this sample has no penetration problem due to soil Sodium. No Gypsum required.

ORGANIC MATTER

Organic matter provides a slow nitrogen release and aids water retention. This sample has a adequate Organic Matter content. No further organic matter is essential, a 2-3 in. top dressing will aid water retention.



PAGE #3

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170211

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 3 TOP 10 INCH

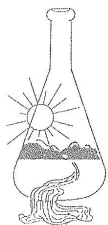
SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

Summary and Suggested Sequence of Soil Improvements (#/1000 Sq.Ft.)
=====

Lime	15	#
Organic Amendment	None presently required	
N-P-K Fertilizer	See above chart	
Sulfate-Sulfur	2	# Ammonium Sulfate

Maintenance Fertilization

Apply 5 pounds of Ammonium sulfate (21-0-0) per 1000 sq.ft. every month until plants become established. After established, apply 28-3-4 (or similar preparation) to provide desired growth rate and color.



11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 02/26/2020
Date Submitted 02/19/2020

To: Jenna Johnson
Melton Design Group
820 Broadway
Chico, CA 95928

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : CENTENNIAL PARK Site ID : 5 SHUB.
Thank you for your business.

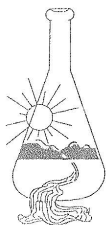
* For future reference to this analysis please use SUN # 81515-170212.

SOIL ANALYSIS

Saturation Percent (SP)	34	Soil Texture	Sandy Loam
pH	6.38		
E.C.	0.16	mmho/cm	
Tot.Dissolved Salts	102.4	ppm	
Infiltration Rate (0% Slope)	0.75	in/hr	
% Organic Matter	8.7		
C.E.C.	14.8	meq/100g	
Sodium Absorption Ratio (SAR)	1.9		
Exchangable Sodium Percent (ESP)	1.5		
Gypsum Req. (CaSO ₄ *2H ₂ O)	None	Required	
est. Nitrogen Release	2.5	#/1000 sq.ft.	

Nitrate	3.29	ppm
Phosphorus	6.39	ppm
Potassium	74.44	ppm
Sulfur	10.74	ppm
Chloride	2.57	ppm
Carbonates	36.97	ppm
Sodium	51.62	ppm
Calcium	1656.24	ppm
Magnesium	739.51	ppm
Boron	0.25	ppm
Copper	1.56	ppm
Iron	52.57	ppm
Manganese	40.97	ppm
Zinc	0.65	ppm

Very Low	Adequate	Excessive
Low		



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170212

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 5 SHUB

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL pH (Acidity and Alkalinity)

The pH of this sample indicates the soil is moderately acid and should be modified for non acid-tolerant plants. Apply 13 pounds of Lime per 1000 sq.ft. and work into ground before planting.

DISSOLVED SALTS (Indicated by E.C. & TDS)

These conditions are in the normal range for plant growth.

SOIL TEXTURE AND RATE OF WATER INFILTRATION

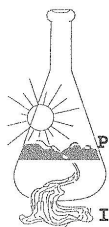
The infiltration rate for all soil textures decreases with increasing ground slope. At 0 to 4%, 5 to 8%, 9 to 12%, 13 to 16% and above 16% the infiltration rate of this sample decreases from 0.75 to 0.60, 0.45, 0.30, 0.19, respectively. Infiltration rate also decreases with percent of ground cover and by compaction.

WATER PENETRATION OF SOIL DUE TO CHEMICAL CHARACTERISTICS

When exchangeable Sodium increases in the soil, water penetration decreases. Based on SAR and ESP values this sample has no penetration problem due to soil Sodium. No Gypsum required.

ORGANIC MATTER

Organic matter provides a slow nitrogen release and aids water retention. This sample has a moderate Organic Matter content. To maintain moisture and provide sustained nitrogen release a level of 10% organic matter is recommended. This can be accomplished by adding 1 yards per 1000 sq.ft. of ground fir bark that is approximately 75% organic matter (i.e. typically found in ground fir bark which also has naturally low salt and boron concentrations). In California, the MWEL0 ordinance requires a fixed application of four yards of COMPOST if the soil organic matter is less than 6%. However, of significant concern when applying COMPOST is the potential for the compost to have high salt, high boron content, high C to N ratio and having a highly variable pH (very high to very low). All of these COMPOST characteristics can have very negative affect on plant growth. Take care by having the compost analyzed or by seeing a recent analysis of the compost to be used.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

PAGE #2

DATE 02/26/2020
SUN NUMBER 170212

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 5 SHUB

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL BORON

Boron concentrations are in a range allowing normal plant growth.

SOIL MICRONUTRIENTS

Micronutrients, Copper, Iron, Manganese and Zinc, in soil are present in small amounts. However, they play a necessary role in plant metabolism. Without appropriate amounts plants will not thrive. Apply the following per 1000/ sq.ft. Do not mix micronutrients during application (use a separate application for each element indicated).

Because copper, manganese and zinc are in very small amounts, dissolve (each) in 2 gallons of water and use a sprayer to obtain an even application. Apply , 0.5 # Zinc Sulfate and water.

SOIL MACRONUTRIENTS : NITROGEN-PHOSPHORUS-POTASSIUM (N-P-K)

GENERAL N-P-K RECOMMENDATION

Use ONE of these NPK preparations for the first fertilizer application.

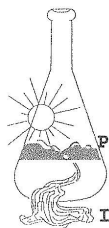
Standard NPK Fertilizer Preparations	6-20-20	5-20-10	16-16-16	0-10-10	28-3-4	21-0-0	Customer Choice
-----	-----	-----	-----	-----	-----	-----	-----
#/1000 sq.ft.	19	22	N/A	N/A	N/A	N/A	**

GRASS OR SOD PREPARATION

Till in organic matter, N,P,K and micro nutrients in addition to any lime gypsum or sulfur as directed above. Smooth soil surface and follow seed or sod producers direction for moisture and product application.

TREES AND SHRUBS

Excavate holes for planting shrubs and trees to at least twice the volume of the container. Prepare backfill for tree and shrub planting holes by mixing three parts of native soil (or imported top soil) with one part organic amendment (preferably nitrogen and iron fortified) and 2.5 pounds of 6-20-20 per yard of mix. For extended fertilization, place slow release fertilizer tablets in each hole per manufacturer's instructions. If 6-20-20 was not directly added to backfill mix, during backfill apply uniformly 1/2 oz of 6-20-20 per gallon containers, 2.5 oz per 5 gallons, 6 oz per 24 inch boxes.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

PAGE #3

DATE 02/26/2020
SUN NUMBER 170212

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 5 SHUB

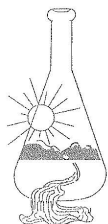
SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

Summary and Suggested Sequence of Soil Improvements (#/1000 Sq.Ft.)
=====

Lime	13	#	
Organic Amendment	1	Yd./1000 Sq.Ft.	Bulk organic amendment (nitrified). or in Calif. if Org.Mat. less than 6% use 4 yd compost.
N-P-K Fertilizer			See above chart
Micro Nutrients			
Zinc	0.5	#	Zinc Sulfate
Sulfate-Sulfur	2	#	Ammonium Sulfate

Maintenance Fertilization

Apply 5 pounds of Ammonium sulfate (21-0-0) per 1000 sq.ft.every month
until plants become established. After established, apply 28-3-4 (or similar
preparation) to provide desired growth rate and color.



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 02/26/2020
Date Submitted 02/19/2020

To: Jenna Johnson
Melton Design Group
820 Broadway
Chico, CA 95928

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : CENTENNIAL PARK Site ID : 8 LP 2FT WET.
Thank you for your business.

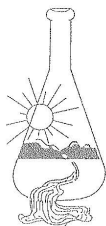
* For future reference to this analysis please use SUN # 81515-170213.

SOIL ANALYSIS

Saturation Percent (SP)	34	Soil Texture	Sandy Loam
pH	6.08		
E.C.	0.11	mmho/cm	
Tot.Dissolved Salts	70.4	ppm	
Infiltration Rate (0% Slope)	0.75	in/hr	
% Organic Matter	7.8		
C.E.C.	16.5	meq/100g	
Sodium Absorption Ratio (SAR)	1.7		
Exchangable Sodium Percent (ESP)	1.3		
Gypsum Req. (CaSO ₄ *2H ₂ O)	None Required		
est. Nitrogen Release	2.3	#/1000 sq.ft.	

Nitrate	1.23	ppm	*
Phosphorus	3.13	ppm	***
Potassium	62.38	ppm	*****
Sulfur	8.41	ppm	*****
Chloride	6.29	ppm	*****
Carbonates	15.66	ppm	*****
Sodium	48.69	ppm	*****
Calcium	1902.28	ppm	*****
Magnesium	805.42	ppm	*****
Boron	0.22	ppm	*****
Copper	0.58	ppm	*****
Iron	26.68	ppm	*****
Manganese	17.01	ppm	*****
Zinc	0.17	ppm	*****

Very	Low	Adequate	Excessive
Low			



Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170213

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 8 LP 2FT WET

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL pH (Acidity and Alkalinity)

The pH of this sample indicates the soil is moderately acid and should be modified for non acid-tolerant plants. Apply 28 pounds of Lime per 1000 sq.ft. and work into ground before planting.

DISSOLVED SALTS (Indicated by E.C. & TDS)

These conditions are in the normal range for plant growth.

SOIL TEXTURE AND RATE OF WATER INFILTRATION

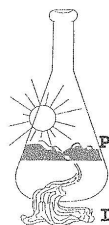
The infiltration rate for all soil textures decreases with increasing ground slope. At 0 to 4%, 5 to 8%, 9 to 12%, 13 to 16% and above 16% the infiltration rate of this sample decreases from 0.75 to 0.60, 0.45, 0.30, 0.19, respectively. Infiltration rate also decreases with percent of ground cover and by compaction.

WATER PENETRATION OF SOIL DUE TO CHEMICAL CHARACTERISTICS

When exchangeable Sodium increases in the soil, water penetration decreases. Based on SAR and ESP values this sample has no penetration problem due to soil Sodium. No Gypsum required.

ORGANIC MATTER

Organic matter provides a slow nitrogen release and aids water retention. This sample has a moderate Organic Matter content. To maintain moisture and provide sustained nitrogen release a level of 10% organic matter is recommended. This can be accomplished by adding 1 yards per 1000 sq.ft. of ground fir bark that is approximately 75% organic matter (i.e. typically found in ground fir bark which also has naturally low salt and boron concentrations). In California, the MWEL0 ordinance requires a fixed application of four yards of COMPOST if the soil organic matter is less than 6%. However, of significant concern when applying COMPOST is the potential for the compost to have high salt, high boron content, high C to N ratio and having a highly variable pH (very high to very low). All of these COMPOST characteristics can have very negative affect on plant growth. Take care by having the compost analyzed or by seeing a recent analysis of the compost to be used.



PAGE #3

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170213

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 8 LP 2FT WET

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

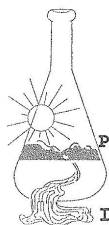
Summary and Suggested Sequence of Soil Improvements (#/1000 Sq.Ft.)

=====

Lime	28	#	
Organic Amendment	1	Yd./1000 Sq.Ft.	Bulk organic amendment (nitrified). or in Calif. if Org.Mat. less than 6% use 4 yd compost.
N-P-K Fertilizer	See above chart		
Micro Nutrients			
Copper	0.2	#	Copper sulfate
Zinc	0.5	#	Zinc Sulfate
Sulfate-Sulfur	2	#	Ammonium Sulfate

Maintenance Fertilization

Apply 5 pounds of Ammonium sulfate (21-0-0) per 1000 sq.ft. every month until plants become established. After established, apply 28-3-4 (or similar preparation) to provide desired growth rate and color.



PAGE #2

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

DATE 02/26/2020
SUN NUMBER 170213

Information requested by:
Jenna Johnson
Melton Design Group

Information for:
CENTENNIAL PARK
Sample ID: 8 LP 2FT WET

SOIL RECOMMENDATIONS FOR LANDSCAPE GARDENING

SOIL BORON

Boron concentrations are in a range allowing normal plant growth.

SOIL MICRONUTRIENTS

Micronutrients, Copper, Iron, Manganese and Zinc, in soil are present in small amounts. However, they play a necessary role in plant metabolism. Without appropriate amounts plants will not thrive. Apply the following per 1000/ sq.ft. Do not mix micronutrients during application (use a separate application for each element indicated).

Because copper, manganese and zinc are in very small amounts, dissolve (each) in 2 gallons of water and use a sprayer to obtain an even application.
Apply 0.2 # Copper Sulfate, 0.5 # Zinc Sulfate and water.

SOIL MACRONUTRIENTS : NITROGEN-PHOSPHORUS-POTASSIUM (N-P-K)

GENERAL N-P-K RECOMMENDATION

Use ONE of these NPK preparations for the first fertilizer application.

Standard NPK Fertilizer Preparations	6-20-20	5-20-10	16-16-16	0-10-10	28-3-4	21-0-0	Customer Choice
-----	-----	-----	-----	-----	-----	-----	-----
#/1000 sq.ft.	20	24	N/A	N/A	N/A	N/A	**

GRASS OR SOD PREPARATION

Till in organic matter, N,P,K and micro nutrients in addition to any lime gypsum or sulfur as directed above. Smooth soil surface and follow seed or sod producers direction for moisture and product application.

TREES AND SHRUBS

Excavate holes for planting shrubs and trees to at least twice the volume of the container. Prepare backfill for tree and shrub planting holes by mixing three parts of native soil (or imported top soil) with one part organic amendment (preferably nitrogen and iron fortified) and 2.5 pounds of 6-20-20 per yard of mix. For extended fertilization, place slow release fertilizer tablets in each hole per manufacturer's instructions. If 6-20-20 was not directly added to backfill mix, during backfill apply uniformly 1/2 oz of 6-20-20 per gallon containers, 2.5 oz per 5 gallons, 6 oz per 24 inch boxes.

END OF SECTION

SECTION 02970

LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.01 CONDITIONS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any) apply to the work specified in this Section.

1.02 SCOPE OF WORK

- A. Furnish all labor, material, equipment, and services required to maintain landscape in a healthy growing condition and in a neat and attractive appearance throughout the maintenance period.
- B. Related Work Specified in Other Sections:
 - 1. SECTION 02811 - **IRRIGATION SYSTEM**
 - 2. SECTION 02905 - **LANDSCAPE INSTALLATION**

1.03 QUALITY ASSURANCE

The Maintenance Contractor shall be experienced in horticulture and landscape maintenance, practices, and techniques, and shall provide sufficient number of workers with adequate equipment to perform the work during the maintenance period.

1.04 MAINTENANCE PERIOD

- A. Continuously maintain the entire project area during the progress of the work and during the sixty (60) calendar-day, maintenance period or until final acceptance of the project by the Landscape Architect.
- B. Sections of the project may begin the maintenance period before others if project schedule is divided into thirds or an alternate schedule that is accepted by the Architect. A prime requirement is that lawn and landscape areas shall be planted and that lawn areas shall show an even, healthy stand of grass seedlings or sod, either of which shall have been mown twice. If such criteria are met to the satisfaction of the Landscape Architect, a written notification shall be issued to establish the effective beginning date of maintenance period for each section of the project.
- C. Any day of improper maintenance, as determined by the Landscape Architect, shall not be credited as an acceptable maintenance period day. The maintenance period shall be extended on a daily basis if the work is not in accordance to the Plans and Specifications. Project shall not be segmented into maintenance areas or phases unless authorization of the Landscape Architect is obtained.

- D. Maintenance shall continue beyond the sixty (60) day maintenance period, as required, until final acceptance is given by the Landscape Architect.

1.05 GUARANTEE AND REPLACEMENT

- A. Guarantee: All plant material and other materials installed under the Contract shall be guaranteed for one (1) year from time of final acceptance against any and all poor, inadequate or inferior materials and/or workmanship or improper maintenance, as determined by the Landscape Architect, shall be replaced by the Contractor at his expense.
- B. Replacement: Any materials found to be dead, missing, or not in a satisfactory or healthy condition during the maintenance period shall be replaced immediately. The Landscape Architect shall be sole judge as to the condition of material. Material to be replaced within the guarantee period shall be replaced by the Contractor within five (5) days of written notification by the Landscape Architect. All replacement materials and installations shall comply to the Plans and Specifications. Any plant missing due to suspected theft shall be replaced by the Contractor. If the Contractor suspects that theft may be a problem, the Contractor shall provide written documentation to the Landscape Architect that security on this site needs to be intensified. The Contractor may relieve himself of theft responsibility if after the security notice, with no result, a written notice to the Landscape Architect shall be given that plant material will not be replaced for theft or vandalism due to lack of site security being maintained. This procedure may take place only during the Landscape Maintenance Period.

1.06 OBSERVATION SCHEDULE

Normal progress observations shall be requested by the Contractor from the Landscape Architect as per observations listed in specifications SECTION 02905 - **LANDSCAPE INSTALLATION**.

1.07 FINAL ACCEPTANCE OF THE PROJECT

- A. Upon completion of all project work, including maintenance period, the Landscape Architect will, upon proper request, make an observation to determine final project acceptability.
- B. Where observed work does not comply with the Plans and Specifications, replace rejected work and continue specified maintenance period until re-inspected by the Landscape Architect and determined to be acceptable. All replacement materials and installations shall be in accordance with the Plans and Specifications. Remove rejected work and materials immediately from project. Prior to the date of final observation, Contractor shall provide the Owner with all Record Drawings and written Guarantee Statement in accordance with the Plans and Specifications.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials used shall either conform to Specifications in other sections or shall otherwise be acceptable to the Landscape Architect. The Landscape Architect shall be given a monthly record of all herbicides, insecticides and disease control chemicals used.
- B. Fertilizer – Ammonium sulfate (21-0-0)

PART 3 - EXECUTION

3.01 MAINTENANCE

- A. General: Proper maintenance, including watering, weeding, mowing, edging, fertilization, repairing and protection shall be required until entire project is finally accepted, but in any event for a period of not less than the specified maintenance period after planting.
- B. Watering: Thoroughly water to insure vigorous and healthy growth until work is accepted. Water in a manner to prevent erosion due to application of excessive quantities of water. When hand watering use a water wand to break the water force.
- C. Weeding: Keep plant basins and areas between plants free of weeds. Control weeds with pre-emergent herbicides. If weeds develop, use legally approved herbicides. Avoid frequent soil cultivation that destroys shallow roots. Weeding also shall be included in all paved areas including public or private sidewalks.
- D. Pruning
 - 1. Trees: Prune trees to select and develop permanent scaffold branches; to eliminate narrow V-shaped branch forks that lack strength; to reduce toppling and wind damage by thinning out crowns; to maintain a natural appearance and to balance crown with roots. Prune only as directed by the Landscape Architect.
 - 2. Shrubs: Same objectives as for trees. Shrubs shall not be clipped into balled boxed forms unless such is required by the landscape plans. All pruning cuts shall be made to lateral branches, buds or flush with the trunk. "Stubbing" and "heading" shall not be permitted.
 - 3. Only skilled workmen shall perform pruning work in accordance with standard horticultural pruning practices. Remove from the project all pruned branches and material. Remove and replace any plant material excessively pruned or malformed resulting from improper pruning practices at no additional costs to the Owner.
- E. Staking and Guying: Stakes and guys shall remain in place through

the guarantee period (one year) and shall be inspected and adjusted to prevent rubbing that causes bark wounds.

- F. Insect, Animal, Rodent and Disease Control: Maintain proper control with legally approved materials as required as part of the Contract.
- G. Protection: The Contractor shall maintain protection of the planted areas. Damaged areas shall be repaired or replaced at the Contractor's expense.
- H. Trash: Remove trash weekly in all planted areas, pedestrian walkways, and plazas.
- I. Replacement: As per Guarantee and Replacement Specifications of this Section.

3.02 MAINTENANCE FERTILIZER

Fertilization: During maintenance period an application of Maintenance Fertilizer (21-0-0), shall be made at thirty (30) days and again at sixty (60) days from the date of landscape installation at a rate of five (5) pounds per 1,000 square feet, or as per manufacturer's recommendations.

3.03 IRRIGATION SYSTEM

- A. System Observation: The Contractor shall check all systems for proper operation. Lateral lines shall be flushed out after removing the last sprinkler head or two at each end of the lateral. All heads are to be adjusted as necessary for unimpeded coverage.
- B. Controllers: Set and program automatic controllers for seasonal water requirements. Give the Town's representative instructions on how to turn off system in case of emergency.
- C. Repairs: Repair all damages to irrigation system at the Contractor's expense. Repairs shall be made within twenty-four (24) hours.

END OF SECTION

SIGNS AND SIGN POSTS

A. SCOPE

This section consists of furnishing and installing sign panels, sign posts, fastening hardware, back braces, straps and saddle brackets at the locations shown on the plans or as designated by the Owners Representative. All work shall conform to Section 56 of the State Standard Specifications unless otherwise stated within these specifications.

B. MATERIALS

SINGLE SHEET ALUMINUM SIGN shall be fabricated from sheet aluminum alloy 6061-T6 or 5052-H38 and shall not have a vertical splice in the sheet aluminum. Aluminum sheeting must be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication and installation. All single sheet aluminum signs shall conform to Section 56 of the State Standard Specifications.

RETROREFLECTIVE SHEETING shall be Type IV microprismatic, or approved equal. Retroreflectivity of the sheeting for sign background and legend shall conform to the requirements in ASTM Designation D 4956. Retroreflective sheeting must have Class 1, 3, or 4 adhesive backing and shall be applied to sign panels as recommended by the retroreflective sheeting manufacturer without stretching, tearing, and damage. The orientation of the legend must comply with the retroreflective sheeting manufacturer's instructions. The retroreflective sheeting must be a single, contiguous sheet without splices except for the splices produced during the manufacturing process of the retroreflective sheeting. The adhesive backing shall be pressure sensitive and fungus resistant.

METAL SIGN POSTS shall be 2" diameter galvanized post and conform to the City of Oroville Standard Detail 601. Galvanizing shall conform to the provisions in Section 75-1.05 of the State Standard Specifications. Sign posts shall be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication and installation.

SIGN PANEL FASTENING HARDWARE: Framing assemblies for multiple sign installations shall be fabricated of structural steel conforming to the requirements in ASTM A36/A36M, or of aluminum alloy as shown on the Plans. Frames fabricated of structural steel shall be hot-dip galvanized after fabrication.

Back braces for signs shall be commercial quality, mild steel, hot-dip galvanized after fabrication.

Straps and saddle brackets for mounting sign panels on electroliers, sign structure posts and traffic signal standards or where shown on the Plans shall be stainless steel conforming to the requirements in ASTM A 167, Type 302 or 304. Theft-proof bolts shall be stainless steel with a chromium content of at least 16 percent and a nickel content of at least 8 percent.

Lag screws, bolts (except theft-proof bolts), metal washers and nuts shall be commercial quality steel, hot-dip galvanized after fabrication. Fiber washers shall be of commercial quality.

Galvanizing shall conform to the provisions in Section 75-1.05 of the State Standard Specifications.

Components of bolted assemblies shall be galvanized separately before assembly.

C. WORKMANSHIP

POSTS: Excavate post holes to the depth shown. Place posts in the holes. Backfill material for posts must be Class B concrete as provided in Section TS 9, "Concrete Work", of these Technical Specifications. Surplus excavated material shall be disposed of in a uniform manner within the project limits as directed by the Engineer. The line between the center of the top of a post and the center of a post at the ground line shall be plumb within a tolerance of not to exceed 0.02 foot in 10 feet.

SIGN PANELS: Sign information must be imprinted in 1/4-inch upper case letters and numerals. Locate this information on the back, lower right of each sign panel so that it will not be blocked by a sign post or mounting frame. Sign information must include:

1. Sign fabricator's name
2. Month and year of fabrication
3. Type of retroreflective sheeting
4. Sheeting manufacturer's identification and lot number for the retroreflective sheeting

Sign information must be imprinted at the fabrication plant by die-stamping on aluminum panels or by an equivalent method for aluminum signs, such as affixing a die-stamped aluminum tag. The information must not be painted, screened, inked, or engraved. The information must be imprinted in a way that does not damage the face of the sign.

Sign panels shall be installed by the Contractor in conformance with the details on the Plans or as directed by the Owners Representative. Any chipping or bending of sign panels shall be considered as sufficient cause to require replacement of panels at the Contractor's expense.

All fastening hardware shall be furnished by the Contractor.

Signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 25 feet. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back, and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive over-spray and aluminum marks.

D. CERTIFICATES OF COMPLIANCE

The California Department of Transportation maintains a list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The Contractor shall work with the manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials and furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6- 1.07, "Certificates of Compliance," of the State Standard Specifications for each type of traffic product supplied.

For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the State Standard Specifications.

E. MEASUREMENT

Measurement of Signs and Sign Posts will be made as a field count of each sign post with sign installed as a single unit per the drawings and these technical specifications.

SECTION 16050

ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Furnish and install all necessary labor, materials, tools and equipment to perform and completely finish the work according to the intent of this specification, and the accompanying drawings.
- B. Furnish and install any incidental work which can reasonably be inferred as required and necessary to provide complete and workable systems.
- C. Provide connections of all equipment including installation and connection of all motors, relays, remote starters, etc.
- D. The requirements of the General and Supplemental Conditions, and Division 1 apply to this Division and these specifications. All sections in Division 16 are interrelated. Work specified in order sections, as applicable, shall apply to all work here under.

1.2 LOCAL CONDITIONS

- A. Examine site; verify dimensions and locations against drawings and become informed of all conditions under which work is to be done before submitting proposal. No allowance will be made for extra expenses because of omission on Contractor's part to include cost of work under prevailing conditions.
- B. Information shown relative to services is based upon available records and data shall be regarded as approximate only. Minor deviations found necessary to conform with actual locations and conditions shall be made without extra cost.

1.3 PERMITS AND INSPECTIONS

- A. Obtain and pay for all permits and service charges required in installation of the work. Arrange for required inspections and secure approvals from authorities having jurisdiction.
- B. During its progress, work shall be subject to inspection by Project Inspector.

1.4 CODES AND STANDARDS

- A. Work and materials shall be in full accordance with California Occupational Safety Health Act (CAL-OSHA), California Electrical Code (CEC), State Fire Marshal, Electrical Safety Orders (Title 8, Subchapter 5), the National Fire Protection Association, California Building Code (CBC); California Code of Regulations – Title 24 and other applicable State or local laws or regulations. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these codes.

- B. Electrical materials shall bear the label of, or be listed by, the Underwriter's Laboratories (UL) unless of a type for which label or listing service is not provided.
- C. Materials and components shall conform to Industry Standards, including:
 - 1. NEMA – National Electrical Manufacturer's Association
 - 2. ANSI – American National Standard Institute
 - 3. ASTM – American Society for Testing Material Association
 - 4. IPCEA – Insulated Power Cable Owners Representative's Association
 - 5. CBM – Certified Ballast Manufacturers
- D. When Contract Documents differ from governing codes, furnish and install larger size or higher standards called for without extra charge.

1.5 REVIEW OF MATERIALS

- A. Prior to commencement of work and within 35 days after award of contract, submit for approval in accordance with General Conditions all equipment and materials to be furnished including all substitutions.
 - 1. Equipment / Product submittals shall be bound and indexed by their referenced specification section and shall include a table of contents listing all equipment submitted including description of product and part numbers. Where a group or series of products are submitted, each item does not have to be listed only the series need to be identified.
 - 2. Shop drawings submittals shall be neat and professionally done using CAD (computer aided drafting), hand-drawn submittals will not be accepted. Shop drawings shall have sufficient information to clearly indicate work to be performed and be complete including device / equipment locations, wire sizes, wire types and number of wires, symbol list or legend, point-to-point connections, wiring diagrams, and equipment anchorage detail where needed.
- B. Substitutions
 - 1. Substitution will be considered 10 days prior to the award of the contract on each item of material or equipment. No substitutions will be considered thereafter. Substitutions will be interpreted to be all manufacturers other than those specifically listed by model or catalog number. Should the original submittal of a proposed substitution be rejected, the specified item shall be furnished.
 - 2. Submit complete information or catalog data to show equality of equipment or material offered to that specified. No substitutions will be allowed unless requested and approved in writing. Materials of equal merit and appearance, in the opinion of the Owners Representative, will be approved for use. Owners Representative reserves the right to require originally specified item.

3. Acceptance of a substitute is not to be considered a release from the Specifications. Any deficiencies in an item, even though approved, shall be corrected by the Contractor at his expense.
4. Responsibility for installation of approved substitution is include herein. Any changes required for installation of approved substituted equipment shall be made without additional cost to Owner.
5. Where it is in the best interest of the Owner, Owners Representative may give written consent to a submittal received after expiration of designated time limits, or for an additional resubmittal.
6. Submit for approval in ample time to avoid delay of construction, shop drawings or submittals on all items of equipment and materials covered in list mentioned above. Submit in accordance with General Conditions in a complete package; partial submittals will not be considered.
7. Failure to comply with any of the preceding requirements will necessitate that the specified materials be submitted and supplied.

1.6 RECORD DRAWINGS

- A. Upon completion of Work, furnish Owners Representative with complete sets of plans on reproducible vellums (not marked blueprints) upon which shall be shown all Work installed under Contract, which are note in accordance with Original Contract Drawings.
- B. All symbols and designations used in preparing Record Drawings shall match those used in Contract Drawings.
- C. Show all buried and concealed conduit, stubs-outs, etc. Locate all buried conduit and stub-outs by dimensions from permanent, easily located and identifiable portions of structure; also dimension ends of stub-outs, etc. Note depth of buried items below grade.

1.7 ADDENDA AND CHANGE ORDERS

- A. Changes in the plans and specifications shall be made by Addenda or Change Orders signed by the Owners Representative.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Materials mentioned herein or on drawings require that each item listed be provided and of quality noted, or an approved equal. All material shall be new, full weight and standard in all respects and in first-class conditions. Where possible, all materials used shall be of the same brand or manufacturer throughout for each class of material or equipment.

- B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein. Dimensions, sizes and capacities shown are a minimum and shall not be changed without permission of Owners Representative.

PART 3 EXECUTION

3.1 DRAWINGS AND COORDINATION

- A. Examine Drawings and Site; be familiar with types of construction where electrical installation is involved.
- B. Work shall be neatly installed in a workmanlike manor in accordance with NECA Standard of Installation. Work shall be coordinated with other trades to avoid conflicts. Clarifications will be made by Owners Representative and minor adjustments shall be made without additional cost to Owner. Obtain ruling from Owners Representative concerning any obvious discrepancies or omissions in work before bidding. All work involved in correcting obvious errors or omissions after award of Contract shall be performed as directed by Owners Representative without additional cost to Owner
- C. Layouts of equipment, accessories and wiring systems are diagrammatic (not pictorial), but shall be followed as closely as possible. Drawings and Specifications are for assistance and guidance, and exact locations, distances, levels, etc., will be governed by Site.
- D. All equipment (devices, conduits, boxes, etc.) shall be flush or semi-flush mounted unless otherwise noted. Where conditions do not allow flush mounting and where acceptable to the Architect, equipment may be surface mounted.

3.2 WORKING SPACE

- A. Provide adequate working space around electrical equipment in compliance with Article 4 of Electrical Safety Orders. In general, provide 36 inches minimum clear work space in front of panelboards and controls of 120/208 volt systems and 42 inches minimum for 277/480 volt systems.

3.3 CABLE AND CLEANING

- A. All broken, damaged or otherwise defective parts shall be repaired or replaced without additional cost to Owner. Work shall be left in a condition satisfactory to Owners Representative. At completion, carefully clean and adjust all equipment, fixtures and trim installed as part of this work. Systems and equipment shall be left in a satisfactory operating condition.
- B. All surplus materials and debris resulting from this work shall be cleaned out and removed from site; this includes surplus excavated material.

3.4 EXCAVATING AND BACKFILLING

- A. Excavate and backfill as required for installation of electrical work. Restore all surfaces, roadways, sod, walks, curbs, walls, existing underground installation, etc., cut by installations to original condition in an acceptable manner. Maintain all warning signs, barricades, flares and lanterns as required by the Safety Orders and local ordinances.
- B. Excavation: Dig trenches straight and true to line and grade, with bottom clear of any rock points. Support conduit for entire length on undisturbed original earth. Minimum conduit depth of pipe crown shall be 2 feet below finished grade.
- C. Backfill: All backfill material shall be local material free of rubble, rubbish or vegetation. Provide sand as backfill material where specified. Trenches shall be backfilled and compacted to 90% (per ASTM D1557) of maximum dry density at optimum moisture content in layers not to exceed 6" when compacted.

3.5 PROTECTION

- A. In performance of work, protect work from damage. Protect electrical equipment, stored and installed from dust, water or other damage.

3.6 EQUIPMENT IDENTIFICATION

- A. Panelboards, remote control switches, terminal boxes, etc., shall be properly identified with a descriptive nameplate. Nameplate shall be made of 3/32 inch laminated plastic with black background and white letters. Size of letters shall be ¼ inch high for equipment in device box or boxes 12" or smaller, and ½ inch high for panelboard, terminal can, or larger items. Letters shall be machine engraved. Punched strip type nameplates and cardholders in any form are not acceptable. Nameplates shall be attached with oval head machine screw tapped into front panel.
- B. Indicate type of equipment and equipment designation, ex. "MAIN SWITCHBOARD-MSB", "LIGHTING CONTROL PEDESTAL - SP", Etc.

3.7 RUST INHIBITOR

- A. Channels, joiners, hangers, straps, clamps, brackets, caps, nuts and bolts and associated parts shall be plated electrolytically with zinc followed immediately thereafter by treating freshly deposited zinc surfaces with chromic acid to obtain a surface which will not form a white deposit on surface for an average of one hundred twenty (120) hours when subjected to a standard salt spray cabinet test, or shall be hot dipped galvanized.

3.8 EQUIPMENT PADS

- A. Concrete reinforced pads for mounting of equipment (i.e. switchboard, transformers, freestanding panels, etc.) shall be minimum 3000 psi, 6" thick with #4 rebars at 12" on center each way. Rebars shall be centered in pad. Pad shall extend 2" beyond equipment and 1-1/2" above surrounding area. Backfill and compact to 95%

maximum dry density at optimum moisture content in layers not be exceed 6" when compacted.

3.9 EQUIPMENT ANCHORAGE

- A. All equipment shall be braced or anchored to resist a horizontal force acting in any direction using the following criteria:
- B. Fixed Equipment on Grade: 75% of operating weight.
- C. Fixed Equipment on Structure: 50% of operating weight.
- D. Simultaneous Vertical Force – Use $1/3 \times$ Horizontal Force.
- E. Where anchorage details are not shown on the drawings the field installation shall be subject to the approval of the Structural Owners Representative.

3.10 TEST

- A. Test all wiring and connections for continuity and grounds; where such test indicate faulty insulation or other defects, located, repair and retest. Balance load at panelboards. Furnish all testing equipment.

3.11 CLOSING OF AN UNINSPECTED WORK

- A. Do not allow or cause any work installed hereunder to be covered up or enclosed before it has been inspected and approved.
- B. Should any work be enclosed or covered up before is has been approved, uncover such work and after is has been inspected and approved, make all repairs necessary to restore work of others to conditions in which it as found at time of cutting, all without additional cost.

3.12 WARRANTY

- A. All materials and installation shall be provided with one (1) year warranty, which shall include replacement parts, labor, retesting, and travel to and from the job site. The warranty period shall begin after final acceptance of the project. The warranty shall cover but is not limited to the following:
- B. Defective workmanship and installation
- C. All system components, devices, conduit, wires, etc.
- D. Manufactured items such as light fixtures, receptacles, switchboard, panelboard, transformer, switches, etc.
- E. Basic materials such as conduit, wires, boxes, cabinets, etc.
- F. Certain manufactured items will have longer warranty periods. Refer to specific item and specification section for warranty information and terms.

END OF SECTION

SECTION 16100

BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.1 SCOPE

- A. The work of this Section consists of basic materials and methods for all work included under Division 16. Additional specifications requirements for electrical work are specified under other sections of Division 16 and where those requirements differ from the requirements of this Section, they shall govern.

1.2 SUBMITTALS

- A. Submit product data per Section 16050.

PART 2 PRODUCTS

2.1 CONDUIT

- A. Rigid Steel Conduit: Standard weight, mild steel pipe, zinc coated on both inside and outside by a hot dipping or sherardizing process. Inside and outside of conduit shall be finished with a protective coating. All threads galvanized after cutting. Meets UL 6, UL Card #DYIX, and ANSI C80.1.
- B. Intermediate Metallic Conduit (IMC): Intermediate weight, mild steel pipe, meeting same requirements for finish and material as rigid steel conduit. Meets UL 1242, UL Card #DYIX, and ANSI C80.6.
- C. Electrical Metallic Tubing (EMT): Cold rolled steel tubing, hot-dipped galvanized, with zinc coating on outside and protective lubricating coating on inside. Fittings shall meet same requirements for finish and material as EMT. Meets UL 797 and ANSI C80.3.
- D. Liquid Tight (LT) Flexible Conduit: Flexible steel, zinc coated on both inside and outside by hot dipping or sherardizing process with extruded polyvinyl covering and with watertight connectors. Conduit to be one continuous length, no couplings, minimum LT 1".
- E. PVC Conduit
 - 1. Type 40, 90°C, UL listed, composed of polyvinyl chloride, conforming to NEMA TC-2, Fed Spec WC1094A, UL651 Standards. Material shall have minimum tensile strength of 6,500 psi at 73.4°F, flexural strength of 12,500 psi and compressive strength of 9,000 psi per ASTM testing. PVC conduit shall be suitable for direct burial without concrete encasement. Fitting shall be of same manufacture. All joints shall be solvent welded.
 - 2. Type 80, similar to type 40 except with extra heavy wall.

F. Raceway Fittings:

1. Rigid Steel Conduit: Fittings, such as couplings, connectors, condulets, elbows, bends, etc., shall be subject to same requirements as for rigid steel conduit. Couplings and unions shall be threaded type, assembled with anti-corrosion, conductive anti-seize compound at joints made absolutely tight to exclude water. Connectors shall be threaded hubs with bonding insulated metallic bushings. Unions shall be equal to Crouse Hinds UNY or UNF.
2. IMC: Fittings shall be as specified for rigid steel conduit.
3. EMT: Fittings shall be steel, box connectors shall have insulated throat. Connectors and couplings to be compression type.
4. Flexible Metallic Conduit: Connectors to be insulated. Metallic connectors (except for liquid-tight) shall be steel "squeeze" type via a screw, Steel City XC-90X and XC-49X series. Liquid-tight metallic connectors shall be watertight approved for such use.
5. Bushings: Metallic insulated type. Weatherproof or dust-tight installations; liquid-tight with sealing ring and insulated throat, OZ/Gedney type "KR".
6. All box connectors to be insulated throat type.
7. Conduit Straps: Galvanized steel, 2-hole straps. 1-hole straps may be used for conduit sizes 1" and smaller concealed in wall or above ceiling.

G. Metallic conduits, raceways, and fittings shall be listed and approved as grounding means.

2.2 BOXES

- A. Boxes located outdoors, or in wet or damp locations shall be rated cast type with gasketed plates.

2.3 WIRES

- A. Wire shall be copper only, manufactured by General Cable Co., Rome, General Electric Co., or Anaconda. Wire shall have type THW, THWN or XHHW insulation. Wire installed in high temperature areas, including branch circuits in ballast enclosures shall have type RHW-2 or XHHW-2 90° insulation.
- B. Wire shall Code type copper wire of not less than 98% conductivity. Wires #8 gauge and larger, shall be stranded. Wire shall bear the Underwriters' label, be color coded and be marked with gauge, type and manufacturer's name on 24" centers. Wires smaller than #8 may be solid or stranded. Where stranded wire is used, provide solid pigtail for connection to screw terminals of receptacles, switches, etc.

C. Color coding to be as follows:

D. <u>208/120 Volts</u>	<u>480/277 Volts</u>	
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Natural Grey
Ground	Green	Green

E. Switch legs shall use the same branch circuit phase color coding which they are connected to.

F. Bring wires to job in original unbroken packages.

2.4 CONVENIENCE OUTLETS

A. Shall be "Specification" grade rated 20 amperes at 125 volts, composition base with slots to accommodate parallel plug caps with grounding peg. Contact shall grip both sides of plug prongs. Outlet shall be UL listed.

B. <u>Receptacle</u>	<u>Hubbell</u>	<u>A-H</u>	<u>P&S</u>	<u>Leviton</u>
20A duplex GFI.	GF5352	GF5242	2091S	6898

C. Weatherproof covers for receptacles shall be of heavy-duty die cast construction, self-closing type with hinged flip-lids and gasket. Each receptacle in a duplex receptacle shall have an individual lid. While-in-use rated covers shall be used at all locations.

D. Provide a separate GFI duplex receptacle at each location identified on the drawings. Through wiring is not acceptable.

2.5 SAFETY/DISCONNECT SWITCHES

A. Type "HD" Heavy-Duty safety switches with externally operated handle. Switches shall be manufactured by Westinghouse, General Electric, Square D or approved equal. Switches shall be rated 250 and 600 volts, A.C., of size and poles as shown on drawings and as required. Disconnects used outdoor shall be in NEMA-3R. Provide fused switches with proper sized fuses where required by equipment manufacturer. All switches shall have pad-locking cover with cover interlock. Label switch per section 16050

2.6 PULL LINE

A. Furnish and install pull line in all unused (empty) raceways. 1/8" diameter braided line of polypropylene or Jet-Line #232, or approved equal line of continuous fiber polyolefin. Minimum break strength, 200 lbs.

B. Provide pull line in conduits for utility company systems, size and type per their requirements.

2.7 PRECAST CONCRETE PULLBOXES/HANDHOLES

- A. Boxes shall be size as indicated on the drawings. Design loads shall consist of live, dead, impact hydrostatic, and other loads. Design loads shall be sixteen KIPS. Concrete shall be per ASTM-C-33-64. Lightweight concrete shall conform to ASTM-C-33-64T. Cement shall be Portland Cement meeting ASTM-C-150 Type II standards. Compressive strength shall be minimum 4,000 psi at 28 days.
- B. Boxes: Precast high-density reinforced concrete with end and side knockouts, and extension as required. Minimum 1-1/2" wall thickness. Acceptable manufacturers shall be Forni, Christy or equal.
- C. Covers: Reinforce concrete covers shall have hold-down bolts. All covers shall be factory marked, see drawings for marking/label required. If not noted, use the following markings:

<u>SYSTEM</u>	<u>MARKING</u>
Power 600 volts or less	Electrical
Telephone	Telephone
Lighting	Lighting

D. Installation

- 1. Excavate around area to accept box, a minimum of 4" around all sides for ease of installation. Provide 12" of compacted pea gravel for bedding and/or to facilitate drainage.
 - 2. Backfill shall be concrete.
 - 3. Grout and seal conduits at box entry with cement. Provide with end bells.
- E. Utility Company boxes shall be per their requirements. Provide with ground rod as required.

2.8 LIGHTING CONTACTORS

- A. Contactors shall be UL listed, electrically operated, for all types of lighting loads. Short circuit withstand rating shall exceed maximum available short circuit amps. Coil voltage shall match control voltage. Square-D class 8903 type LO (electrically held) or equal.
- B. Contactors shall be installed on vibration isolators.

2.9 GROUND RODS

- A. Ground rods shall be 3/4 in dia. X 10 ft. copper clad steel.

2.10 SERVICE PEDESTAL

- A. Pedestal enclosures shall be fabricated from 12 gauge hot dipped galvanized steel. Internal parts shall be fabricated from 14 gauge cold rolled steel. The pedestal shall

- be of all welded construction with welding materials specifically designed for the material used. All fasteners, hinged, latches and hardware shall be of stainless steel and hinges shall be continuous piano style. There shall be no exposed nuts, bolts, screws, rivets, or other fasteners on the exterior.
- B. Pedestals shall be NEMA 3R and NEMA 12 with fully framed side hinged outer doors with swaged close tolerance sides for flush fit with top drip lip and closed cell neoprene flange compressed gaskets. The door shall have 2,000 lb. stress rated stainless steel hasp, welded to cabinet and door. The pedestals shall have hinged deadfront panel with ¼ turn latch and knurled knobs. Deadfront shall be hinged on the same side as the front door and shall open on a minimum of 102°.
 - C. Pedestal finish shall be dry powder polyurethane plastic electrostatically applied to produce a finish of 3 to 5 mils thickness. The coating shall be commercially smooth, substantially free of flow lines, paint washout, streaks, blisters and other defects that would impair serviceability or detract from general appearance.
 - D. Panel shall include circuit breakers for each load with through-deadfront operating handles. Provide facilities for power company watt hour meter.
 - E. Provide terminal blocks for all wiring connections. Bundle and neatly install wiring in panel.
 - F. Provide pedestal mounting kit of standard design by control panel manufacturer for bolting to concrete slab.
 - G. Provide thermostatically controlled condensation heaters to help keep moisture from condensing in control panel.
 - H. Provide a 120V light with switch, to light up inner door and provide a weatherproof 20-ampere duplex receptacle.
 - I. Provide lightning arrester or surge suppressors to protect control equipment from lightning induced surges or high voltage transients.
 - J. Provide additional equipment and controls as indicated on drawings.
 - K. Current transformers and metering shall be as required by Power Utility company. All equipment shall be factory installed by the switchboard manufacturer.
 - L. Make provisions for the installation of utility's metering equipment and entrance conductors, all in strict conformance with the requirements of the utility company and as shown on the Drawings. Pedestal manufacturer shall be held to have submitted shop drawings of the service entrance and metering provisions to the Utility prior to manufacture. Owners Representative's shop drawing approval does not imply conformance with utility requirements. Provide for off site metering if required by the local serving utility company.

- M. Small wiring, necessary fuse blocks and terminal blocks within the board shall be furnished when required. All groups of control wires leaving the switchboard shall be provided with terminal blocks with suitable numbering strips. All hardware used on conductors shall have a high tensile strength and an anti-corrosive zinc plating.
- N. A one-piece copper ground bus complete with lugs shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard and shall be front accessible.
- O. Ground bus current rating to be same as main device.
- P. Pedestal main and distribution circuit breakers shall be molded case bolt-on type with trip rating as scheduled on Drawings.
- Q. Pedestal shall be labeled to serve as "Service Entrance Equipment".
- R. Each circuit breaker shall be identified with an engraved laminated phenolic plate showing the load served or the function of the circuit breaker and trip rating. The nameplate shall be attached with oval head machine screws tapped into the front of the board. Equip breaker handles with padlocking "lock-off" devices.
- S. Pedestal shall be completely factory assembled, wired and tested before delivery and shall conform to UL where applicable, WUESSC, National Electrical Code Standards and State of California requirements.
- T. Where pedestal has facilities for revenue metering, comply with the requirements of servicing utility company. Provide heaters with control thermostat to maintain temperature of 55 degrees Fahrenheit minimum inside switchboard.
- U. The board shall be as manufactured by Tesco or approved equal.

PART 3 EXECUTION

3.1 CONDUITS

- A. All Exposed Conduits shall be rigid steel or IMC. Obtain Architect approval prior to installing any exposed conduits.
- B. Provide flexible connections of short length to equipment subject to vibration or movement and to all motors. Provide a separate bonding conductor in all flexible connections. Flexible conduit shall be one continuous length with couplings.
- C. Support conduit with straps and secure to concrete by means of insert or expansion bolts. Expanders and shields shall be steel or malleable iron.
- D. Conduits installed in contact with ground shall be PVC-40 conduits.
 - 1. Install PVC conduit in a 2" sand or fine earth envelope below ground. Provide a minimum of 2" of sand or fine earth bedding at the bottom of the trench before laying conduits. Risers, including elbows, shall be double-wrapped rigid steel or

PVC coated rigid steel conduit; except that risers, including elbows and bends; at in-ground pull box locations shall be PVC-40, concrete encased.

2. When installing underground conduits to specified depth, depth shall be taken from the top of the conduit to the finished grade level. Unless otherwise specified, underground conduits shall be installed with topside not less than 24" below finished grade.
 3. Utility Company (electric, telephone, etc.) conduits shall be installed per their depth and backfill requirements. Minimum depth shall be 24" below finished grade. Minimum conduit shall be PVC-40. Where the utility company allows use of a "lesser" grade conduit, i.e. DB120, PVC-40 shall be used.
 4. The minimum size of conduits shall be 1".
 5. Bends shall be wide sweeping type with radius equal to 10 times O.D. and minimum 24 inch.
 6. Place a 6" wide non-biodegradable plastic tape at 12" below grade, labeled "CAUTION ELECTRIC LINE BURIED BELOW". Fluorescent red for electric power conduits and fluorescent orange for telephone conduits. Tape shall be continuous for full length of trench.
- E. Although circuiting is shown as diagrammatic, their point-to-point destinations and their indication above/below ground route shall be followed as much as possible. Where site conditions dictate that an alternate means of routing will alleviate conflicts, the alternate means will be considered with prior approval by the Architect. Route conduits below paved roadways where possible.
- F. Feeder conduits connected to panels/switchboard shall have ground lug bushing connected to equipment ground bus.

3.2 CAPPING

- A. Cap conduits during construction with manufactured seals. Swab out conduits before wires are pulled in.
- B. Cap all empty conduits below grade and in pull boxes with manufacturer's caps to prevent entrance of water and debris, attach pull string to cap.

3.3 CONDUCTORS

- A. Splices and joints shall be made with Burndy, T & B or approved equal, solderless tool applied pressure lugs and connectors, Uninsulated lugs and wire ends shall be insulated with layers of plastic tape equal to insulation of wire and with all irregular surfaces properly padded with "Scotchfil" putty tape prior to application of tape. Tape shall equal to Scotch #33, General Electric #AW-1 or approved equal. Feeder splicing is not permitted.

- B. Conductor splices below grade where approved shall meet ANSI C119.1-1986 and UL 486D standards. Raychem RVA or RVC series. Conductors to be joined with compression sleeve connectors.
- C. Use only UL approved wire pulling compound as lubricant.
- D. Lace conductors together with waxed linen lacing cord, T &B "Ty-Rap", Holub "Quik-Wrap" or equal, in a neat and workmanlike manner in panelboards, wireways, raceways, pull boxes and similar locations.
- E. #10 AWG wire shall be minimum size wire used.
- F. All conductors shall be in conduit unless otherwise indicated.
- G. Conduit sizes shall be based on code fill table for THW insulated wires to accommodate the number, size and type of wires shown or specified.
- H. Wiring installed in pull boxes or junction boxes, shall be pulled through without splices. shall have a service loop around the interior of the box for 360 degrees utilizing the largest circumference.
- I. Where conductors are increased in size and number (such as for voltage drop reasons), and such that conductors will not fit the standard breaker or panel lugs, terminate in one of the following manners:
 - 1. Provide larger breaker frame.
 - 2. Provide oversized lugs.

3.4 GROUNDING

- A. Ground fittings shall be approved manufactured type, installed and connected conform with Code requirements.
- B. Neutral conductors and noncurrent-carrying parts of equipment at each installation shall be grounded in accordance with applicable code. Ground conductor shall be copper having a current capacity sized in accordance with CEC.
- C. All equipment cases, equipment frames, etc., shall be completely grounded to satisfy requirements of CEC. Install bond wire in flexible conduit. Install copper bond wire, sized in accordance with CEC, in all nonmetallic raceways and bond to all metallic parts using approved fittings.
- D. Service ground conductor shall be connected to "Ufer" electrode, concrete encased ground, per CEC 250.
- E. Ground resistance shall not exceed 25 ohms as measured at MSB.
- F. All connections shall be made with solderless connectors or molded fusion-welding process.

- G. Equipment grounding conductors shall be insulated with a continuous green outer finish along its entire length. Conductors size #4 AWG and larger may be identified (with green electrical tape applied half-lapped) at each end and at every point where the conductor is accessible
- H. Insulated grounded (neutral) conductors shall be identified with a continuous white outer finish along its entire length. Neutral conductors #4 AWG or larger can be identified by a distinctive white marking (applied half-lapped with white electrical tape) for the last 12 inches at each end.
- I. Where equipment is 1000 volts or above, fence grounding shall be provided with a ground rod at each fixed gate post and at each corner post. Attach #4 ground wire exothermic weld to ground rod, and with compression ground post clamp to post. Each gate shall be bonded to its gatepost by flexible braided copper strap.

3.5 FIELD TESTS

- A. Provide required labor, materials, equipment and connections to perform tests. Document results and submit them to the Owners Representative. Repair or replace all defective work.
- B. Perform Megger test on all feeders and motor branch circuits.
- C. Verify operation of all controls and adjust time settings per Architect.
- D. Each ground rod shall be tested. A ground rod which does not have a resistance to ground of 25 ohms or less shall be augmented by one additional ground rod at no less than 8 ft. from each other.
- E. CLEANING
- F. Brush and clean work prior to concealing, painting and acceptance. Performed in stages if directed.
- G. Clean and repair soiled or damaged painted exposed work and match adjoining work before final acceptance.
- H. Remove debris from inside and outside of material, equipment and structures.

END OF SECTION

SECTION 16500

LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

Furnish and install a complete lighting system consisting of luminaires, lamps and appurtenances as show on drawings and specified.

1.2 WORK INCLUDED

- A. The requirements of Sections 16050, 16100 and 16550 apply to the Work of the Section.

1.3 SUBMITTALS

- A. groundinformation, photometric data, fixture efficiency, ballasts information, lamp information, weights, accessories, etc.
- B. Submit per Section 01330

PART 2 PRODUCTS

2.1 LUMINAIRES

- A. Weatherproof fixtures shall have weatherproof gaskets on fixture trim and door assemblies. Fixture shall be UL listed for wet locations.
- B. Luminaire voltage indicated on the plans is for reference. Verify actual voltage required based on the branch circuit.
- C. Housing shall be prefinished. Color to be selected by Architect.

2.2 LIGHT POLES

- A. Poles shall be as shown on the drawings with a minimum wind rating 90 mph with a 1.3 gust factor. Base dimensions shall be as directed by the structural engineer at each pole location.
- B. Reflector optical systems shall be high reflectance prefinished.

PART 3 EXECUTION

Rotary Centennial Park
December 5, 2005

Section 16500
Lighting

3.1 INSTALLATION

- A. Mounting of luminaires shall be in strict accordance the CEC Section 410.

END OF SECTION



SYMBOL LEGEND

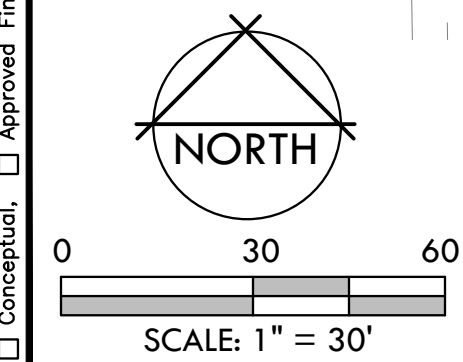
SYMBOL DESCRIPTION	
---	STRAW WADDLE SEE DETAIL 2, SHEET L-1.1
□	DRAIN INLET FILTER SEE DETAIL 3, SHEET L-1.1

EROSION CONTROL GENERAL NOTES

- ALL EROSION CONTROL MEASURES SHALL CONFORM TO CITY OF CHICO STANDARDS AND THE EROSION CONTROL PLANS SHOWN ON THE CONSTRUCTION DRAWINGS.
- EROSION CONTROL DEVICES TO BE IN PLACE BEFORE START OF CONSTRUCTION
- CONTRACTOR SHALL PLACE STABILIZED CONSTRUCTION SITE ACCESS PER DETAIL THIS SHEET.
- CONTRACTOR STORM WATER POLLUTION PLAN SHALL BE AVAILABLE ON SITE AT ALL TIMES.
- CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR STATE WATER RESOURCES CONTROL BOARD.
- SWPPP TO BE IN PLACE BEFORE START OF CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE STRAW WATTLE AT BACK OF CURB OR BANK AND IN AREAS REQUIRED BY THIS EROSION CONTROL PLAN.
 - INSPECTION BY CONTRACTOR SHALL BE FREQUENT. REPAIRS AND/OR REPLACEMENT SHALL BE MADE PROMPTLY; AS REQUIRED.
 - ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF NINE INCHES.
- CONTRACTOR SHALL MAINTAIN ALL STRAW WATTLE AND OTHER EROSION CONTROL DEVICES THROUGHOUT CONSTRUCTION. SILT BUILDUP IN SILTING BASIN AREA SHALL BE REMOVED AS NECESSARY. REMOVE ALL BALES AND POLLUTION PREVENTION DEVICES AT THE END OF CONSTRUCTION.
- INTERIM EROSION CONTROL MEASURES MAY BE NEEDED AND SHALL BE INSTALLED DURING CONSTRUCTION TO ASSURE ADEQUATE EROSION CONTROL FACILITIES ARE IN PLACE AT ALL TIMES.
- AFTER THE HARDSCAPES ARE COMPLETED GRAVEL BAGS, FILTER FABRIC AND DRAIN ROCK SHALL BE PLACED AROUND EACH DROP INLET.
- CONTRACTOR SHALL USE DUST CONTROL MEASURES IN THE FORM OF WATER APPLICATION TO ALL EXPOSED SOIL SURFACES TO PREVENT THE TRANSPORT OF SOIL FROM EXPOSED SURFACES ON CONSTRUCTION SITES IN THE FORM OF AIRBORNE PARTICULATES. WATERING OF EXPOSED SOIL SURFACES SHALL OCCUR AT LEAST TWICE DAILY, PREFERABLY IN THE LATE MORNING AND AFTER WORK IS DONE FOR THE DAY. ALL CLEARING, GRADING, EARTH MOVING OR EXCAVATION ACTIVITIES SHALL CEASE WHEN WINDS EXCEED 15 MPH AVERAGED OVER 1 HOUR.
- ANY SOIL MATERIAL CARRIED ONTO STREET SURFACES BY CONSTRUCTION EQUIPMENT SHALL BE REMOVED ON A DAILY BASIS. (BROOM CLEAN- DO NOT USE WATER TO WASH THE STREET).
- HAUL TRUCKS SHALL BE COVERED WITH TARPULINS OR OTHER EFFECTIVE COVERS AT ALL TIMES.
- PRIOR TO PLACEMENT OF LANDSCAPING, REMOVE TEMPORARY EROSION CONTROL MEASURES (STRAW WATTLES).
- STOCKPILES NOT USED WITHIN THE LAST 14 DAYS MUST BE COVERED WITH AN EROSION CONTROL BLANKET OR PLASTIC SHEETING AND CONTAINED WITH A FIBER ROLL OR GRAVEL BAG BERM.

CONSTRUCTION ACCESS NOTE:

- CONSTRUCTION ENTRY, TRACK OUT, AND CONCRETE WASHOUT AREA LOCATIONS TO BE LOCATED BY CONTRACTOR ALONG CERES AVE. FINAL LOCATION PENDING APPROVAL BY OWNER.



Plan Status: <input type="checkbox"/> Conceptual, <input type="checkbox"/> Approved, <input type="checkbox"/> Final, <input type="checkbox"/> Record	Designed: MDG	Approved: _____	Revision	Date	By	PREPARED BY: MDG MELTONDESIGNGROUP.COM	MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616	PREPARED FOR: CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711		CENTENNIAL PARK EROSION CONTROL PLAN	0 1 2 INCHES	Project Number: MDG #2397	Drawing Number L-1.0
	Drawn By:	Date: July 17, 2020										Scale: 1"=30'	Sheet 2 of 26
	Checked:												

CALL BEFORE YOU DIG

CITY OF CHICO PUBLIC WORKS

Call: 530-894-4200

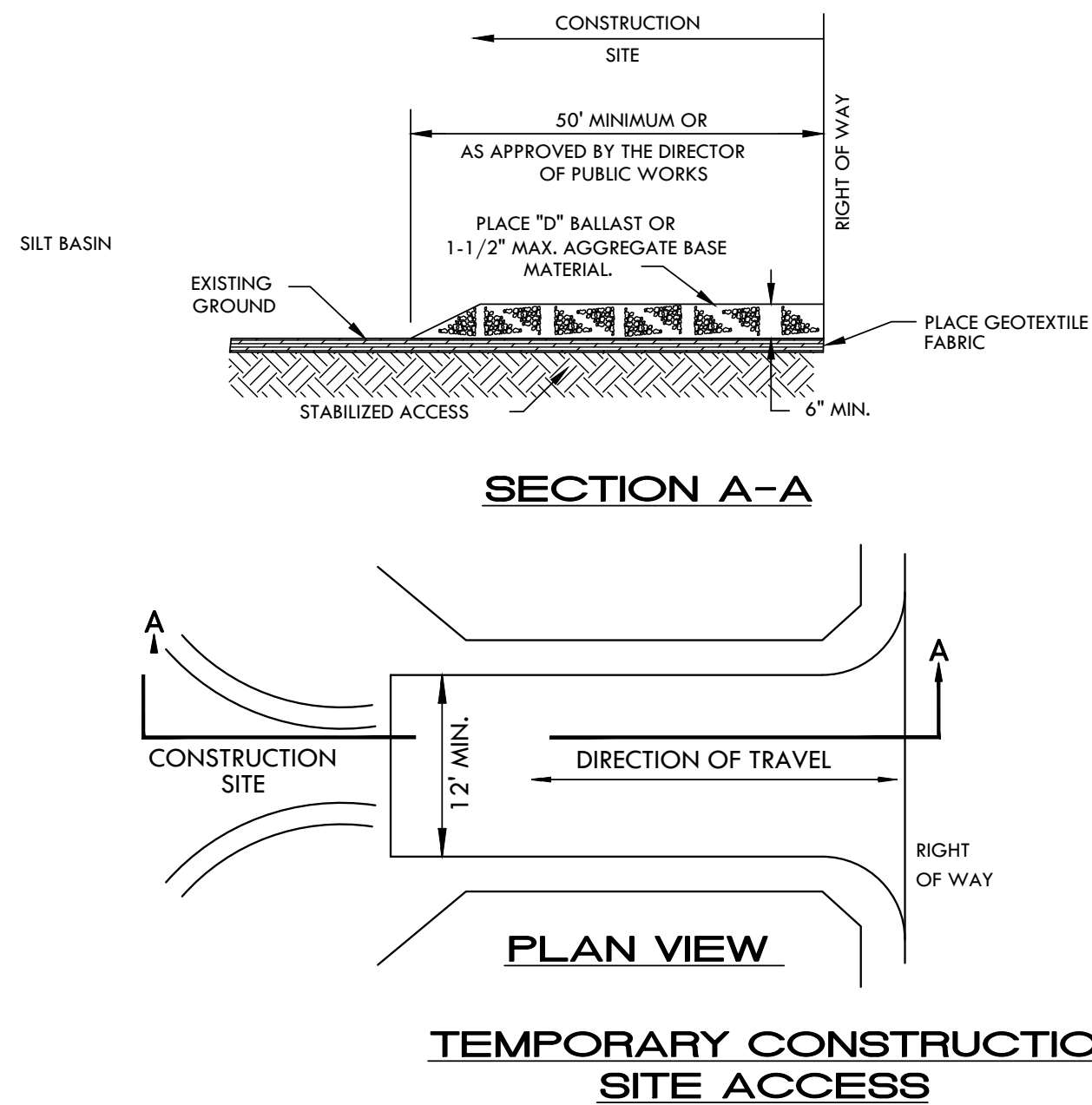
UNDERGROUND SERVICE ALERT

of Northern California

Call: TOLL FREE 1-800-227-2600

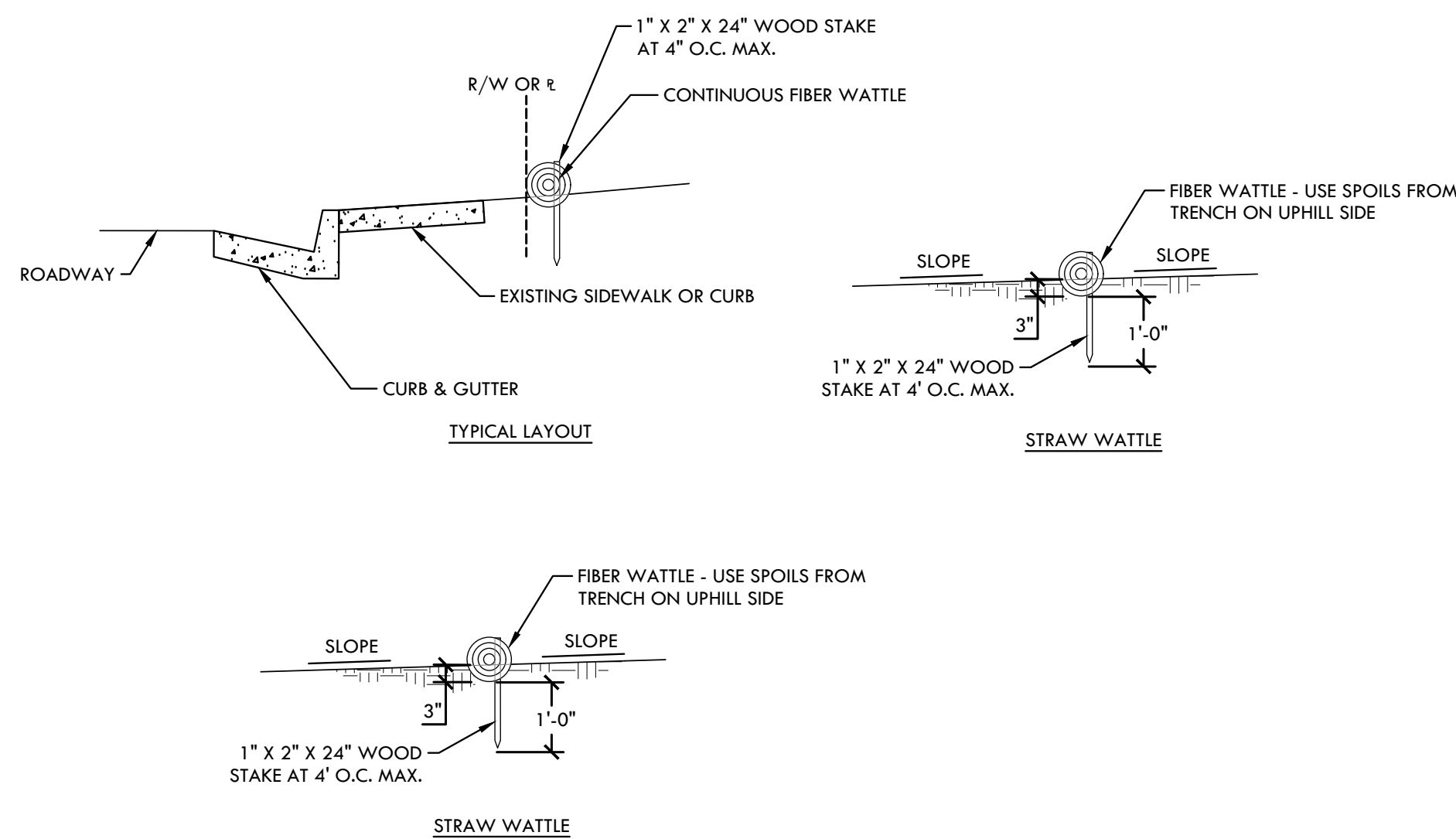
TWO WORKING DAYS BEFORE YOU DIG

Plan Status: ☐ Conceptual, ☐ Approved, ☐ Final, ☐ Record



NOTES

- 1) STABILIZED CONSTRUCTION SITE ACCESS SHALL BE CONSTRUCTED OF 1-1/2" MAXIMUM AGGREGATE BASE MATERIAL CONFORMING TO SECTION 26 OF STATE SPECIFICATIONS. MATERIAL SHALL BE PLACED TO A MINIMUM THICKNESS OF SIX INCHES. THE METHOD OF PLACING, SPREADING AND COMPACTING AGGREGATE BASE MATERIAL SHALL CONFORM TO SECTION 26 OF THE STATE SPECIFICATIONS.
- OF FIFTY FEET. WIDTH SHALL BE A MINIMUM OF TWENTY FEET, OR GREATER AS NECESSARY TO COVER ALL VEHICULAR INGRESS AND EGRESS.
- 3) THE SITE ACCESS SHALL BE KEPT IN GOOD CONDITION BY OCCASIONAL TOP DRESSING WITH AGGREGATE BASE MATERIAL OR CLEANED AS DIRECTED BY THE PROJECT SUPERVISOR.
- 4) TRUCK TIRES SHALL BE WASHED DOWN AND THE SEDIMENT CONTAINED ON THE PROJECT SITE.

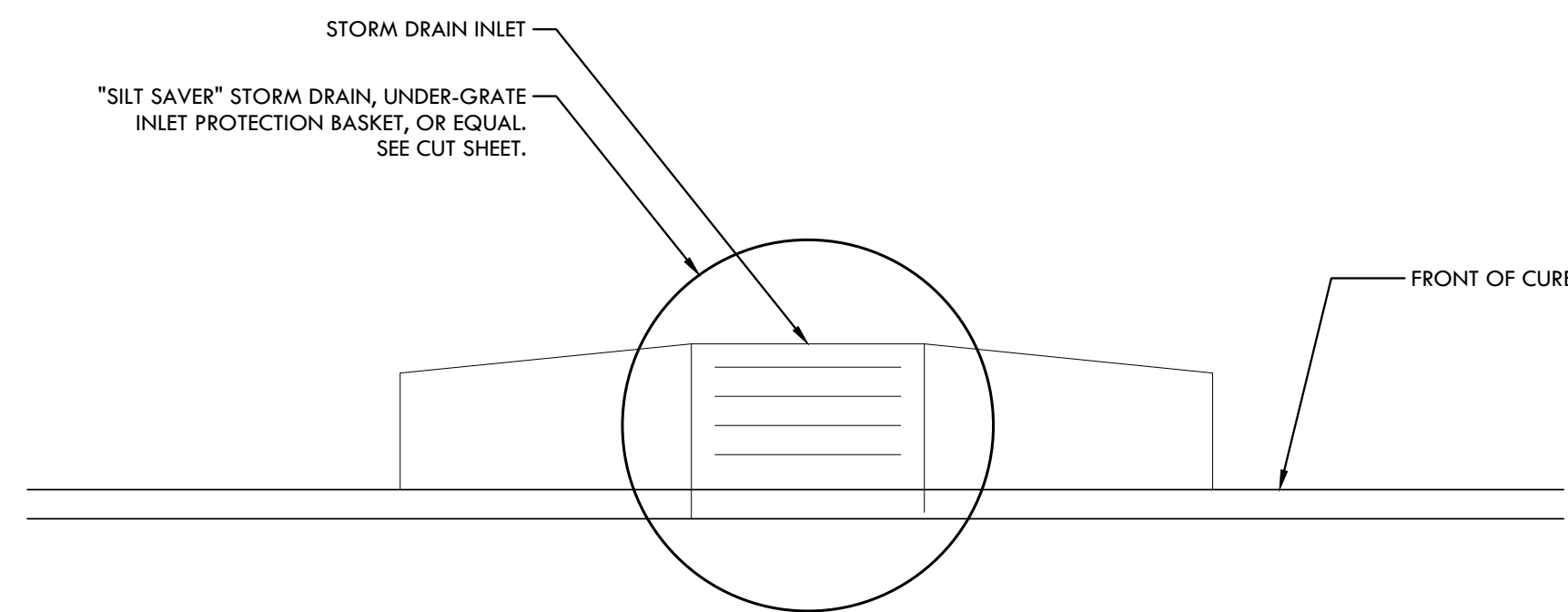


1 TEMPORARY CONSTRUCTION SITE ACCESS

L-1.1 SCALE: NTS

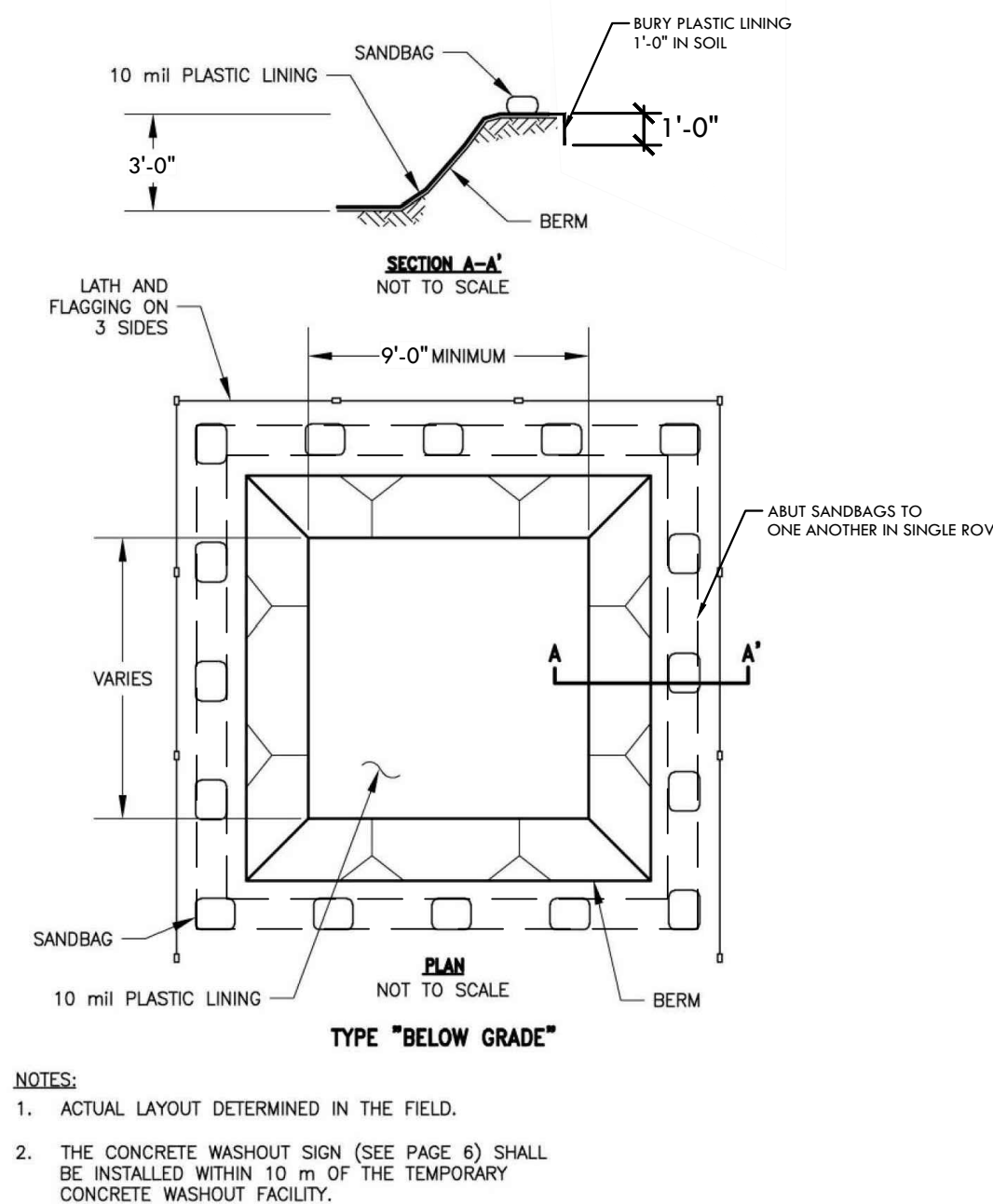
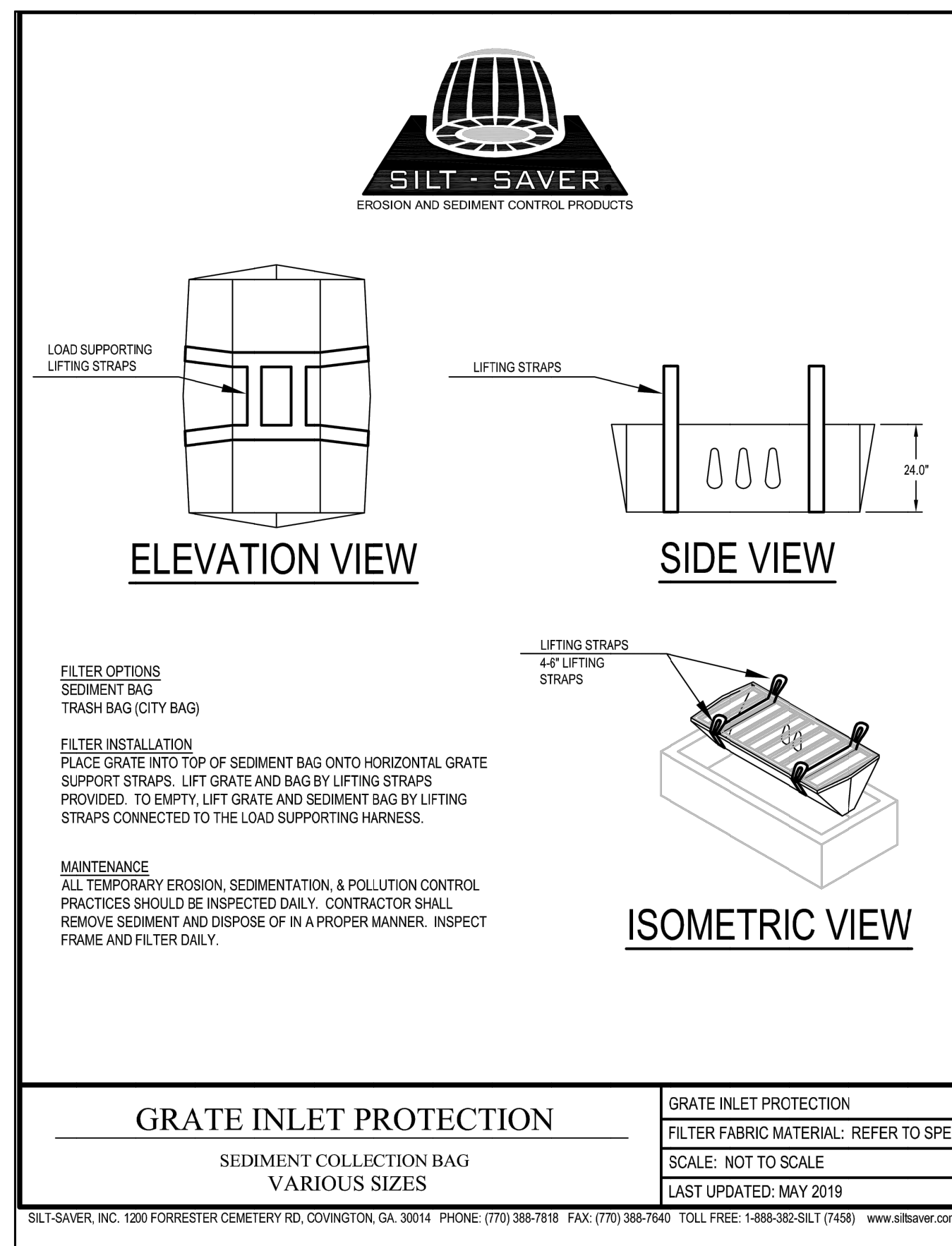
2 STRAW WATTLE

L-1.1 SCALE: NTS



3 DRAIN INLET PROTECTION

L-1.1 SCALE: NTS



3 CONCRETE WASHOUT

L-1.1 SCALE: NTS

CALL BEFORE YOU DIG

CITY OF CHICO PUBLIC WORKS

Call: 530-894-4200

UNDERGROUND SERVICE ALERT

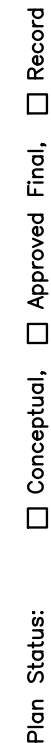
of Northern California

Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



Designed: MDG	Approved: _	Revision	Date	By	<div>PREPARED BY:</div> <div><div>MDG</div><div>MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616</div></div>	<div>PREPARED FOR:</div> <div><div>CHICO AREA RECREATION DEPARTMENT</div><div>545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711</div></div>	<div></div>	<div>CENTENNIAL PARK</div> <div>EROSION CONTROL DETAILS</div>	<div>012</div> <div>INCHES</div>	Project Number: MDG #2397	Drawing Number L-1.1	
Drawn By:	Date: July 17, 2020										Scale: 1"=30'	Sheet <u>3</u> of <u>26</u>
Checked:												



0 30 60

SCALE: 1" = 30'

Designed: MDG	Approved:	Revision	Date	By	<div>PREPARED BY:</div> <div><div>MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616</div></div>	<div>PREPARED FOR:</div> <div>CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711</div>		<div>012</div> <div>INCHES</div>	Project Number: MDG #2397	Drawing Number L-1.2		
Drawn By:											Scale: 1"=30'	Sheet <u>4</u> of <u>26</u>
Checked: GVM		Date: July 17, 2020										

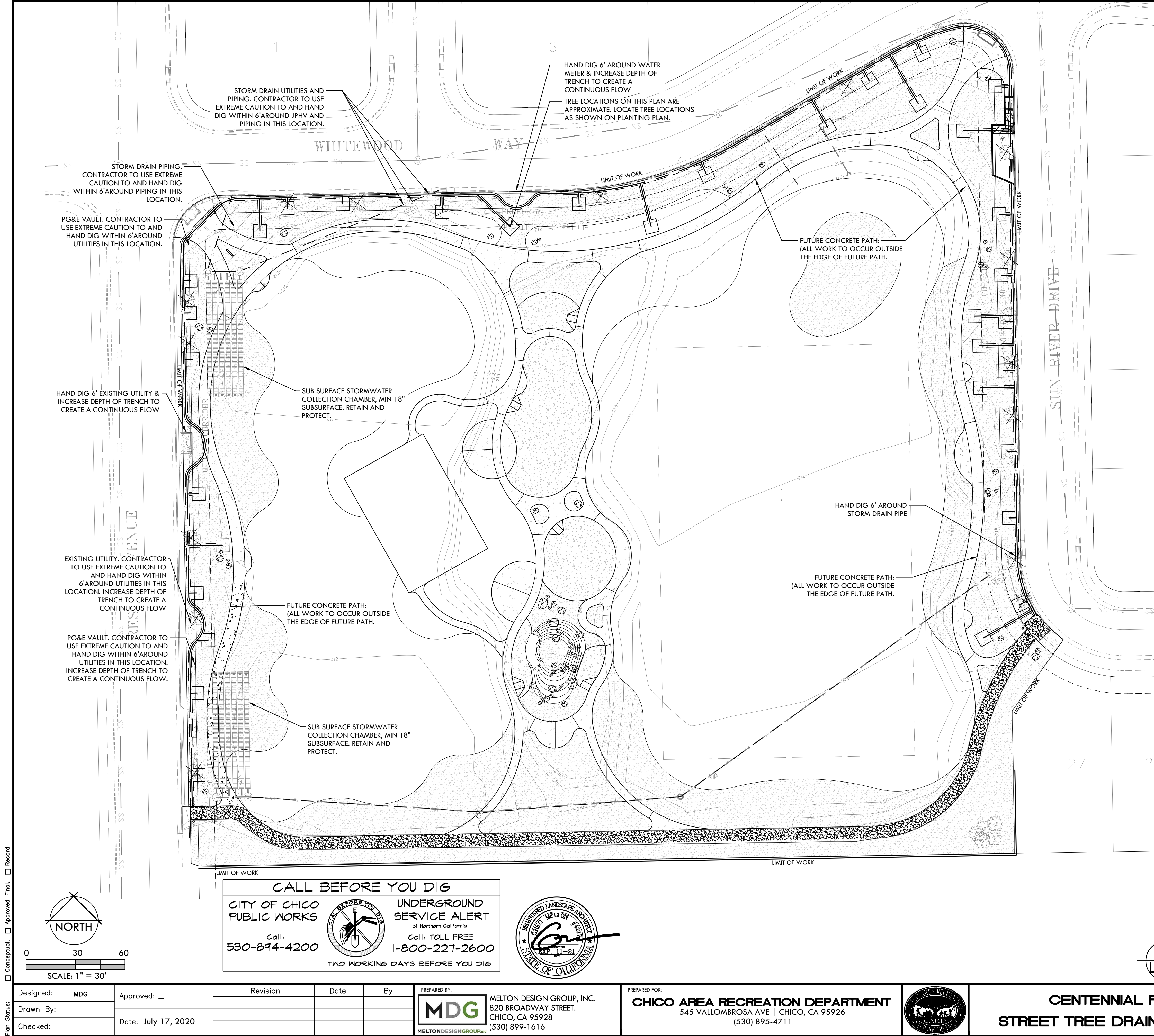
SYMBOL	<u>2022 EXISTING CONDITIONS</u> <u>DESCRIPTION</u>
(D-01)	RETAIN AND PROTECT (E) UTILITIES. CONTRACTOR RESPONSIBLE FOR REPAIRING ANY DAMAGE TO UTILITIES DURING THE COURSE OF CONSTRUCTION.
(D-02)	RETAIN AND PROTECT (E) RAMP. CONTRACTOR RESPONSIBLE FOR REPAIRING ANY DAMAGE TO RAMP DURING THE COURSE OF CONSTRUCTION.
(D-03)	RETAIN AND PROTECT (E) SITE PAVING. CONTRACTOR RESPONSIBLE FOR ANY DAMAGE THAT OCCURS DURING THE COURSE OF CONSTRUCTION.
(D-04)	RETAIN AND PROTECT (E) STORM DRAINS AND PIPE ON SITE, INCLUDING MANHOLE COVER/RAIN CLEANOUT.
(D-05)	RETAIN AND PROTECT (E) SIGNS AND GUARD POSTS.
(D-06)	RETAIN AND PROTECT (E) STORMTECH CHAMBER SYSTEM
(D-07)	RETAIN AND PROTECT (E) TREE. CONTRACTOR RESPONSIBLE FOR ALL TREE PROTECTION MEASURES THROUGHOUT SITE, AS WELL AS ANY DAMAGE SUSTAINED BY (E) TREES AND THEIR ROOT STRUCTURE.
(D-08)	RETAIN AND PROTECT (E) ASPHALT BIKE PATH.
<u>SYMBOL</u>	<u>DEMOLITION</u> <u>DESCRIPTION</u>
(D-101)	REMOVE TREE; RETAIN AND PROTECT AREA AROUND TREE. CONTRACTOR RESPONSIBLE FOR REPAIRING ANY DAMAGE TO SURROUNDING AREA DURING THE COURSE OF CONSTRUCTION.
(D-102)	SAWCUT AND REPLACE (E) ASPHALT (BIKE PATH OR ROAD).
(D-103)	REMOVE EXISTING PIPE AND WING WALLS. INSTALL FILL MATERIAL AND REPAIR SLOPE.
(D-104)	REMOVE (E) CONCRETE CURB FOR HANDICAP RAMP

1. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING HARDSCAPE, ASPHALT PATHS, LANDSCAPING, IRRIGATION, ETC. THAT ARE NOT DESIGNATED FOR DEMOLITION OR MODIFICATION.
2. CONTRACTOR SHALL COVER EXISTING ASPHALT PATHS, ROADWAYS, CURBS, MOW CURBS AND OTHER ELEMENTS TO PROTECT FROM DAMAGE DURING CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND/OR REPLACE ALL DAMAGED SURFACES, AMENITIES, HARDSCAPES, LANDSCAPE, IRRIGATION, ETC. DUE TO HIS/HER ACTIVITY OR NEGLIGENCE AND AS APPROVED BY THE DISTRICT.

1. CONFIRM ALL LOCATIONS OF EXISTING UTILITIES WITHIN PROJECT SITE PRIOR TO DEMOLITION AND EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING UTILITIES AND THE REPAIR AND/OR REPLACEMENT OF UTILITIES DAMAGED DUE TO CONTRACTORS WORK OR NEGLECT.
2. THE LANDSCAPE ARCHITECT CANNOT BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY OF EXISTING INFORMATION. PROVISION OF UTILITY LOCATION DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR RESPONSIBILITY TO CONDUCT FIELD DISCOVERY TO VERIFY EXISTING CONDITIONS.
3. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE HIS WORK WITH THE WORK OF OTHERS.
4. CONSTRUCTION SHALL CONFORM TO ALL UNIFORM BUILDING CODES AND SPECIFICATIONS.
5. CONTRACTOR SHALL OBSERVE ALL SAFETY REGULATIONS PERTAINING TO THIS PROJECT.
6. ANY CHANGES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
7. SEE CONSTRUCTION PLAN SHEET L-2.0 FOR COMPLETE REFERENCE NOTE SCHEDULE

1. THE NATURAL GRADE AROUND THE DRILLINE OF EXISTING TREES SHALL REMAIN UNDISTURBED DURING AND AFTER CONSTRUCTION. PREFERABLY, THE UNDISTURBED AREA SHALL BE AT DRILLINE, BUT IN NO CASE CLOSER THAN 20 FEET FROM THE TREE TRUNK. THE DRILLINE OF A TREE IS A PROJECTED RADIUS ON THE GROUND FORMED BY THE OUTERMOST EDGE OF THE TREE CANOPY.
2. WHERE GRADE CHANGES MUST OCCUR WITHIN THE DRILLINE, A SUITABLE MITIGATION PLAN SHALL BE DEVELOPED BY EITHER A CERTIFIED ARBORIST. THE PLAN SHALL PROTECT THE TREE FROM EXCESS FILL AND/OR THE REMOVAL OF EXCESS SOIL FROM THE ROOT ZONE.
3. PRIOR TO THE BEGINNING OF CONSTRUCTION, EXISTING TREES SHALL BE PRUNED TO REMOVE LIMBS WHICH MAY BE DEAD OR MAY BECOME DAMAGED DURING CONSTRUCTION. PRUNING SHALL BE PERFORMED CONSISTENT WITH ANSI A300 PRUNING STANDARDS, PRUNE TO THIN 1 IN.
4. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AROUND ALL TREE TRUNKS WITHIN CONSTRUCTION ZONE. WRAP TRUNK 4 TIMES AND SECURE FENCING TO TRUNK FOR DURATION OF PROJECT. CONFIRM WITH LANDSCAPE ARCHITECT ON BOUNDARY. THE FENCE SHALL BE SUBSTANTIAL ENOUGH TO RESTRICT ACTIVITY TO OUTSIDE THE AREA AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR OTHER CONSTRUCTION ACTIVITY. DURING CONSTRUCTION, MAINTENANCE SHALL BE PERFORMED SO THAT THE FENCE REMAINS IN GOOD REPAIR. REMOVAL OF THE FENCE SHALL ONLY OCCUR TO ALLOW REQUIRED CONSTRUCTION WITHIN THE AREA OR TO COMPLETE SITE LANDSCAPING. THE LANDSCAPE ARCHITECT SHALL BE CONTACTED, PRIOR TO COMMENCEMENT OF CONSTRUCTION, TO INSPECT FENCING AND TO APPROVE ANY CONSTRUCTION WITHIN THE DRILLINE.
5. UNDERGROUND FACILITIES AND TRENCHES, (e.g., UTILITY SERVICES, SANITARY SEWER, OR STORM DRAINAGE LINES) SHALL BE CONSOLIDATED, TO THE EXTENT FEASIBLE, AND LOCATED TO MINIMIZE IMPACTS UPON TREE ROOT SYSTEMS. ANY TRENCHING OR UNDERGROUND WORK SHOULD BE LOCATED OUTSIDE OF THE TREE DRILLINE. ANY TRENCHING REQUIRED WITHIN THE TREE DRILLINE SHALL BE AS FAR FROM THE TREE TRUNK AS POSSIBLE AND SHALL BE EXCAVATED BY HAND TO MINIMIZE IMPACT ON ROOTS. ALL TRENCHING WITHIN THE DRILLINE SHALL BE SUPERVISED BY A CERTIFIED ARBORIST.
6. ROOTS 3/4 IN. OR GREATER IN SIZE ENCOUNTERED DURING TRENCHING SHALL BE CLEANLY CUT AND TREATED WITH A SEALING AGENT TO REDUCE LOSS OF MOISTURE TO THE TREE. ROOTS GREATER THAN 1-1/2 IN. SHALL BE PRESERVED AND PROTECTED AT THE DIRECTION OF A CERTIFIED ARBORIST.
7. CONSTRUCTION VEHICLES, EQUIPMENT, OR MATERIALS SHALL NOT BE PARKED OR STORED WITHIN THE FENCED AREA. NO STAGING OR STORAGE AREA FOR CONSTRUCTION SHALL BE LOCATED CLOSER THAN 50 FEET TO THE DRILLINE OF ANY TREE TO BE PROTECTED.
8. ALL CONSTRUCTION WASTES, INCLUDING BUT NOT LIMITED TO BUILDING MATERIAL DEBRIS, ROOFING MATERIALS, CLEANING OF CEMENT TRUCKS, CHEMICALS/ADHESIVES/SOLVENTS, ETC., SHALL BE STORED OR DISPOSED OF NO CLOSER THAN 50 FEET FROM ANY TREE DRILLINE.





SYMBOL LEGEND

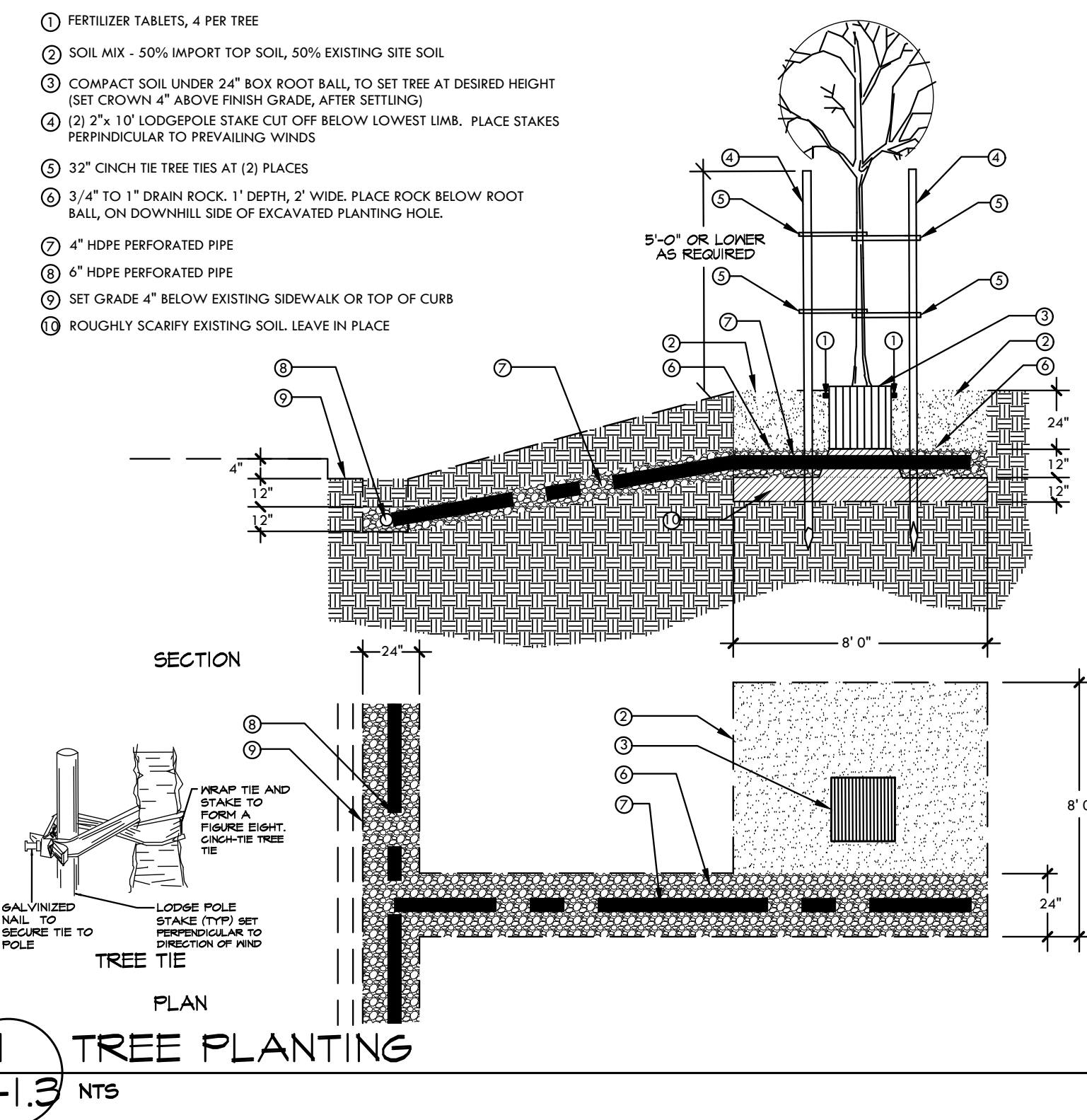
SYMBOL	DESCRIPTION
	CENTERLINE OF TRENCH, SEE DETAIL 1/L-3.0
	TRENCHED AREA, LOCATED AT BACK OF WALK, BACK OF CURB, OR AS SHOWN
	EXISTING TREE TO BE REMOVED
	EXISTING GRADE

EXISTING CONDITIONS NOTE

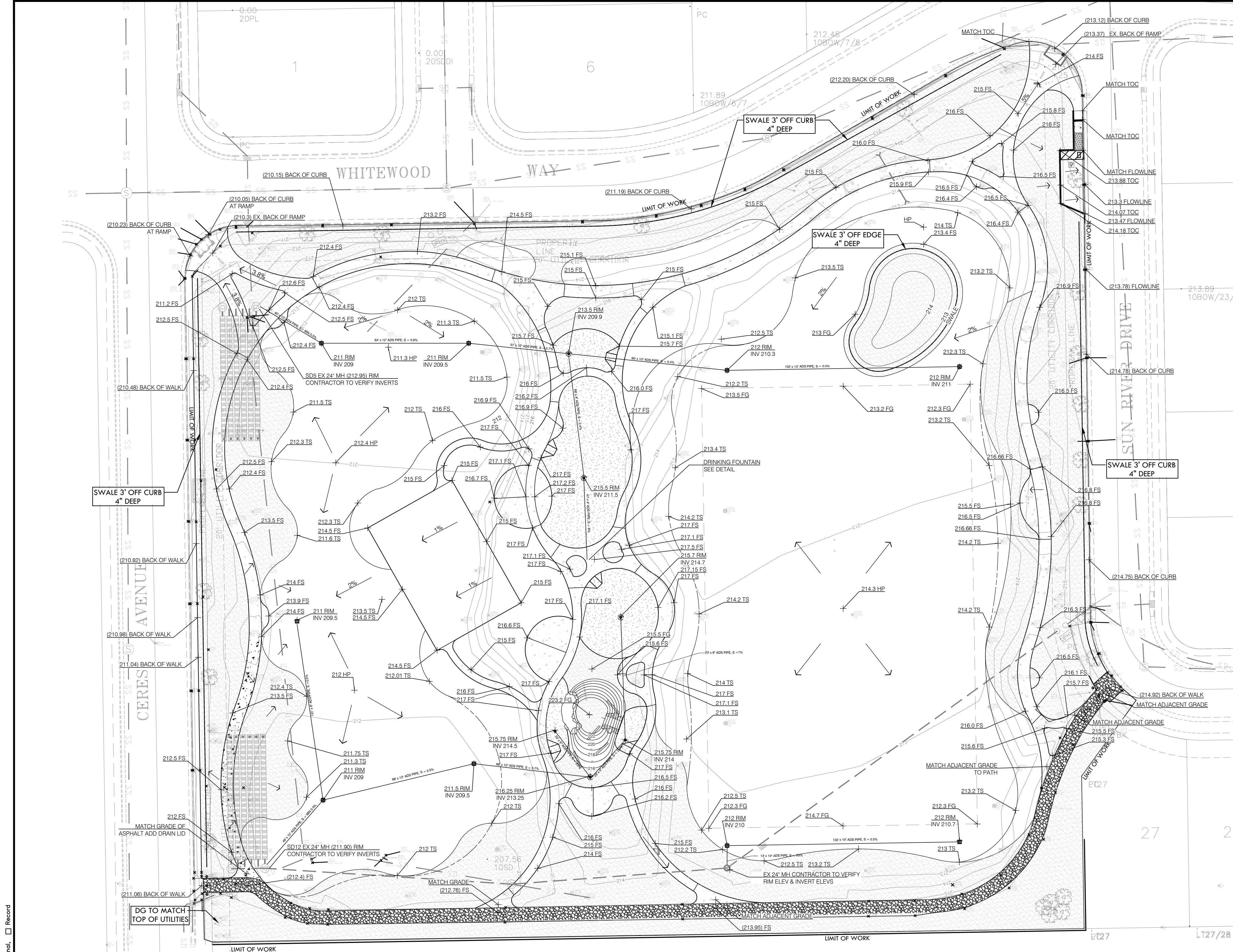
- CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING HARDSCAPE, ASPHALT PATHS, LANDSCAPING, IRRIGATION, ETC. THAT ARE NOT DESIGNATED FOR DEMOLITION OR MODIFICATION.
- CONTRACTOR SHALL COVER EXISTING ASPHALT PATHS, ROADWAYS, CURBS, MOW CURBS AND OTHER ELEMENTS TO PROTECT FROM DAMAGE DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND/OR REPLACE ALL DAMAGED SURFACES, AMENITIES, HARDSCAPES, LANDSCAPE, IRRIGATION, ETC. DUE TO HIS/HER ACTIVITY OR NEGLIGENCE AND AS APPROVED BY THE DISTRICT.

TREE PROTECTION MEASURES

- THE NATURAL GRADE AROUND THE DRIPLINE OF EXISTING TREES SHALL REMAIN UNDISTURBED DURING AND AFTER CONSTRUCTION. PREFERABLY, THE UNDISTURBED AREA SHALL BE AT DRIPLINE, BUT IN NO CASE CLOSER THAN 20 FEET FROM THE TREE TRUNK. THE DRIPLINE OF A TREE IS A PROJECTED RADIUS ON THE GROUND FORMED BY THE OUTERMOST EDGE OF THE TREE CANOPY.
- WHERE GRADE CHANGES MUST OCCUR WITHIN THE DRIPLINE, A SUITABLE MITIGATION PLAN SHALL BE DEVELOPED BY EITHER A CERTIFIED ARBORIST. THE PLAN SHALL PROTECT THE TREE FROM EXCESS FILL AND/OR THE REMOVAL OF EXCESS SOIL FROM THE ROOT ZONE.
- PRIOR TO THE BEGINNING OF CONSTRUCTION, EXISTING TREES SHALL BE PRUNED TO REMOVE LIMBS WHICH MAY BE DEAD OR MAY BECOME DAMAGED DURING CONSTRUCTION. PRUNING SHALL BE PERFORMED CONSISTENT WITH ANSI A300 PRUNING STANDARDS, PRUNE TO THIN 1 IN.
- A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AROUND ALL TREE TRUNKS WITHIN CONSTRUCTION ZONE. WRAP TRUNK 4 TIMES AND SECURE FENCING TO TRUNK FOR DURATION OF PROJECT. CONFIRM WITH LANDSCAPE ARCHITECT ON BOUNDARY. THE FENCE SHALL BE SUBSTANTIAL ENOUGH TO RESTRICT ACTIVITY TO OUTSIDE THE AREA AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR OTHER CONSTRUCTION ACTIVITY. DURING CONSTRUCTION, MAINTENANCE SHALL BE PERFORMED SO THAT THE FENCE REMAINS IN GOOD REPAIR. REMOVAL OF THE FENCE SHALL ONLY OCCUR TO ALLOW REQUIRED CONSTRUCTION WITHIN THE AREA OR TO COMPLETE SITE LANDSCAPING. THE LANDSCAPE ARCHITECT SHALL BE CONTACTED, PRIOR TO COMMENCEMENT OF CONSTRUCTION, TO INSPECT FENCING AND TO APPROVE ANY CONSTRUCTION WITHIN THE DRIPLINE.
- UNDERGROUND FACILITIES AND TRENCHES, (e.g., UTILITY SERVICES, SANITARY SEWER, OR STORM DRAINAGE LINES) SHALL BE CONSOLIDATED, TO THE EXTENT FEASIBLE, AND LOCATED TO MINIMIZE IMPACTS UPON TREE ROOT SYSTEMS. ANY TRENCHING OR UNDERGROUND WORK SHOULD BE LOCATED OUTSIDE OF THE TREE DRIPLINE. ANY TRENCHING REQUIRED WITHIN THE TREE DRIPLINE SHALL BE AS FAR FROM THE TREE TRUNK AS POSSIBLE AND SHALL BE EXCAVATED BY HAND TO MINIMIZE IMPACT ON ROOTS. ALL TRENCHING WITHIN THE DRIPLINE SHALL BE SUPERVISED BY A CERTIFIED ARBORIST.
- ROOTS 3/4 IN. OR GREATER IN SIZE ENCOUNTERED DURING TRENCHING SHALL BE CLEANLY CUT AND TREATED WITH A SEALING AGENT TO REDUCE LOSS OF MOISTURE TO THE TREE. ROOTS GREATER THAN 1-1/2 IN. SHALL BE PRESERVED AND PROTECTED AT THE DIRECTION OF A CERTIFIED ARBORIST.
- CONSTRUCTION VEHICLES, EQUIPMENT, OR MATERIALS SHALL NOT BE PARKED OR STORED WITHIN THE FENCED AREA. NO STAGING OR STORAGE AREA FOR CONSTRUCTION SHALL BE LOCATED CLOSER THAN 50 FEET TO THE DRIPLINE OF ANY TREE TO BE PROTECTED.
- ALL CONSTRUCTION WASTES, INCLUDING BUT NOT LIMITED TO BUILDING MATERIAL DEBRIS, ROOFING MATERIALS, CLEANING OF CEMENT TRUCKS, CHEMICALS/ADHESIVES/SOLVENTS, ETC., SHALL BE STORED OR DISPOSED OF NO CLOSER THAN 50 FEET FROM ANY TREE DRIPLINE.



Project Number: MDG #2397	Drawing Number L-1.3
Scale: 1"=30'	Sheet 4 of 26



GENERAL GRADING NOTES

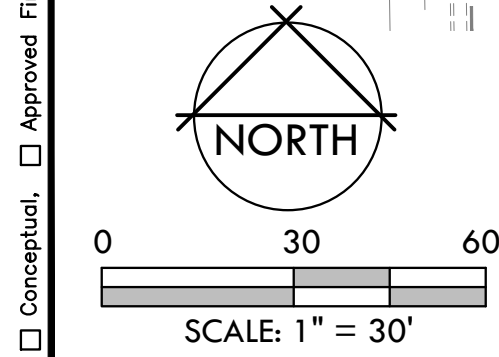
1. CONTACT LANDSCAPE ARCHITECT PRIOR TO GRADING IN THE EVENT THAT EXISTING GRADES FOR CONDITIONS ARE NOT AS SHOWN ON PLANS.
2. SLOPE DECOMPOSED GRANITE TO DRAIN TO DRAIN SUMP. ELIMINATE ALL LOCALIZED DEPRESSIONS OR "BIRD BATHS".
3. PROVIDE SMOOTH CONTINUOUS CURVE AT TOPS AND BOTTOM OF SLOPES AND OVER FIELD GRADE.
4. SMOOTH OUT TRANSITIONS TO ALL DRAIN INLETS. VERIFY RIM ELEVATIONS IN FIELD AT TIME OF STAKING WITH LANDSCAPE ARCHITECT PRIOR TO SETTING.
5. PROVIDE POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES AND BUILDINGS.
6. BRING GRADE IN PLANTERS TO BE 2.5" BELOW SIDEWALK TO ALLOW FOR DECOMPOSED GRANITE.
7. GRADE TURF AREA TO BE 2" BELOW SIDEWALK PRIOR TO SOD APPLICATION. BLEND SLOPE A MINIMUM OF 5' AWAY FROM SIDEWALK.
8. DIGITAL COPY OF TOPOGRAPHIC PLAN IS AVAILABLE ON REQUEST.
9. SEE BOOK FORM SPECIFICATIONS FOR ADDITIONAL INFORMATION.
10. ENTIRE SITE PREVIOUSLY ROUGH GRADED. NO EXPORT OR IMPORT OF SOIL IS ANTICIPATED, EXCEPT FOR TOPSOIL IMPORT FOR AMENDING SOIL IN TURF AREAS. SEE SPECIFICATIONS.

GRADING LEGEND

SYMBOL	DESCRIPTION	ABBREVIATIONS
215	EXISTING HARDSCAPE (RETAIN AND PROTECT)	FS FINISH CONCRETE SURFACE
214	EXISTING CONTOUR	FG FINISH GRADE
215.5	NEW CONTOUR	TC TOP OF CURB
216.7 FS	EXISTING SPOT ELEVATION	BC BOTTOM OF CURB
216.7 FS	NEW SPOT ELEVATION	TR TOP OF RAMP
216.7 FS	DIRECTION AND PERCENT OF SLOPE - SLOPE TO DRAIN	BR BOTTOM OF RAMP
216.7 FS	CATCH BASIN TURF AREAS (LOCKABLE GRATE)	VE EDGE OF VAULT
216.7 FS	CATCH BASIN NON-TURF AREAS (LOCKABLE GRATE)	INV DRAIN PIPE INLET ELEVATION
216.7 FS	TOE OF SLOPE	RIM TOP OF CATCH BASIN GRATE
216.7 FS	SWALE	TS TOE OF SLOPE

EXISTING CONDITIONS NOTE

1. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING HARDSCAPE, ASPHALT PATHS, LANDSCAPING, IRRIGATION, ETC. THAT ARE NOT DESIGNATED FOR DEMOLITION OR MODIFICATION.
2. CONTRACTOR SHALL COVER EXISTING ASPHALT PATHS, ROADWAYS, CURBS, MOW CURBS AND OTHER ELEMENTS TO PROTECT FROM DAMAGE DURING CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND/OR REPLACE ALL DAMAGED SURFACES, AMENITIES, HARDSCAPES, LANDSCAPE, IRRIGATION, ETC. DUE TO HIS/HER ACTIVITY OR NEGLECT AND AS APPROVED BY THE DISTRICT.



Designed: MDG	Approved: _____	Revision	Date	By	PREPARED BY: MDG	PREPARED FOR: CHICO AREA RECREATION DEPARTMENT		CENTENNIAL PARK GRADING AND DRAINAGE PLAN	0 1 2 INCHES	Project Number: MDG #2397	Drawing Number L-1.4
Drawn By:	Date: July 17, 2020				820 BROADWAY STREET, CHICO, CA 95928 (530) 899-1616	545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711				Scale: 1"=30'	Sheet 4 of 26
Checked:											

CALL BEFORE YOU DIG

CITY OF CHICO
PUBLIC WORKS

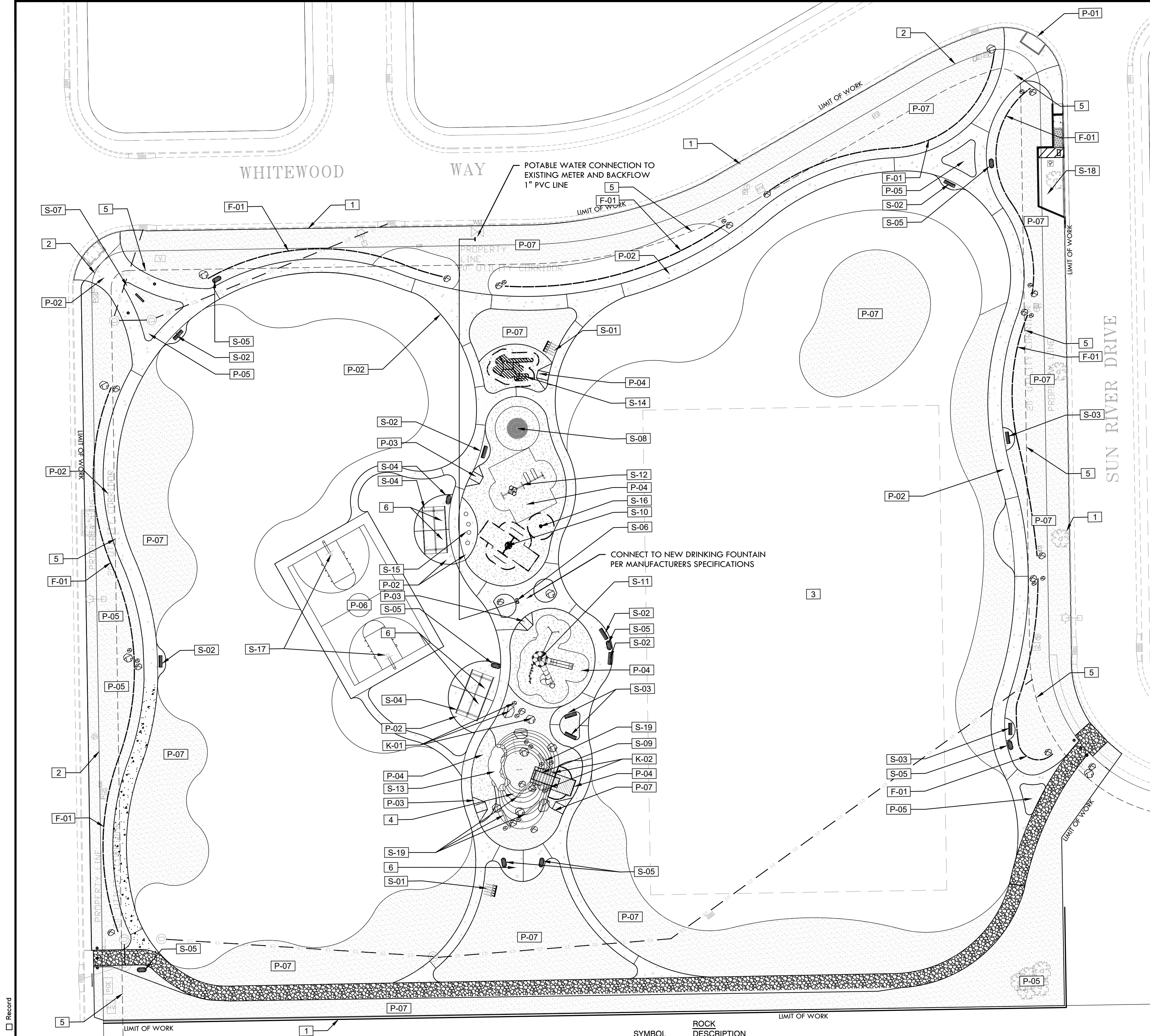
Call: 530-894-4200

UNDERGROUND SERVICE ALERT

at Northern California

Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	LIMIT OF WORK - FOR REFERENCE ONLY
2	PROPERTY LINE - FOR REFERENCE ONLY
3	MULTI-USE TURF FIELD. SEE PLANTING PLAN.
4	NATURAL PLAY MOUND. SEE ENLARGED DETAIL AND GRADING PLAN FOR MORE INFORMATION.
5	PUBLIC UTILITY EASEMENT - 20' FOR REFERENCE ONLY
6	ADA ORIENTATION OF PICNIC TABLES, REFER TO MAUFACTURERS GUIDELINES FOR ADA SET-UP

SYMBOL	FENCE DESCRIPTION
F-01	SPLIT RAIL FENCE, WESTERN RED CEDAR, 36" RAIL HEIGHT, 42" POST HEIGHT - REJECT ALL SPLINTERED PIECES.

SYMBOL	PAVING DESCRIPTION
P-01	PEDESTRIAN RAMP. SEE DETAILS
P-02	CONCRETE PAVING 4" DEEP. NEW CONCRETE PAVING WITH MEDIUM BROOM FINISH. NO COLOR. MAIN EXPANSION JOINTS SHOWN, PLACE REMAINING @ 18' SPACING WITH SCORE LINES @ 6" SPACING.

SYMBOL	DESCRIPTION
P-03	PLAY AREA RAMP - CONCRETE ADA ACCESSIBLE
P-04	FALL SURFACE - 12" DEEP MINIMUM BY READYPLAY; 100% VIRGIN FOREST WOOD. CONTACT 209-786-4042. OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S SPECIFICATIONS. ORDER 125% VOLUME TO ALLOW FOR SETTLING.

SYMBOL	DESCRIPTION
P-05	3" MINUS BLACK BASALT CHIPS, 3" DEPTH
P-06	MULTI-PURPOSE SPORT COURT. SEE DETAILS FOR MORE INFORMATION.
P-07	DECOMPOSED GRANITE. COLOR GOLD, 3" THICK AFTER COMPACTION. NO AGGREGATE BASE. NO FORMAL EDGE, NATURAL TO TURF.

SYMBOL	DESCRIPTION
S-01	BIKE RACK. 5 LOOP STEEL U24 BIKE RACK, COLOR: BLACK, BY MADRAX (800) 448-7931 OR APPROVED EQUAL.
S-02	BACKLESS BENCH, VICTOR STANLEY RBF-12 COLOR: PER LANDSCAPE ARCHITECT

SYMBOL	DESCRIPTION
S-03	BENCH, VICTOR STANLEY RBF-28. COLOR: PER LANDSCAPE ARCHITECT
S-04	PICNIC SHELTER BY ICON SHELTERS. MODEL: TBD.
S-05	TRASH RECEPTACLE BY VICTORY STANLEY DUO, MODEL # SD-242 WITH RECYCLING.

SYMBOL	DESCRIPTION
S-06	DRINKING FOUNTAIN MDF PEDESTAL FOUNTAIN MODEL #840 SMSS-02 HI-LO DUAL FOUNTAIN. COLOR: BLACK AVAILABLE THROUGH MOST DEPENDABLE AT (800) 552-6551
S-07	PRECAST CONCRETE ENTRY SIGN BY OUTDOOR CREATIONS OR APPROVED EQUAL. AVAILABLE THROUGH PARK PLANET; CONTACT KYLE KNOX (877) 473-7619.

SYMBOL	DESCRIPTION
S-08	ROTATING NET SPINNER: KLD ROPES WITH FLOOR. PRODUCT # KLD-SPIN-04 NET SPINNER
S-09	STEEL EMBANKMENT SLIDE ON MOUND BY NATURAL STRUCTURES. MODEL: SS-EMS0805-RM. CONTACT DAN KLIPPERT 541-403-7325

SYMBOL	DESCRIPTION
S-10	8' ROPE BASKET SWING. KOMPAN MODEL # KSW92008-0910 SINGLE BAY SWING.
S-11	LANDSCAPE STRUCTURES SUPER NETPLEX 12' TOWER. CONTACT JON BAWDEN (707) 736-6890

SYMBOL	DESCRIPTION
S-12	8' HEIGHT SWING SET: (2) BELT SEATS WITH CHAINS, AND (1) FRIENDSHIP SWING #6121. 5' FULL ARCH SWING FRAME WITH ADDITIONAL BAY. LANDSCAPE STRUCTURES DESIGN ID #4341
S-13	BOULDERING WALL - GUNITE WITH REBAR. 10' HEIGHT. NOT SHOWN. CONTRACTOR TO PROVIDE SHOP DRAWINGS - EL DORADO CLIMBING WALLS (303) 447-0512

SYMBOL	DESCRIPTION
S-14	FITNESS STATION, FREESTANDING EQUIPMENT - KOMPAN # FSW10401-0900 COMBI 4 ORANGE. CONTACT MARK WILLIS (916) 316-9663
S-15	MUSIC EQUIPMENT: (2) FLOWERS, (2) BUTTERFLY BY HARMONY PARK. COLOR: BY LANDSCAPE ARCHITECT.

SYMBOL	DESCRIPTION
S-16	MINI ROTATING CLIMBER: KOMPAN SPICA GXY8014, COLOR: BY LANDSCAPE ARCHITECT.
S-17	BASKETBALL GOAL AND POST MODEL: 1804 BY PLAYCRAFT.
S-18	ACCESSIBLE ON STREET PARKING STALL - SEE DETAIL

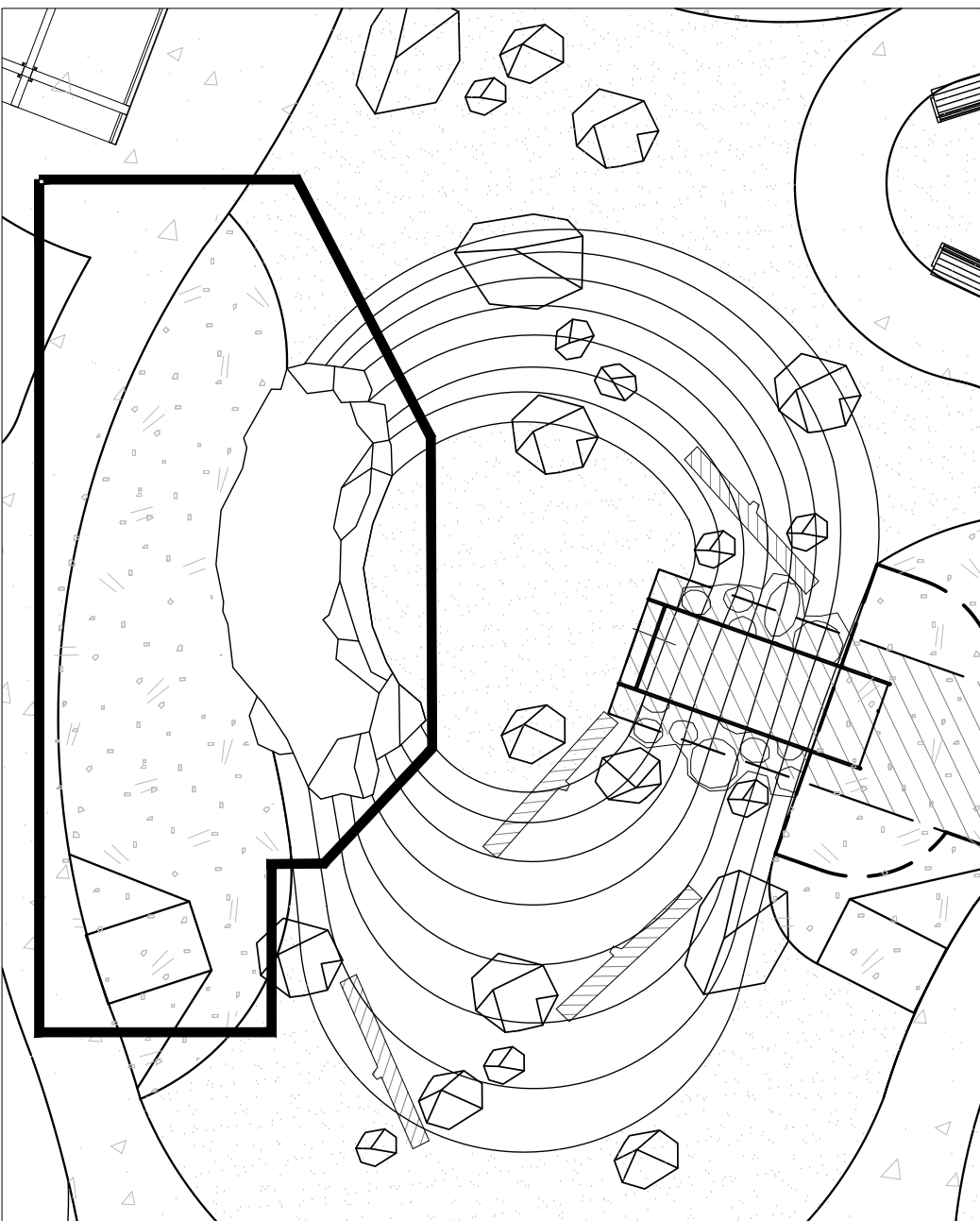
SYMBOL	DESCRIPTION
S-19	EMBEDDED CEDAR LOGS, TYP. 4 TOTAL. SEE DETAIL L-2.1

EXISTING CONDITIONS NOTE

- CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING HARDSCAPE, ASPHALT PATHS, LANDSCAPING, IRRIGATION, ETC. THAT ARE NOT DESIGNATED FOR DEMOLITION OR MODIFICATION.
- CONTRACTOR SHALL COVER EXISTING ASPHALT PATHS, ROADWAYS, CURBS, MOW CURBS AND OTHER ELEMENTS TO PROTECT FROM DAMAGE DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND/OR REPLACE ALL DAMAGED SURFACES, AMENITIES, HARDSCAPES, LANDSCAPE, IRRIGATION, ETC. DUE TO HIS/HER ACTIVITY OR NEGLIGENCE AND AS APPROVED BY THE DISTRICT.

CONSTRUCTION NOTES

- CONFIRM ALL LOCATIONS OF EXISTING UTILITIES WITHIN PROJECT SITE PRIOR TO DEMOLITION AND EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND RETAIN EXISTING UTILITIES, AND FOR THE REPAIR AND/OR REPLACEMENT OF UTILITIES DAMAGED DUE TO CONTRACTORS WORK OR NEGLIGENCE.
- THE LANDSCAPE ARCHITECT CANNOT BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY OF EXISTING INFORMATION. PROVISION OF UTILITY LOCATION DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR RESPONSIBILITY TO CONDUCT FIELD DISCOVERY TO VERIFY EXISTING CONDITIONS.
- THE CONTRACTOR IS RESPONSIBLE TO COORDINATE HIS WORK WITH THE WORK OF OTHERS.
- CONSTRUCTION SHALL CONFORM TO ALL UNIFORM BUILDING CODES AND SPECIFICATIONS.
- CONTRACTOR SHALL OBSERVE ALL SAFETY REGULATIONS PERTAINING TO THIS PROJECT.
- ANY CHANGES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.



PLAY MOUND ENLARGEMENT

- BID ALTERNATE SHOWN WITHIN BOUNDARY:
 - CLIMBING WALL WITH BOULDERS AT TOP.
 - FALL SURFACING AT BASE OF CLIMBING WALL.
 - PEDESTRIAN RAMP INTO FALL AREA.
- BASE BID TO INCLUDE WITHIN BOUNDARY:
 - COMPLETE CONSTRUCTION OF PLAY MOUND.
 - CONTINUE DG SURFACING WITHIN BOUNDARY FROM BACK OF SIDEWALK TO TOE OF SLOPE.

DESIGNED BY: MDG

DRAWN BY:

CHECKED BY: GYM

APPROVED:

DATE: July 17, 2020

REVISION:

DATE:

BY:

PREPARED BY: MDG

MELTON DESIGN GROUP, INC.

820 BROADWAY STREET.

CHICO, CA 95928

(530) 899-1616

PREPARED FOR: CHICO AREA RECREATION DEPARTMENT

545 VALLOMBROSA AVE | CHICO, CA 95926

(530) 895-4711

CENTENNIAL PARK

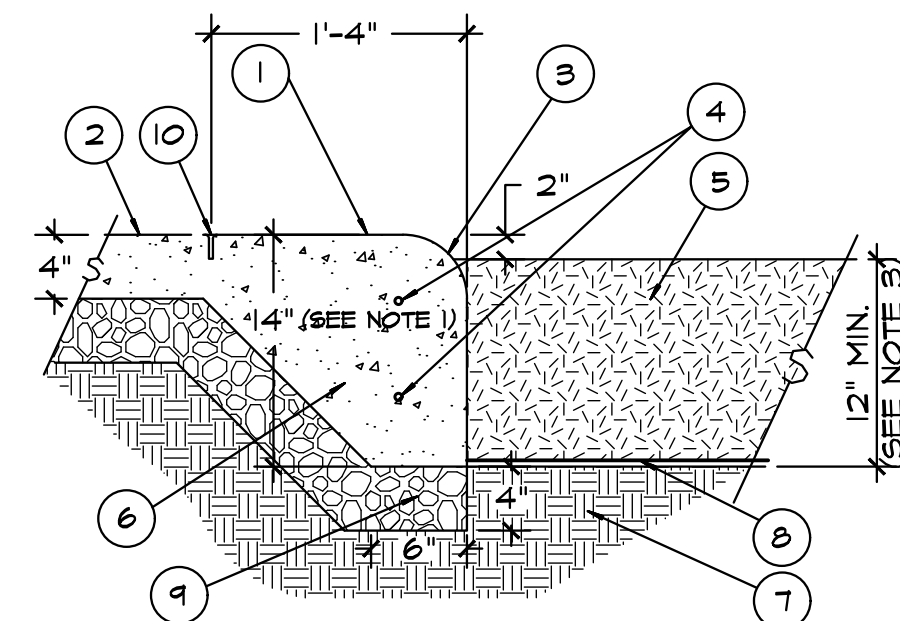
CONSTRUCTION PLAN

Project Number: MDG #2397

Scale: 1"=30'

Drawing Number L-2.0

Sheet 6 of 26



NOTES:
1. PLAY AREAS HAVE NOT BEEN EXCAVATED DURING PRELIMINARY GRADING
2. SEE GRADING PLAN FOR MAXIMUM DEPTH OF SAFETY FALL SURFACING

- ① THICKENED EDGE OF CONCRETE AS SHOWN AT PERIMETER OF PLAY AREA
- ② CONCRETE PAVING SEE DETAIL 1/L-6.0
- ③ 4" RADIUS TOOLED EDGE
- ④ (2) #4 REBAR CONT.
- ⑤ SAFETY FALL SURFACING LOOSE FILL ENGINEERED WOOD FIBER TESTED TO BE ADA ACCESSIBLE. INSTALL 12" MINIMUM DEPTH. MF6R BY SUN-UP PRODUCTS (800)222-2551. ORDER 125% OF REQUIRED VOLUME TO ALLOW FOR SETTLING.
- ⑥ THICKENED CONCRETE CURB
- ⑦ COMPACTED SUBGRADE TO 95%
- ⑧ SOIL SEPARATOR FABRIC. DEWITT 4.1 OZ., 20 YEAR FABRIC (EQUAL OR BETTER)
- ⑨ 4" LAYER OF CLASS #2 AGGREGATE BASE COMPACTED TO 95% RELATIVE DENSITY.
- ⑩ SCORELINE - 1-1/2" DEPTH, 1/4" WIDTH W/ 1/4" RADIUS EDGE

NTS

THICKENED EDGE OF CONCRETE AT PLAY AREA

1

ASPHALT PATHWAY

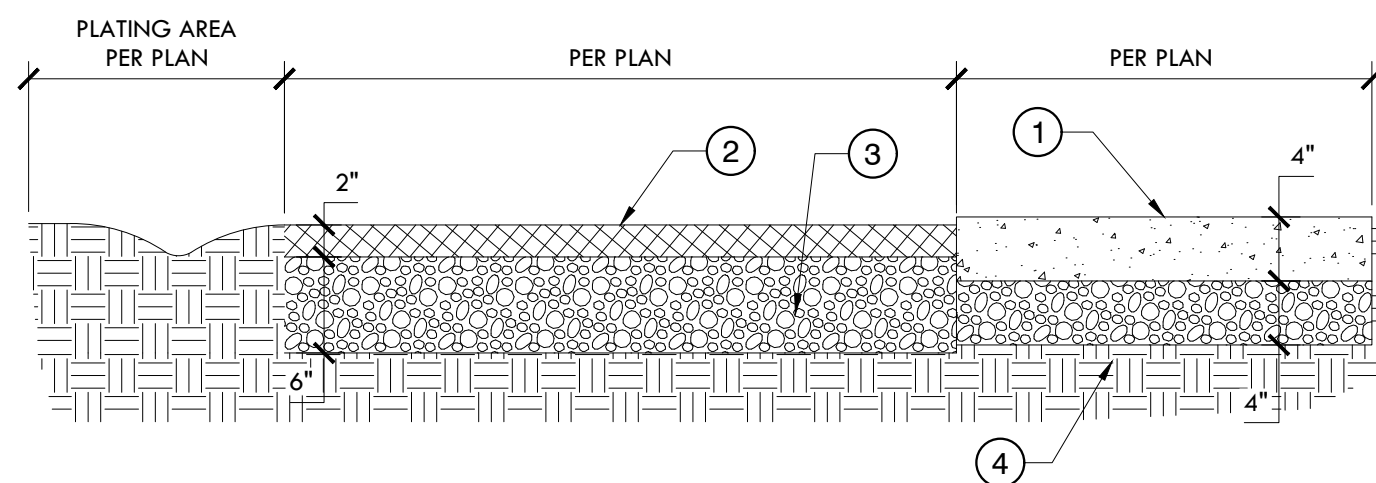
NTS

2

CONCRETE PAVING

NTS

3



- ① PAVING PER PLANS
- ② 2" ASPHALT CONCRETE
- ③ 6" AGGREGATE BASE
- ④ COMPACTED SUBGRADE

NTS

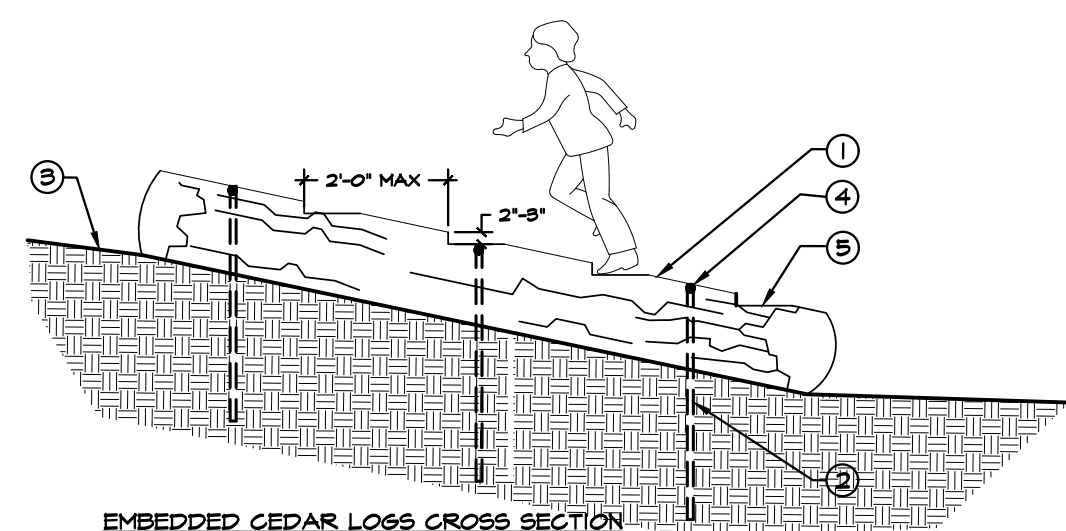
AC PAVING

4

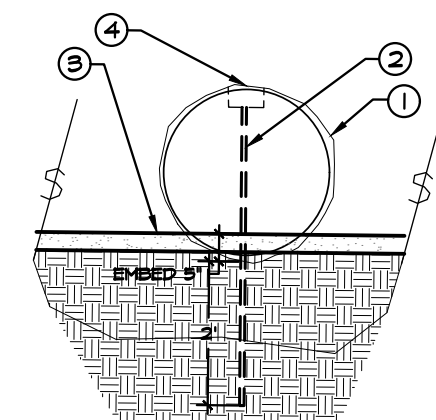
PLAY AREA RAMP

NTS

5



EMBEDDED CEDAR LOGS CROSS SECTION



EMBEDDED CEDAR LOGS SECTION

- ① LOG CEDAR. LENGTH VARIES. SEE PLAN. DIAMETER TO BE 16" MIN, 24" MAX.
- ② GALVANIZED PIPE, 1" DIAM, DRILL PILOT HOLE THROUGH TOP OF LOG. PLACE EVERY 8' O.C. MAX. MAINTAIN MINIMUM OF 18" FROM ENDS OF LOG. SET 2" BELOW FINISHED GRADE. MIN. (2) GALVANIZED PIPES PER LOG.
- ③ FINISHED GRADE. MATERIAL VARIES. SEE CONSTRUCTION PLAN.
- ④ CUT 3" DIA BY 3" DEEP PLUG FROM LOG TO SEAL OVER TOP OF PIPE. WOOD GLUE IN PLACE.
- ⑤ NOTCH WOOD TO CREATE FOOT-HOLD. SAND EDGES SMOOTH TO 1/4" RADIUS

NTS

NOTCHED, EMBEDDED LOGS

6

EMBEDDED LOGS

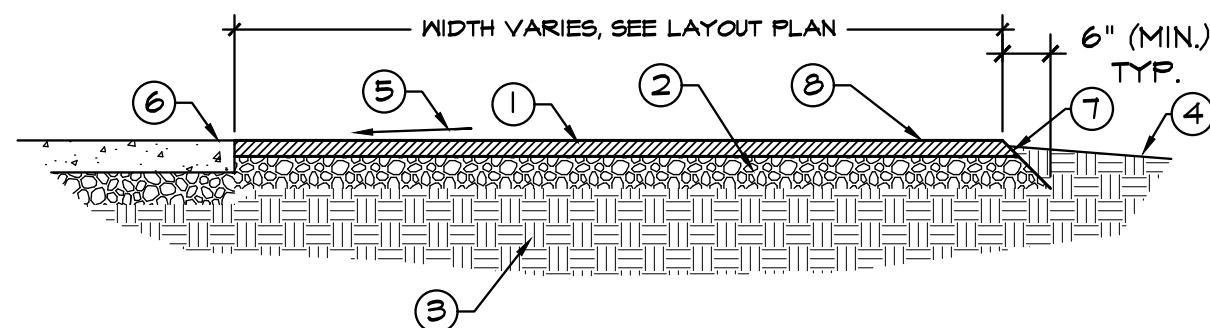
NTS

7

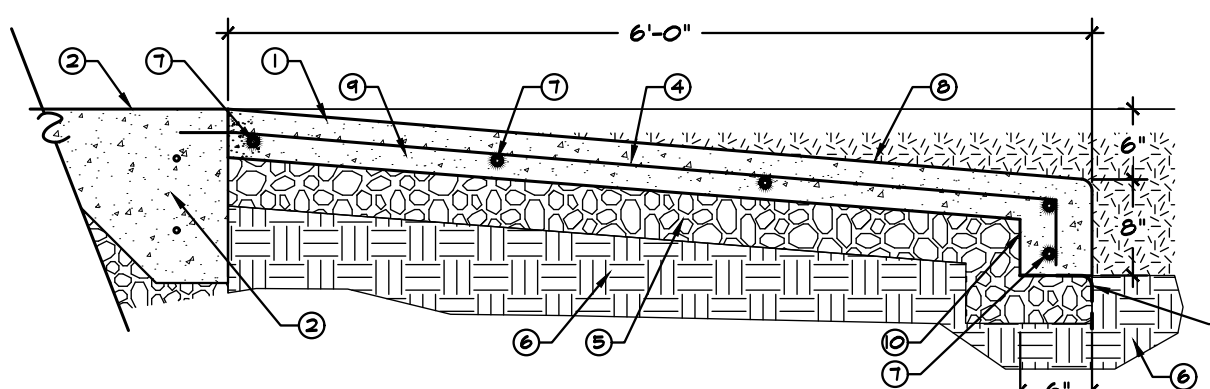
ADA PARKING STRIPING AND SIGNAGE

NTS

8

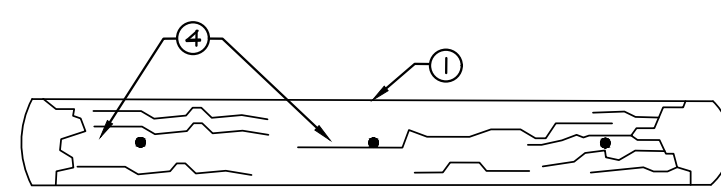


- ① 2" CLASS 'B' A.C. WITH PRIME COAT
- ② 4" LAYER OF CLASS #2 AGGREGATE BASE COMPACTED TO 95%. FOR HIGH TRAFFIC VEHICULAR PARKING AREAS USE 6" LAYER OF CLASS #2 AGGREGATE BASE COMPACTED TO 95%. EXTEND FAST EDGE OF ASPHALT 6" MIN.
- ③ COMPACTED SUBGRADE TO 95% RELATIVE DENSITY.
- ④ TURF OR PLANTING BED, SEE PLANTING PLAN.
- ⑤ SEE GRADING PLAN FOR SLOPE OF PATH.
- ⑥ FLUSH WITH CONCRETE PAVING (WHERE APPLICABLE)
- ⑦ HAND TAMP EDGES. FINISH EDGES STRAIGHT AND TRUE, 45 DEGREE EDGE
- ⑧ 2" CLASS 'A' A.C. WITH PRIME COAT FOR HIGH TRAFFIC VEHICULAR PARKING AREAS.

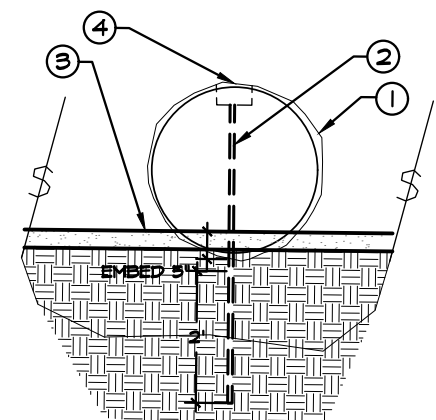


- ① CONCRETE PAVING, SEE DETAIL 1/L-6.0
- ② PLAY CURB, SEE DETAIL 6/L-6.0 RAMP TO BE FLUSH WITH CURB AS SHOWN.
- ③ SOIL SEPARATION FABRIC, SEE SPECIFICATIONS.
- ④ 4" THICK CONCRETE RAMP
- ⑤ 4" LAYER OF CLASS #2 AGGREGATE BASE COMPACTED TO 95% RELATIVE DENSITY.
- ⑥ UNDISTURBED SUB-GRADE OR COMPACTED TO 95% RELATIVE DENSITY
- ⑦ #4 REBAR, 5 REQ'D (HORIZ). TERMINATE 2" IN FROM EDGE OF PAVING
- ⑧ LOOSE FILL ENGINEERED WOOD FIBER, SEE DETAIL 6/L-6.0
- ⑨ #4 REBAR (HORIZ) @ 24" O.C. TIE INTO ADJACENT CONCRETE CURB
- ⑩ 8" REINFORCED EDGE - INSTALL ON THREE SIDES-BUTT INTO CURB

NOTE:
SEE CONSTRUCTION PLAN FOR ADDITIONAL INFORMATION

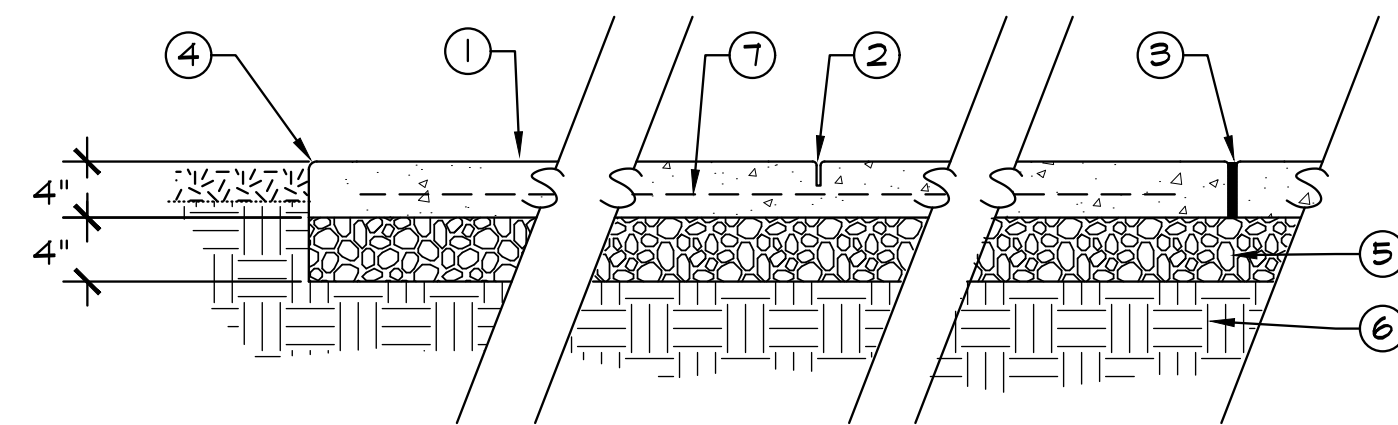


EMBEDDED CEDAR LOGS PLAN



EMBEDDED CEDAR LOGS SECTION

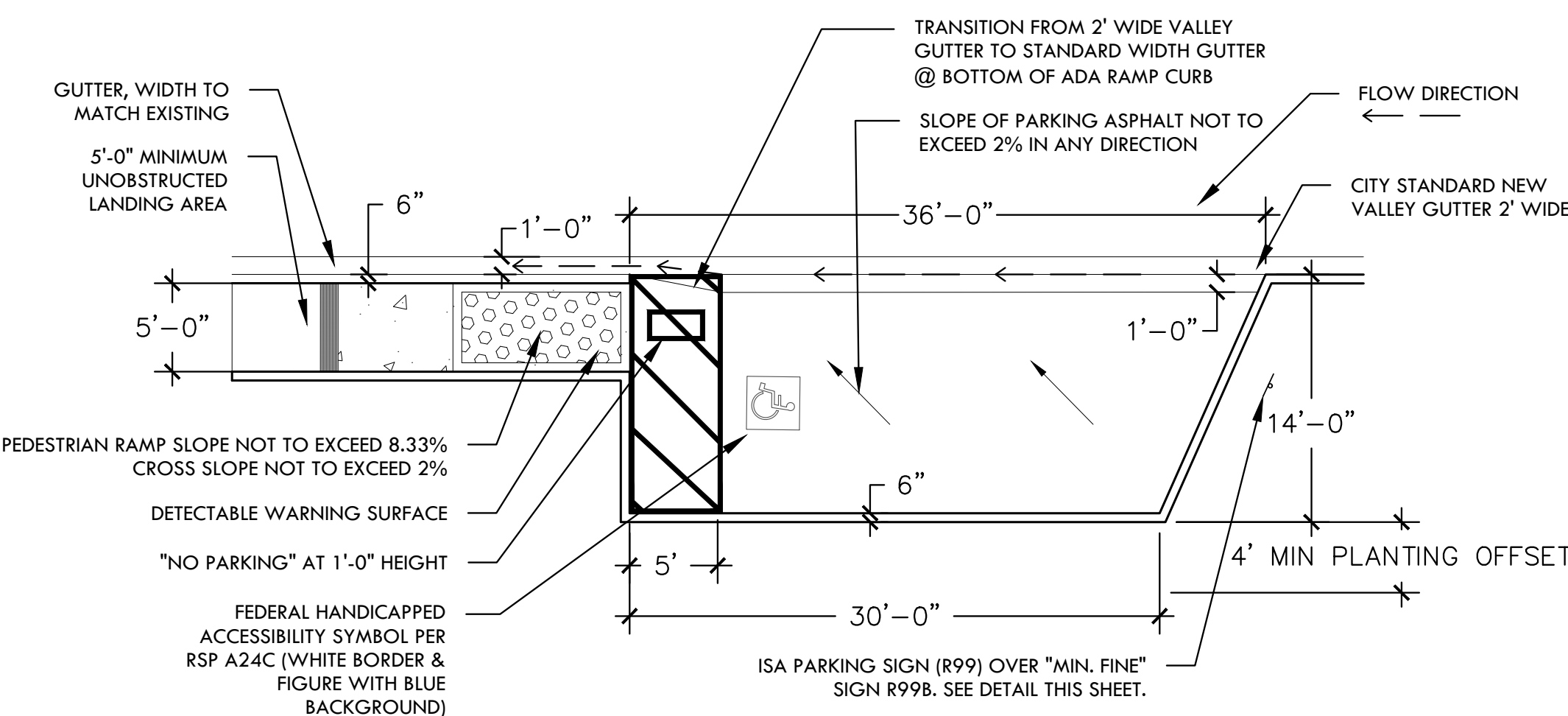
- ① LOG CEDAR. LENGTH VARIES. SEE PLAN. DIAMETER TO BE 16" MIN, 24" MAX.
- ② GALVANIZED PIPE, 1" DIAM, DRILL PILOT HOLE THROUGH TOP OF LOG. PLACE EVERY 8' O.C. MAX. MAINTAIN MINIMUM OF 18" FROM ENDS OF LOG. SET 2" BELOW FINISHED GRADE. MIN. (2) GALVANIZED PIPES PER LOG.
- ③ FINISHED GRADE. MATERIAL VARIES. SEE CONSTRUCTION PLAN.
- ④ CUT 3" DIA BY 3" DEEP PLUG FROM LOG TO SEAL OVER TOP OF PIPE. WOOD GLUE IN PLACE.



- ① CONCRETE PAVING - SEE CONSTRUCTION PLAN FOR LOCATION. (SEE SPECIFICATIONS)
- ② SCORELINE - 1-1/2" DEPTH, 1/4" WIDTH W/ 1/4" RADIUS EDGE. LINES CAN BE EITHER TOOLED OR SAWCUT AND BEVELING THE EDGES OF THE CUT
- ③ 1/2" EXPANSION FELT AT FIXED OBJECTS, EXISTING PAVING, OR AS SPECIFIED ON PLANS. 1/2" WIDE X 1/2" DEEP RESILIENT POLYURETHANE SEALANT, MATCH CONCRETE COLOR.
- ④ 1/4" RADIUS TOOLED EDGE
- ⑤ COMPACTED CLASS II AGGREGATE BASE. 4" MIN. DEPTH.
- ⑥ UNDISTURBED SUB-GRADE OR COMPACTED TO 95% RELATIVE DENSITY.
- ⑦ #3 REBAR @ 24" O.C. B/W OR 6X6/10X10 WELDED WIRE MESH

NOTES:

1. PEDESTRIAN CONCRETE - 4" MIN. CONCRETE THICKNESS, 4" MIN. AGGREGATE BASE. (SEE CONSTRUCTION PLAN SHEET L-2.0 PLAN LEGEND ITEM 5). MEDIUM BROOM FINISH.
2. REFER TO SPECIFICATIONS FOR CONCRETE MIX DESIGN.



GUTTER, WIDTH TO MATCH EXISTING
5'-0" MINIMUM UNOBSTRUCTED LANDING AREA

PEDESTRIAN RAMP SLOPE NOT TO EXCEED 8.33%
CROSS SLOPE NOT TO EXCEED 2%

"NO PARKING" AT 1'-0" HEIGHT
FEDERAL HANDICAPPED ACCESSIBILITY SYMBOL PER RSP A24C (WHITE BORDER & FIGURE WITH BLUE BACKGROUND)

TRANSITION FROM 2' WIDE VALLEY GUTTER TO STANDARD WIDTH GUTTER @ BOTTOM OF ADA RAMP CURB
SLOPE OF PARKING ASPHALT NOT TO EXCEED 2% IN ANY DIRECTION
CITY STANDARD NEW VALLEY GUTTER 2' WIDE

36'-0"
1'-0"
1'-0"
14'-0"
4' MIN PLANTING OFFSET
30'-0"
6"

ISA PARKING SIGN (R99) OVER "MIN. FINE" SIGN R99B. SEE DETAIL THIS SHEET.

NOTES:

1. WHERE PLAQUE R99B (CA), SIGN R99C (CA) OR SIGN RT-2B ARE INSTALLED, THE BOTTOM OF THE SIGN OR PLAQUE PANEL SHALL BE A MINIMUM OF 7'-0" ABOVE THE SURROUNDING SURFACE.
2. A R100B (CA) SIGN SHALL BE POSTED IN A CONSPICUOUS PLACE AT EACH ENTRANCE TO OFF-STREET PARKING FACILITIES OR IMMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL. THE SIGN SHALL INCLUDE THE TELEPHONE NUMBER TO RECLAIMED VEHICLES.
3. PARKING STALL, SIGNAGE, RAMP, AND STRIPING TO CONFORM TO CALTRANS REVISED STANDARD PLAN RSP A90B.
4. ALL CONCRETE IS TO BE 4,000 P.S.I.

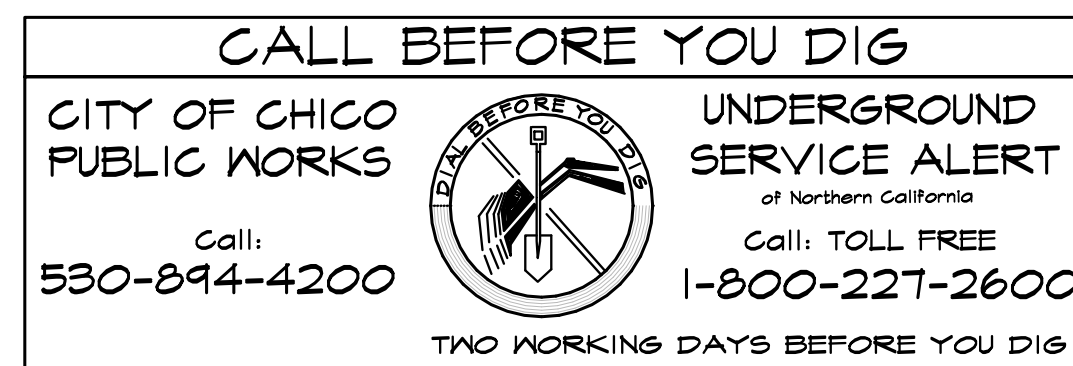


SIGN R99 (CA)
SEE NOTE 1 & 2



PLAQUE R99B (CA)
SIGN R99 (CA) WITH PLAQUE R99B (CA)
SEE NOTE 1 & 2

SIGN R100B (CA)
SEE NOTE 1 & 2



CALL BEFORE YOU DIG
CITY OF CHICO
PUBLIC WORKS
Call: 530-894-4200
TWO WORKING DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT
at Northern California
Call: TOLL FREE 1-800-227-2600

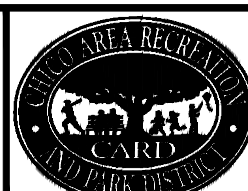


NTS

Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GVM/BDF				

PREPARED BY:	MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616
--------------	--

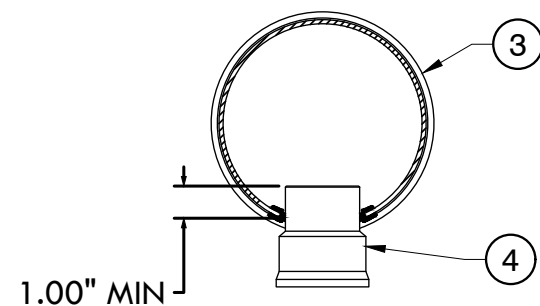
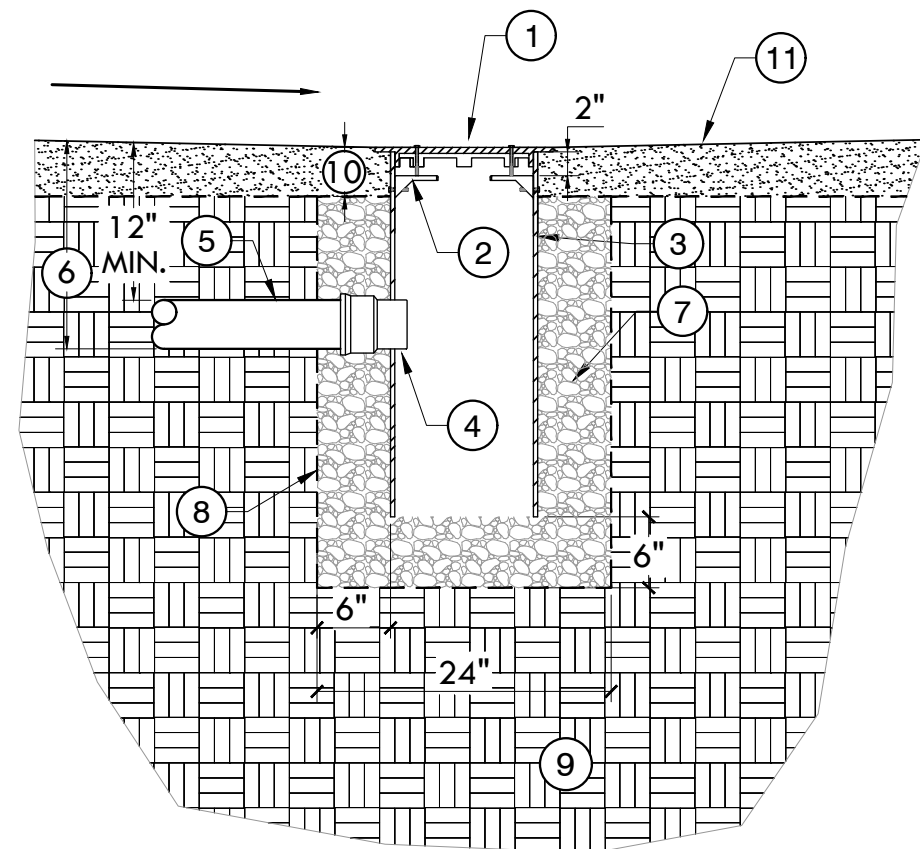
PREPARED FOR:	CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711
---------------	---



CENTENNIAL PARK
CONSTRUCTION DETAILS

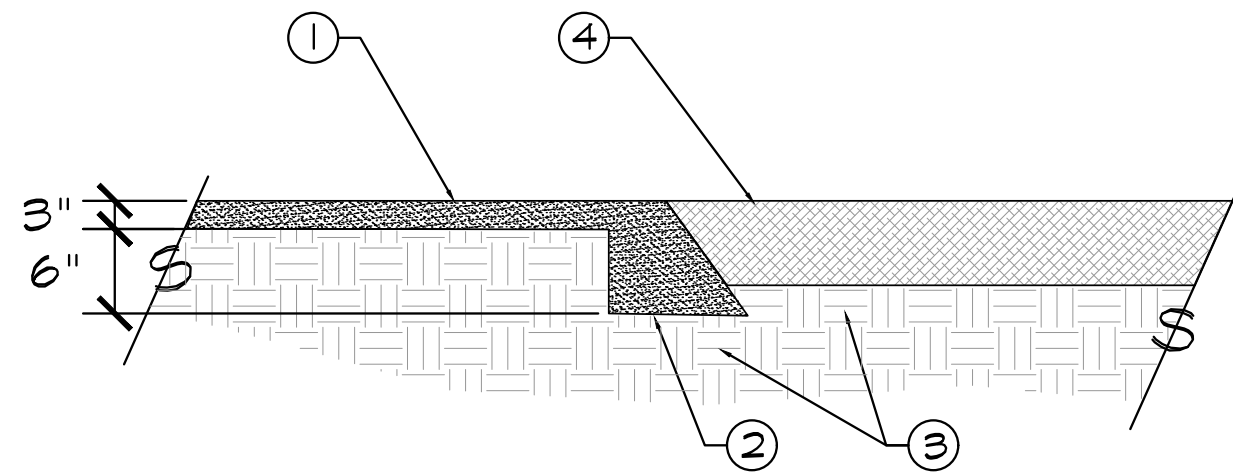
0 1 2
INCHES

Project Number: MDG #2397	Drawing Number L-2.1
Scale: AS-SHOWN	Sheet 8 of 26

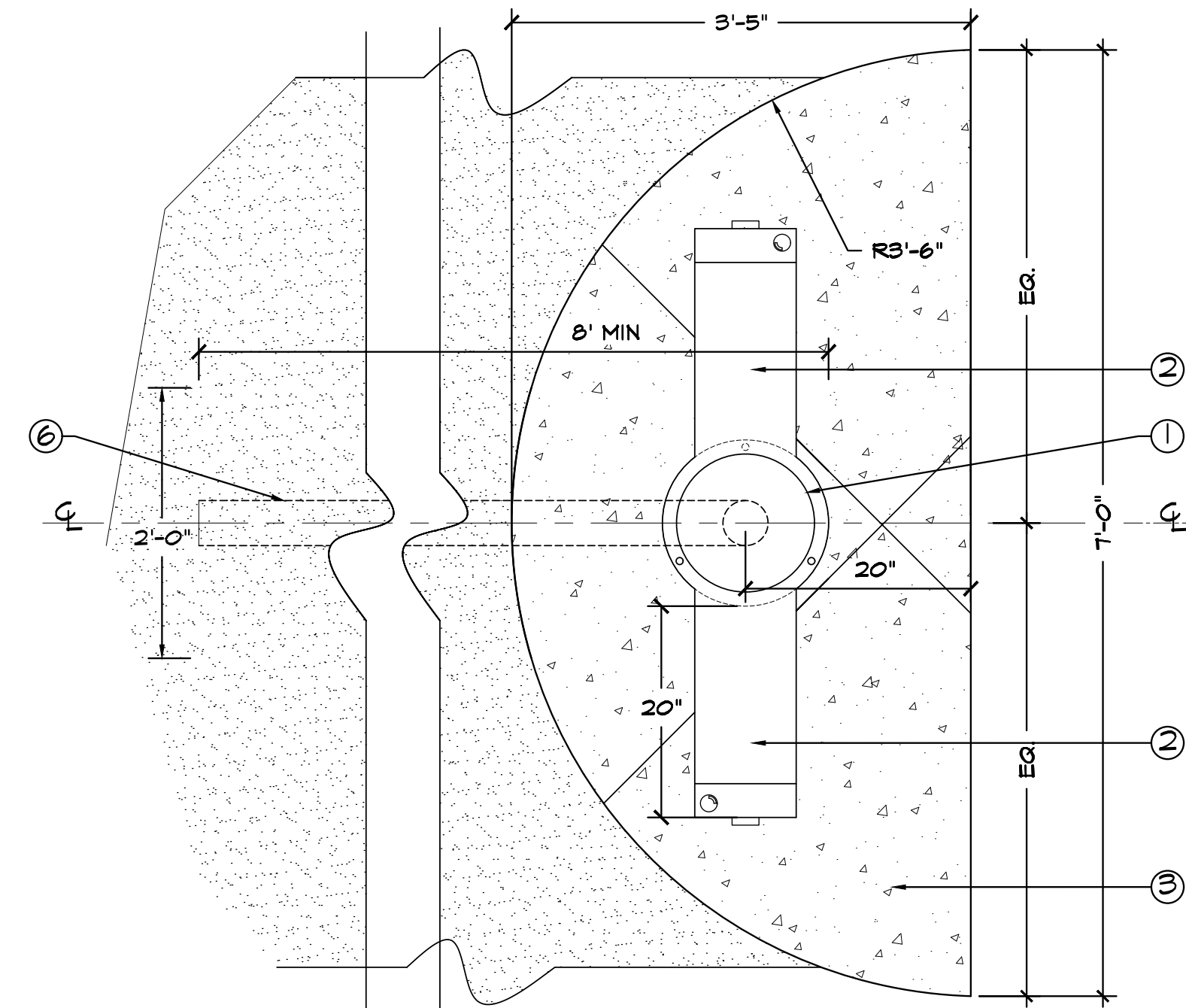


ADD-A-BRANCH GASKET - SOIL TIGHT JOINT
(ENLARGED TO SHOW DETAIL)

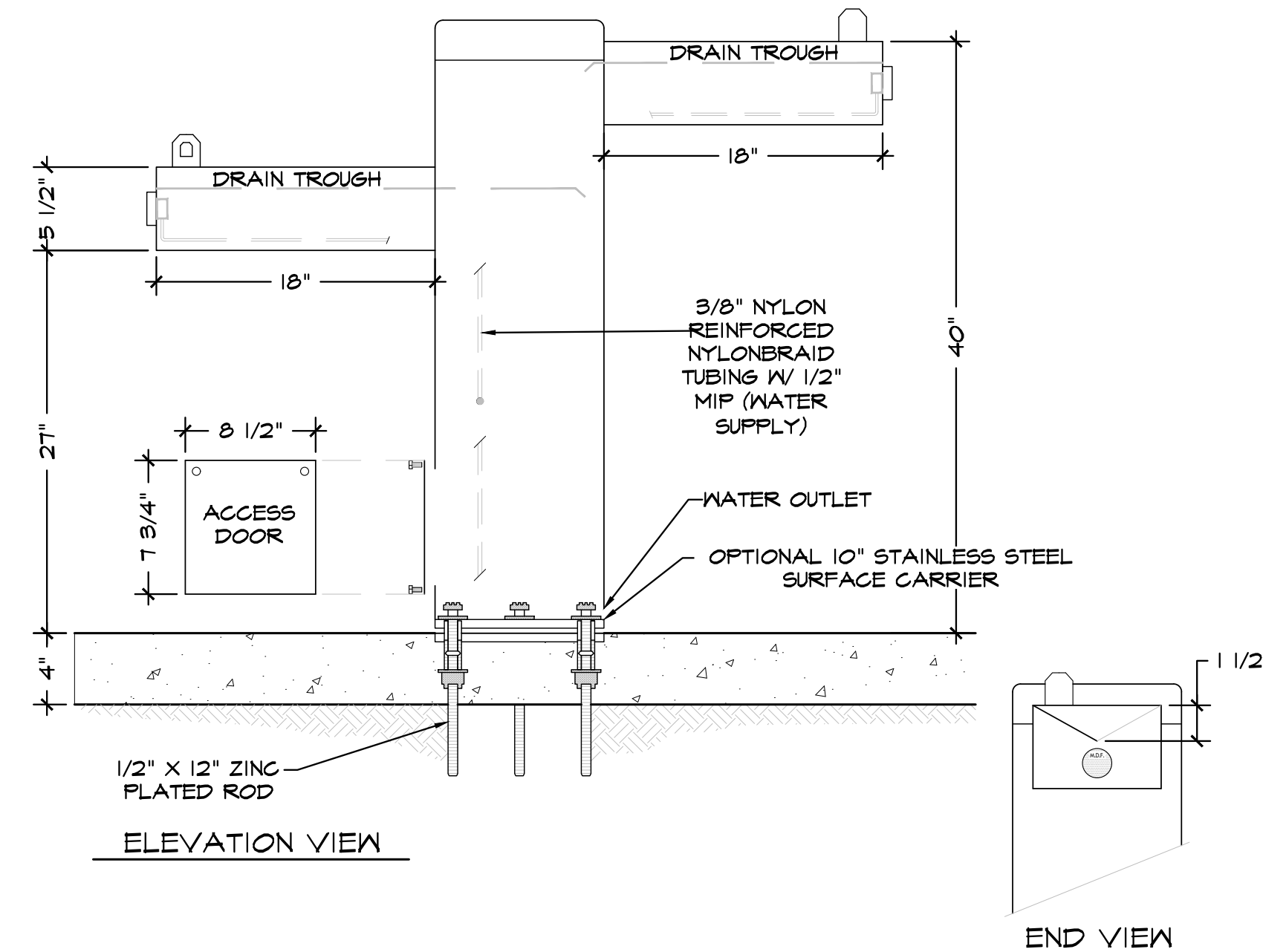
- 12" ROUND DUCTILE IRON PEDESTRIAN DROP IN DRAIN GRATE. GRATE FIT INSIDE SDR 35 SEWER PVC RISER EXTENSION.
- STAINLESS STEEL LOCKING OPTION - USE ON PVC RISER ONLY. INSTALL 2" BELOW FINISH GRADE.
- 12" SDR-35 SEWER PVC RISER OR APPROVED EQUAL; KEEP BOTTOM OPEN
- 4" X SDR-35 SEWER PIPE NYOPLAST ADD-A BRANCH GASKET (SOIL TIGHT); INSTALL PER MANUFACTURER SPECIFICATION.
- 4" SDR-35 PVC SOLID PIPE TO NDS DURA SLOPE TRENCH DRAIN. SEE DETAIL 1/L-1.0
- INVERT PER GRADING PLAN
- 3/4" CLASS II AGGREGATE COMPACTED TO 90% R.D.
- 100% POLYPROPYLENE NON-WOVEN HEAVY DUTY FILTER FABRIC. OVERLAP EDGES 6" MIN. AND SECURE WITH STAPLES AT 1.2 STAPLES PER SQ. YD.
- NATIVE BACKFILL
- 4" DECOMPOSED GRANITE OVER FILTER FABRIC, SEE DETAIL
- FINISH GRADE - SLOPE TO DRAIN PER GRADING PLAN



- 3" MINIMUM LAYER DECOMPOSED GRANITE IN PLANTER. WATER IN AND RAKE. SLOPE TO DRAIN PER PLAN, PROVIDE SAMPLE FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION
- THICKENED EDGE, PLACE WHERE DECOMPOSED GRANITE MEETS FALL MATERIAL
- COMPACT SUBGRADE TO 90% RELATIVE DENSITY
- FALL MATERIAL.



PLAN VIEW



- MDF MODEL 840 SM-01 PEDESTAL FOUNTAIN WITH HI LOW DUAL FOUNTAIN. COLOR - BLACK; AVAILABLE THROUGH MOST DEPENDABLE FOUNTAINS AT 1-800-552-6331
- 2" WIDE X 3' DEEP X 8' LONG DRAIN ROCK SUMP. 3/4" DRAIN ROCK WRAPPED IN FILTER FABRIC ENVELOPE AND FINED OR STAPLED TOGETHER. DENSITY 4.1 OZ., 20 YEAR FABRIC OR BETTER.
- 1/2" TROUGH FOR DRINKING FOUNTAIN DRAINAGE
- CONCRETE PAVING, SEE DETAIL 1/L-6.0
- 10" STAINLESS STEEL SURFACE CARRIER
- ACCESS DOOR
- 4" PIPE - CONNECT TO STORM DRAIN
- 2' WIDE X 3' DEEP X 8' LONG DRAIN ROCK SUMP. 3/4" DRAIN ROCK WRAPPED IN FILTER FABRIC ENVELOPE AND FINED OR STAPLED TOGETHER. DENSITY 4.1 OZ., 20 YEAR FABRIC OR BETTER.
- 1/2" X 12" ZINC PLATED ROD
- COMPACTED SUBGRADE
- 4" LAYER COMPACTED AGGREGATE BASE
- 3/8" NYLON REINFORCED NYLONBRAID TUBING WITH 1/2" MIP (POTABLE WATER SUPPLY) SEE IRRIGATION SHEETS

- NOTES:
- MEETS ADA REGULATIONS.
 - MUST APPLY ADHESIVE CAULKING TO BOTTOMS OF SURFACE MOUNT FLANGE.
 - INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 - DO NOT SCALE DRAWING.
 - THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
 - ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

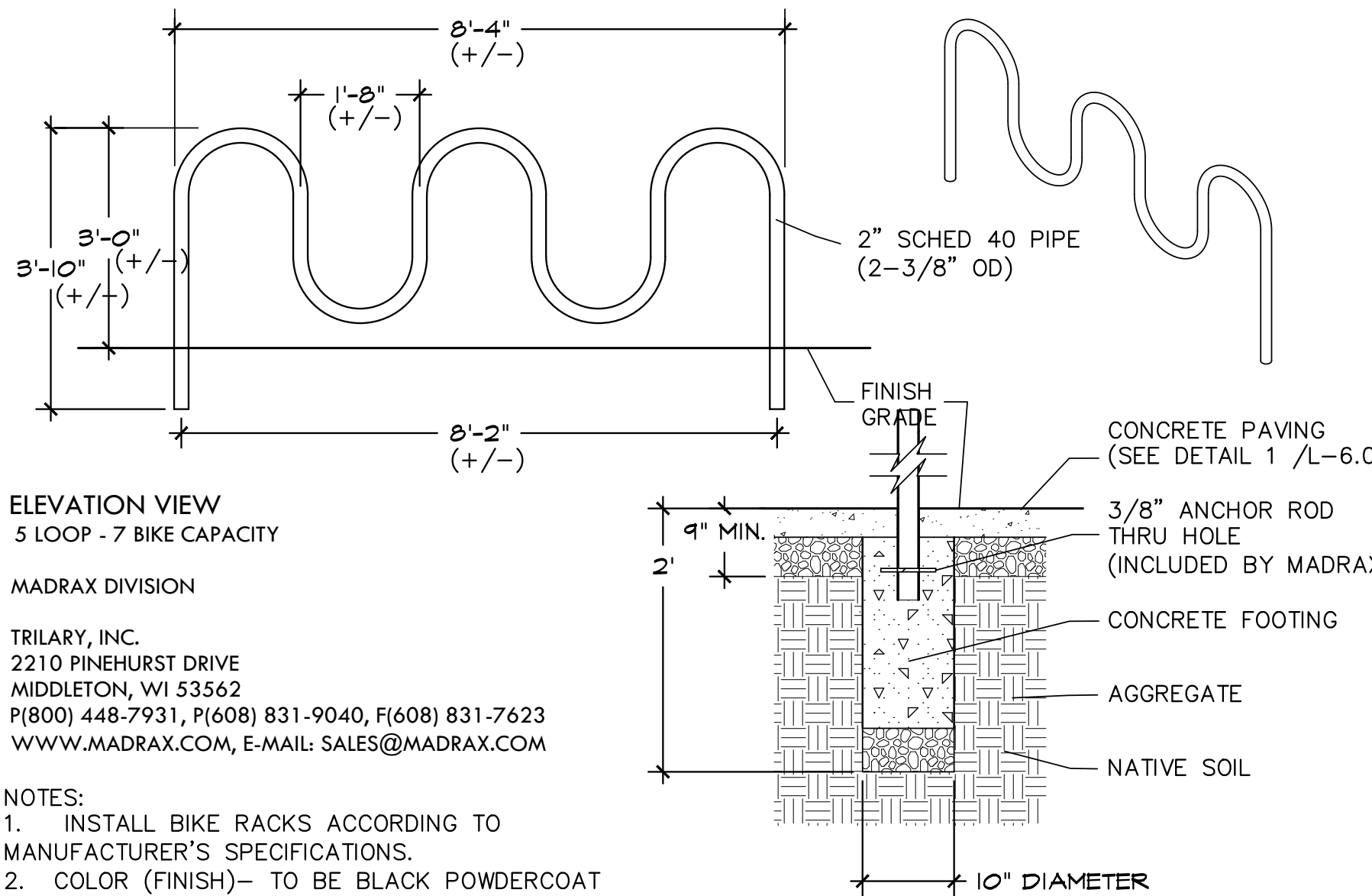


DRAIN SUMP

NTS

DECOMPOSED GRANITE AT FALL MATERIAL

NTS



ELEVATION VIEW
5 LOOP - 7 BIKE CAPACITY

MADRAX DIVISION

TRILARY, INC.
2210 PINEHURST DRIVE
MIDDLETON, WI 53562
P(800) 448-7931, P(608) 831-9040, F(608) 831-7623
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM

- NOTES:
- INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
 - COLOR (FINISH) - TO BE BLACK POWDERCOAT

SECTION

4A L-2.2

PROFILE SECTION

4B L-2.2

- LOOSE FILL ENGINEERED WOOD FIBER PER DETAIL
- THICKENED EDGE OF CONCRETE @ PLAY AREA, PER DETAIL
- 4" DRAIN PIPE. DRAINGUARD BY ADS OR APPROVED EQUAL.
- LINE TRENCH WITH GEOTEXTILE FILTER FABRIC AND FILL WITH 1-1/2" - 3" DOUBLE WASHED DRAIN ROCK. OVERLAP FABRIC AND PIN TOGETHER TO SEAL DRAIN.
- NOT USED
- SLOPE TO TRENCH AND DRAIN PIPE MINIMUM 2%.
- COMPACTED SUBGRADE TO 95% R.D.
- GEOTEXTILE FILTER FABRIC, DEWITT 4.1 OZ., 20 YEAR FABRIC (EQUAL OR BETTER)
- ADS NYLOPLAST CATCH BASIN, BEYOND SECTION (WHERE APPLICABLE)
- HDPE PIPE, INVERT OUT OF PLAY AREA DRAIN

NTS

PLAY AREA DRAIN

NTS

BIKE RACK

NTS

Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GYM/BDF				

PREPARED BY:	MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616
--------------	--

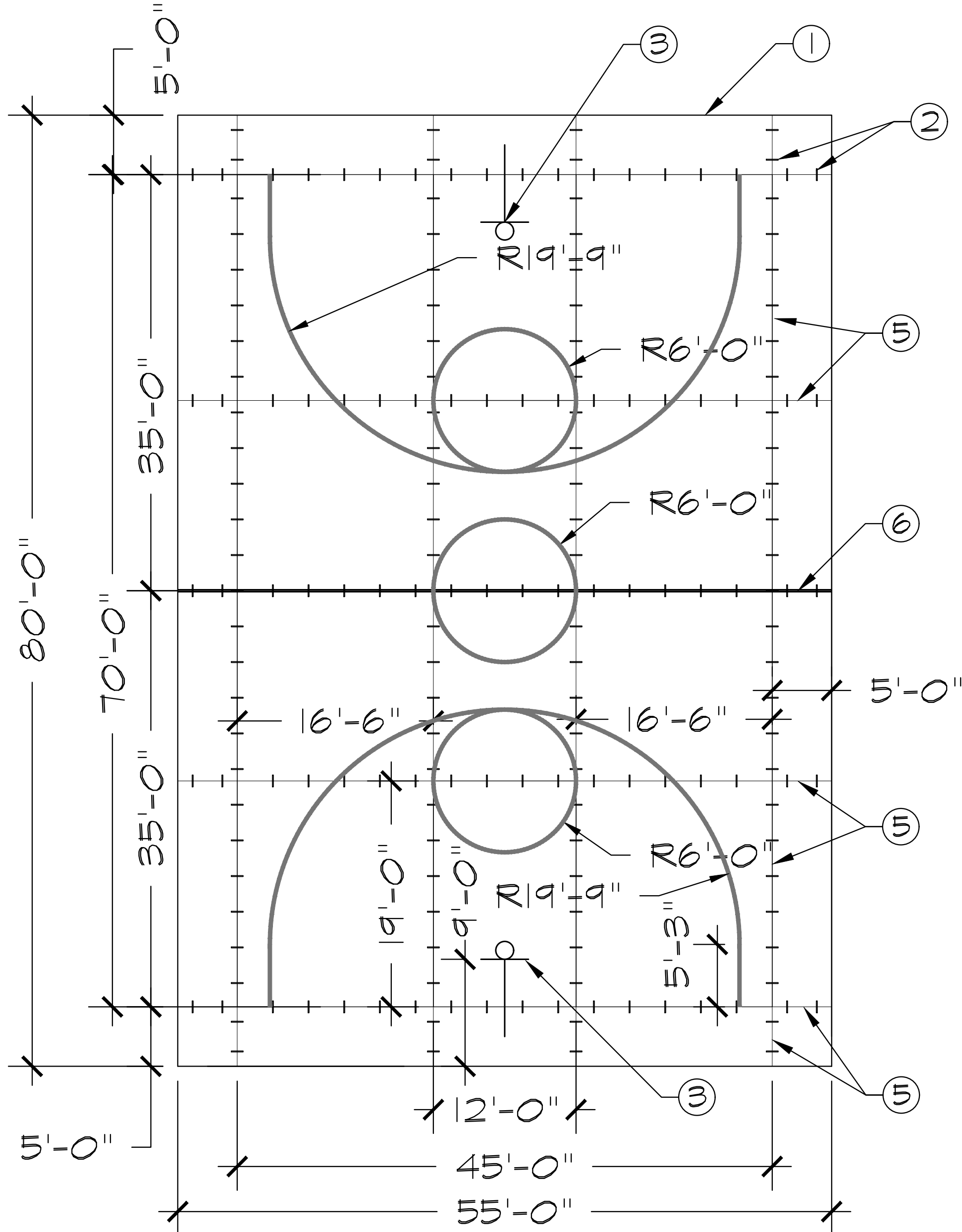
PREPARED FOR:	CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711
---------------	---



CENTENNIAL PARK
CONSTRUCTION DETAILS

0 1 2 INCHES

Project Number: MDG #2397	Drawing Number L-2.2
Scale: AS-SHOWN	Sheet 9 of 26



A LAYOUT PLAN
L-2.3 1/8"=1'-0"

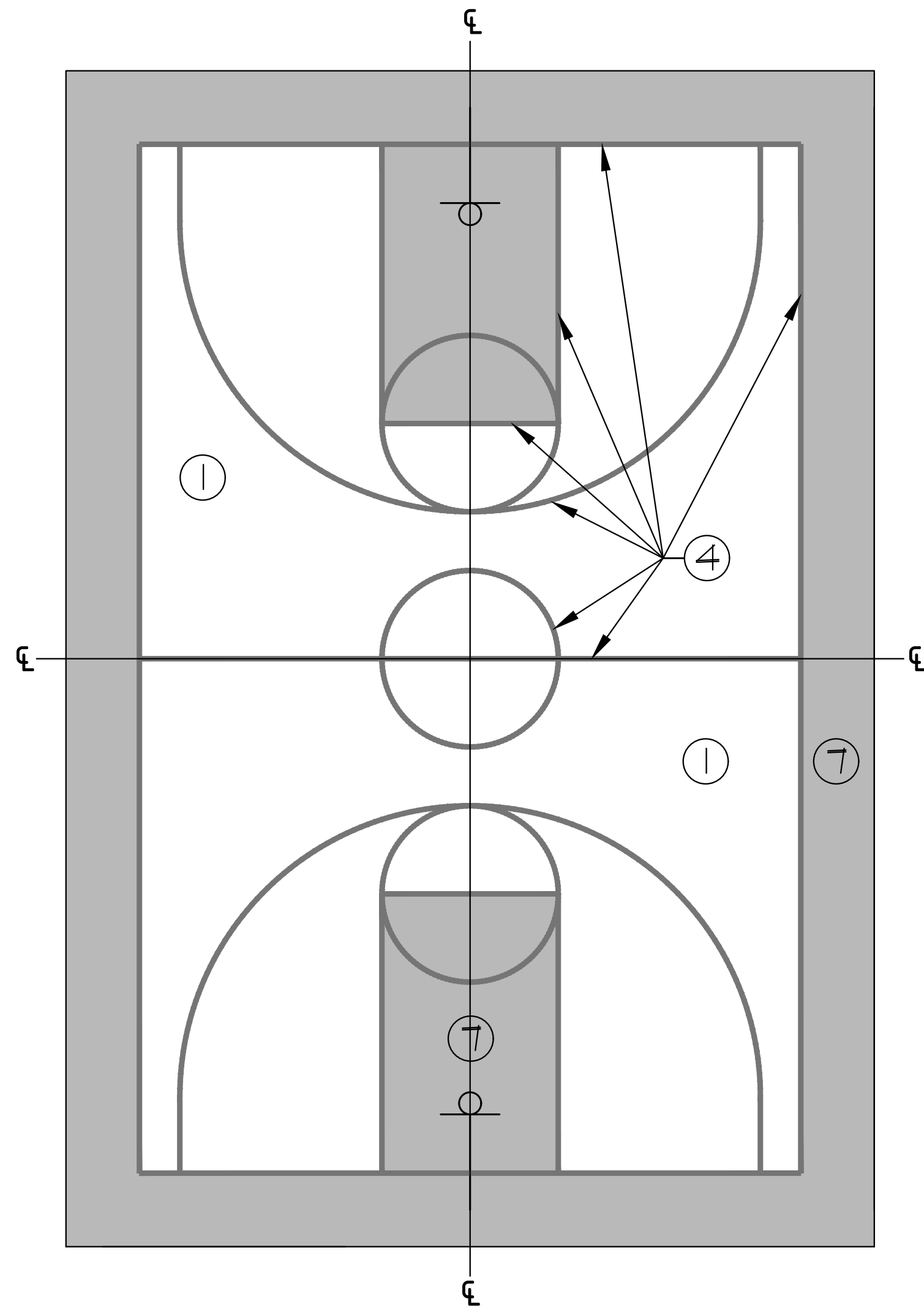
- ① CONCRETE BASKETBALL COURT; COLOR NATURAL GREY
- ② STEEL DOWEL (TYP.)
- ③ BASKETBALL GOAL AND POST ASSEMBLY; BACKBOARD LOCATED 9'-0" FROM EDGE OF COURT
- ④ BASKETBALL COURT STRIPING
- ⑤ COLD JOINT (TYP.)
- ⑥ EXPANSION JOINT
- ⑦ INTEGRAL CONCRETE COLOR

CURVED 5 9/16" OD POST, MODEL 12C54 WITH 4' EXTENSIONS
MODEL 5D-4D DOUBLE ROUGHNECK GORILLA GOAL.
FOOTING 6" BELOW FINISH GRADE. ALUMINUM SATIN FINISH
FAN BACKBOARD MODEL IIX. ALL BY
STEELCRAFT AVAL. THROUGH NORTH STATE PLAYGROUNDS.
(877)473-7619.

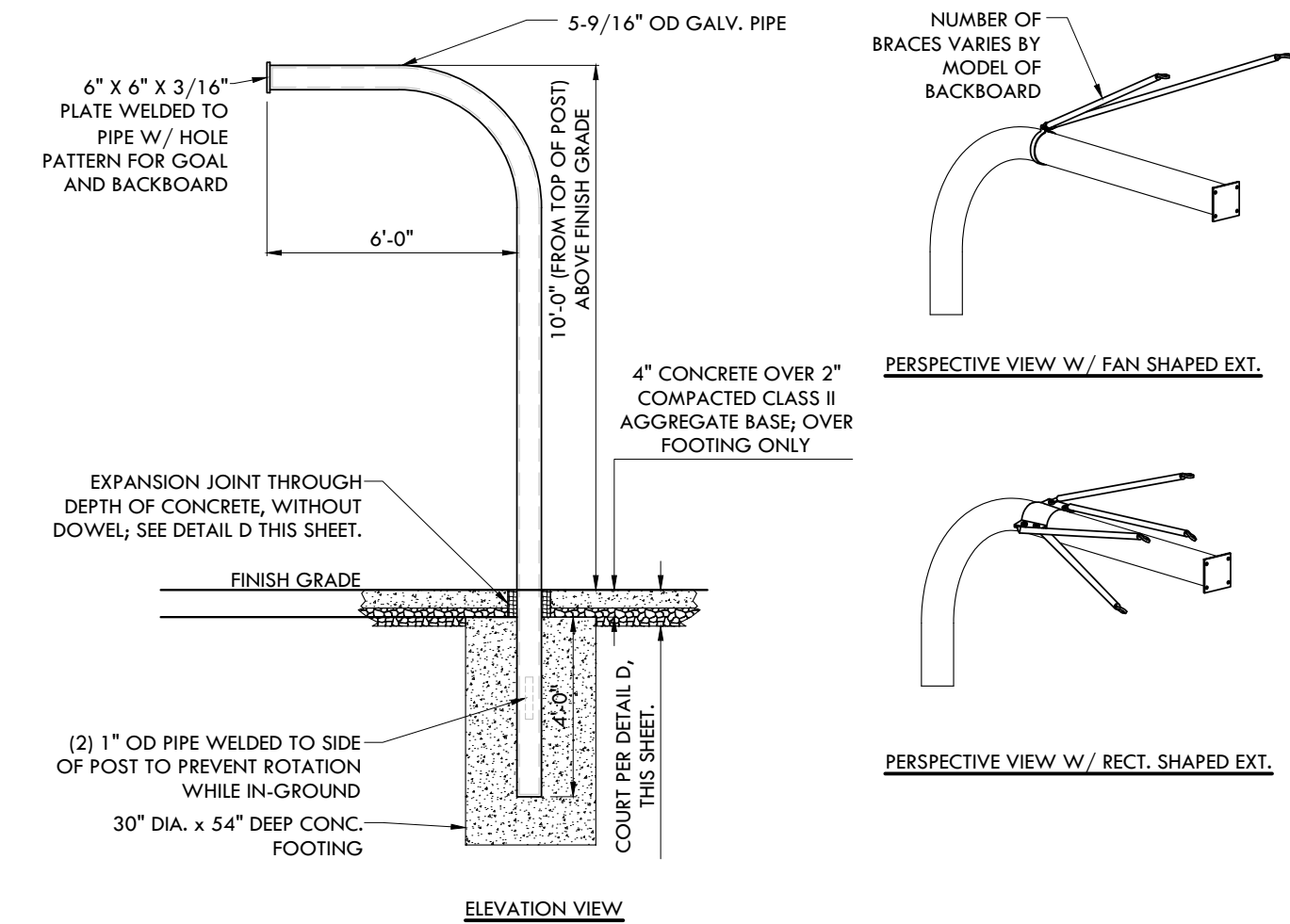
2" WIDE TEXTURED WHITE LINE PAINT. NOVATEX
OR APPROVED EQUAL. 1-(800)-USA-NOVA

COLOR - 2 LBS. 6130 COCOA
BY DAVIS PRODUCTS (OR APPROVED EQUAL)

NOTE:
REFER TO COURT PAVING DETAIL FOR ADDITIONAL DETAILS.

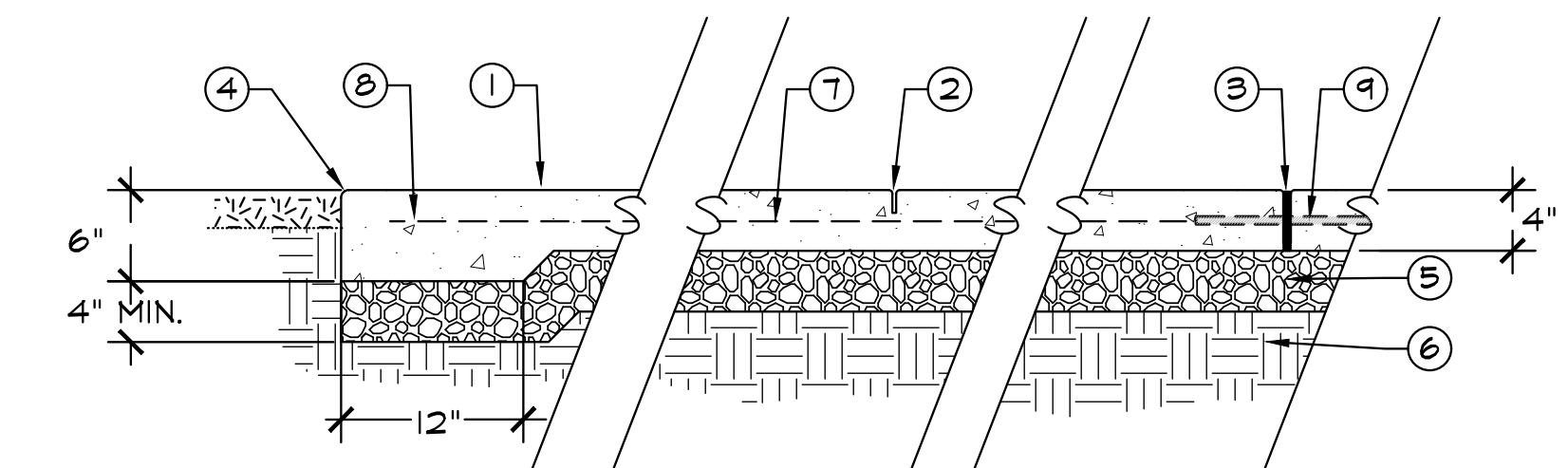


B STRIPING AND COLOR PLAN
L-2.3 1/8"=1'-0"



- NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 2. DO NOT SCALE DRAWING.
 3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
 4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
 5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 2663-038.

C BASKETBALL HOOP FOOTING
L-2.3 N.T.S.



- ① CONCRETE PAVING - NON-SLIP TROWEL FINISH (TROWEL AND WASH OFF CREAM). STANDARD GREY COLOR.
- ② SCORELINE - 1-1/2" DEPTH, 1/4" WIDTH W/ 1/4" RADIUS EDGE.
- ③ EXPANSION OR COLD JOINT (BOTH TO HAVE DOWELS); SEE PLAN FOR LOCATIONS. EXPANSION JOINT - 1/2" EXPANSION FELT 1/2" WIDE X 1/2" DEEP RESILIENT POLYURETHANE SEALANT, MATCH CONCRETE COLOR.
- ④ 1/4" RADIUS TOOLED EDGE
- ⑤ COMPACTED CLASS II AGGREGATE BASE. 4" MIN. DEPTH.
- ⑥ UNDISTURBED SUB-GRADE OR COMPACTED TO 95% RELATIVE DENSITY.
- ⑦ #3 REBAR @ 24" O.C. B/W.
- ⑧ 6" THICKENED EDGE (4 SIDES).
- ⑨ 12" STEEL DOWEL @ 36" O.C. AND/OR AS SHOWN ON CONSTRUCTION PLAN. LUBRICATE ONE END.

NOTES:

1. CONCRETE - 4" MIN. THICKNESS WITH 6" THICKNESS ALONG EDGES.
2. REFER TO SPECIFICATIONS FOR CONCRETE MIX DESIGN
3. SEE PLAN FOR CONCRETE COLOR LOCATIONS.

D COURT PAVING DETAIL
L-2.3 N.T.S.

CALL BEFORE YOU DIG

CITY OF CHICO
PUBLIC WORKS

Call: 530-894-4200

UNDERGROUND
SERVICE ALERT
of Northern California
Call: TOLL FREE
1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GVM/BDF				

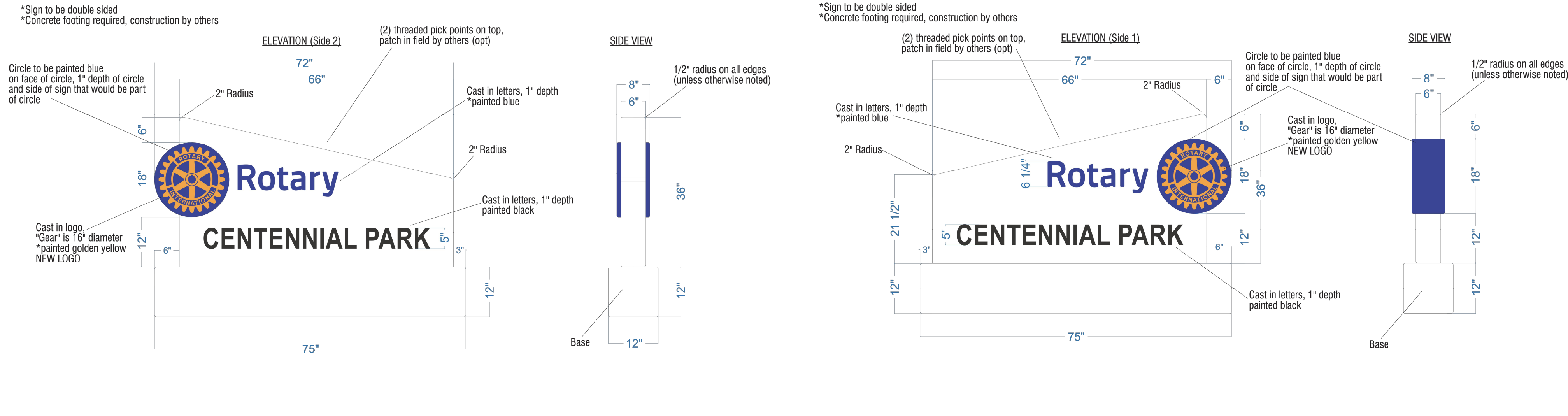
PREPARED BY:	MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616
--------------	--

PREPARED FOR:	CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711
---------------	---

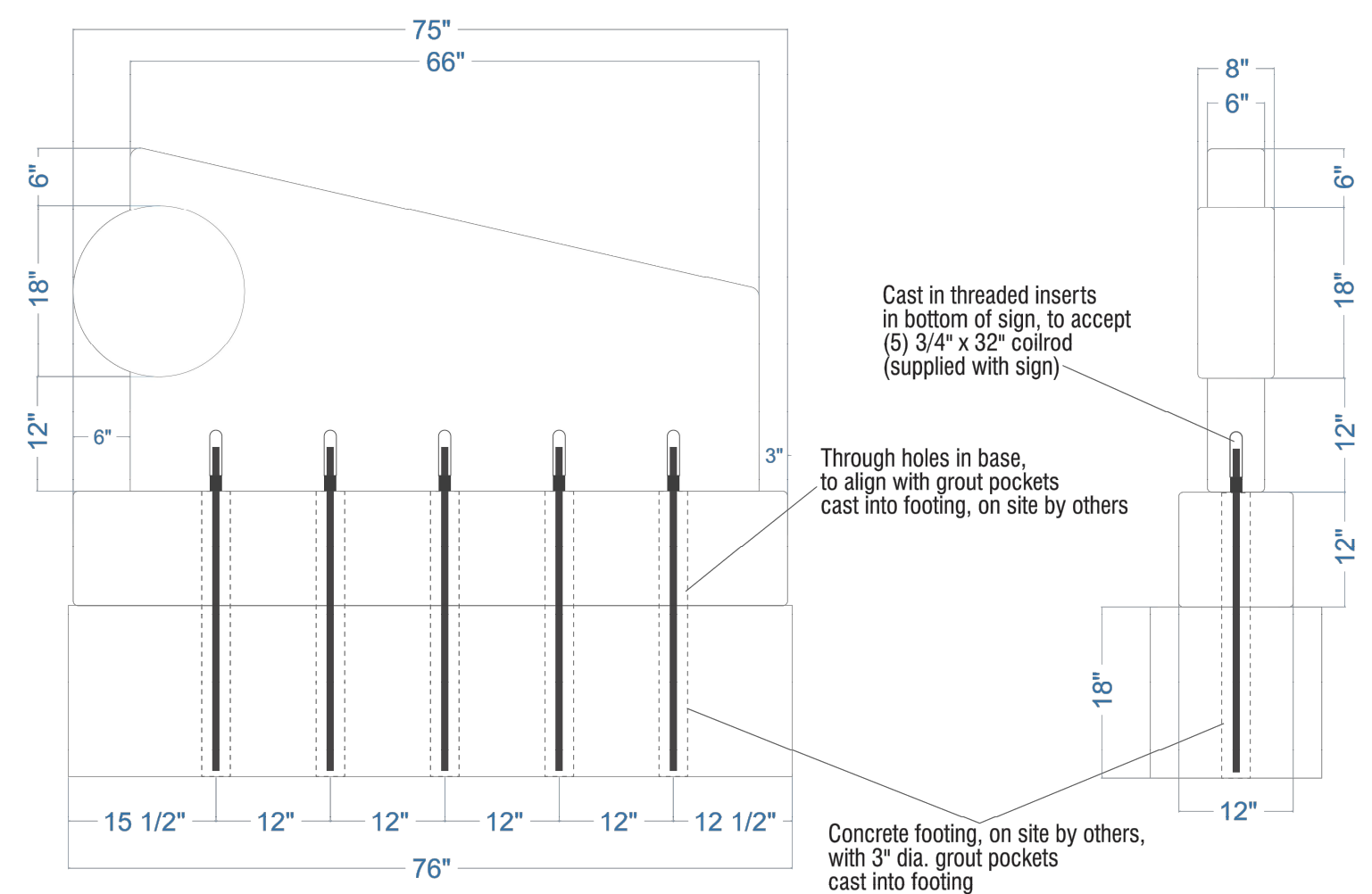


CENTENNIAL PARK
MULTI-PURPOSE SPORT COURT DETAILS

0 1 2 INCHES	Project Number: MDG #2397	Drawing Number L-2.3
	Scale: AS-SHOWN	Sheet 10 of 26




NOTE:
DETAILED CUTSHEET AVAILABLE FROM LANDSCAPE ARCHITECT.



CALL BEFORE YOU DIG

CITY OF CHICO
PUBLIC WORKS

Call: 530-894-4200



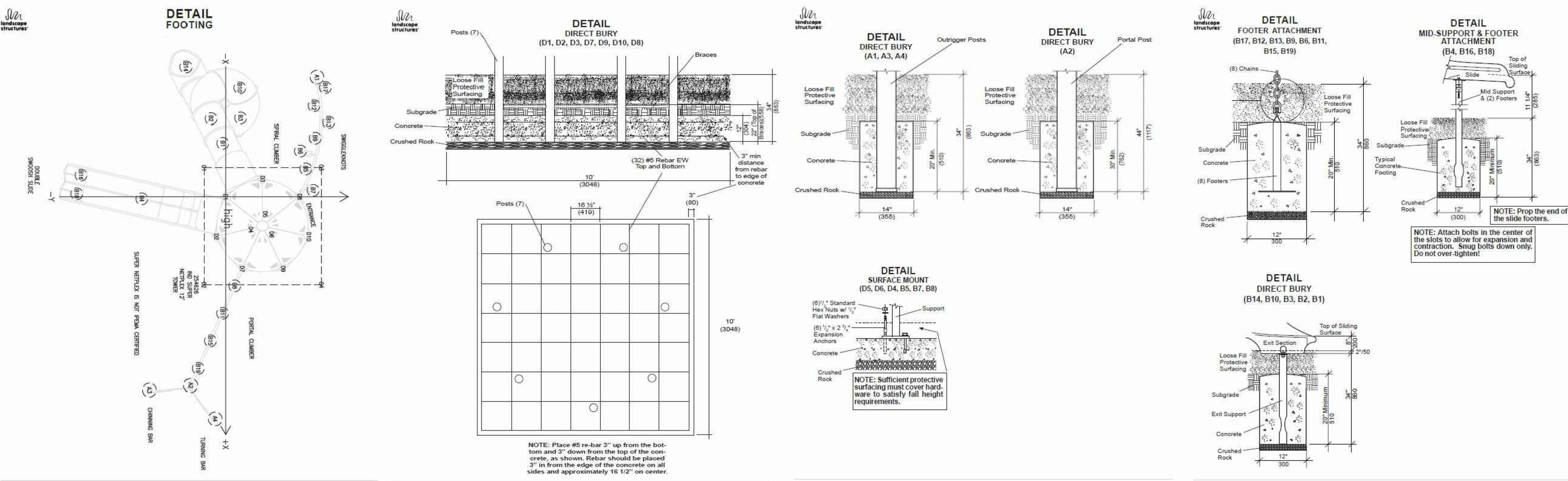
UNDERGROUND
SERVICE ALERT

at Northern California

Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

MONUMENT PARK SIGN



Freestanding Play 254626 Super Netplex™ 12' Tower Page 2
091 7th Street South, Chico, Minnesota 55326-8005 888-674-4278 L&I Install Help 888-438-6374 L&I Direct 763-972-5290 Int. FAX (763) 972-3185
© 2013 by Landscape Structures. All rights reserved. Document #26723700

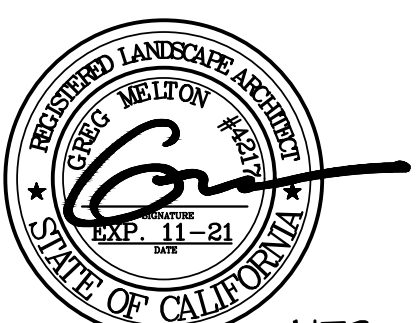
Freestanding Play 254626 Super Netplex™ 12' Tower Page 5
091 7th Street South, Chico, Minnesota 55326-8005 888-674-4278 L&I Install Help 888-438-6374 L&I Direct 763-972-5290 Int. FAX (763) 972-3185
© 2013 by Landscape Structures. All rights reserved. Document #26723700

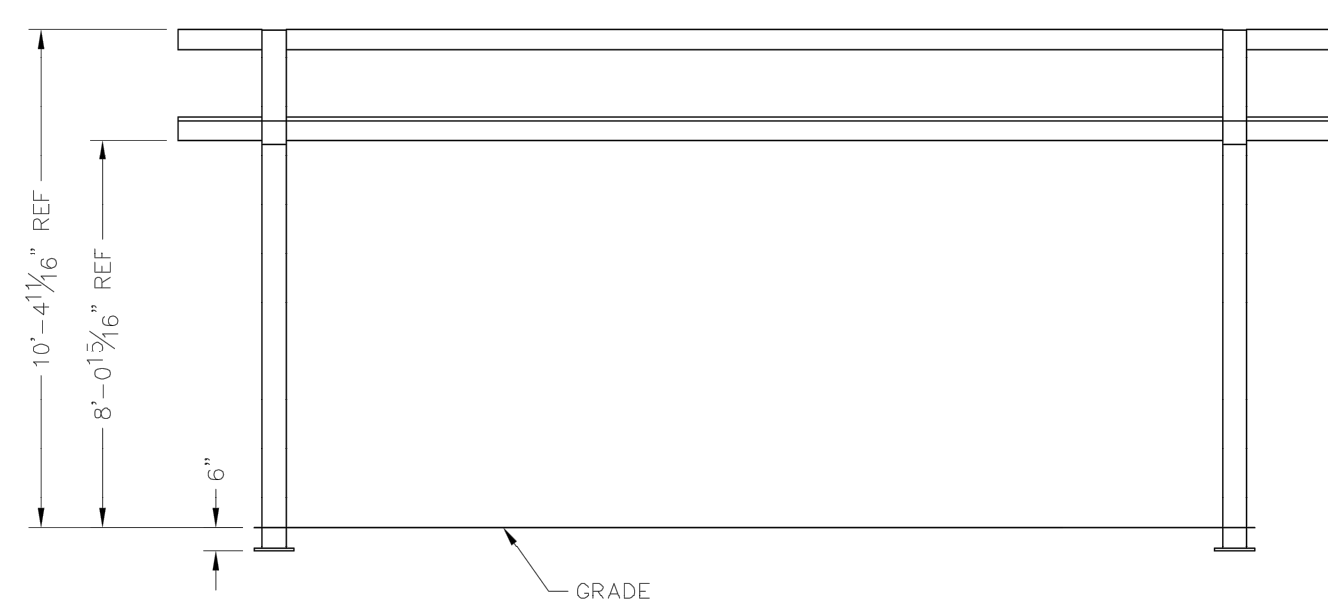
Freestanding Play 254626 Super Netplex™ 12' Tower Page 6
091 7th Street South, Chico, Minnesota 55326-8005 888-674-4278 L&I Install Help 888-438-6374 L&I Direct 763-972-5290 Int. FAX (763) 972-3185
© 2013 by Landscape Structures. All rights reserved. Document #26723700

Freestanding Play 254626 Super Netplex™ 12' Tower Page 7
091 7th Street South, Chico, Minnesota 55326-8005 888-674-4278 L&I Install Help 888-438-6374 L&I Direct 763-972-5290 Int. FAX (763) 972-3185
© 2013 by Landscape Structures. All rights reserved. Document #26723700

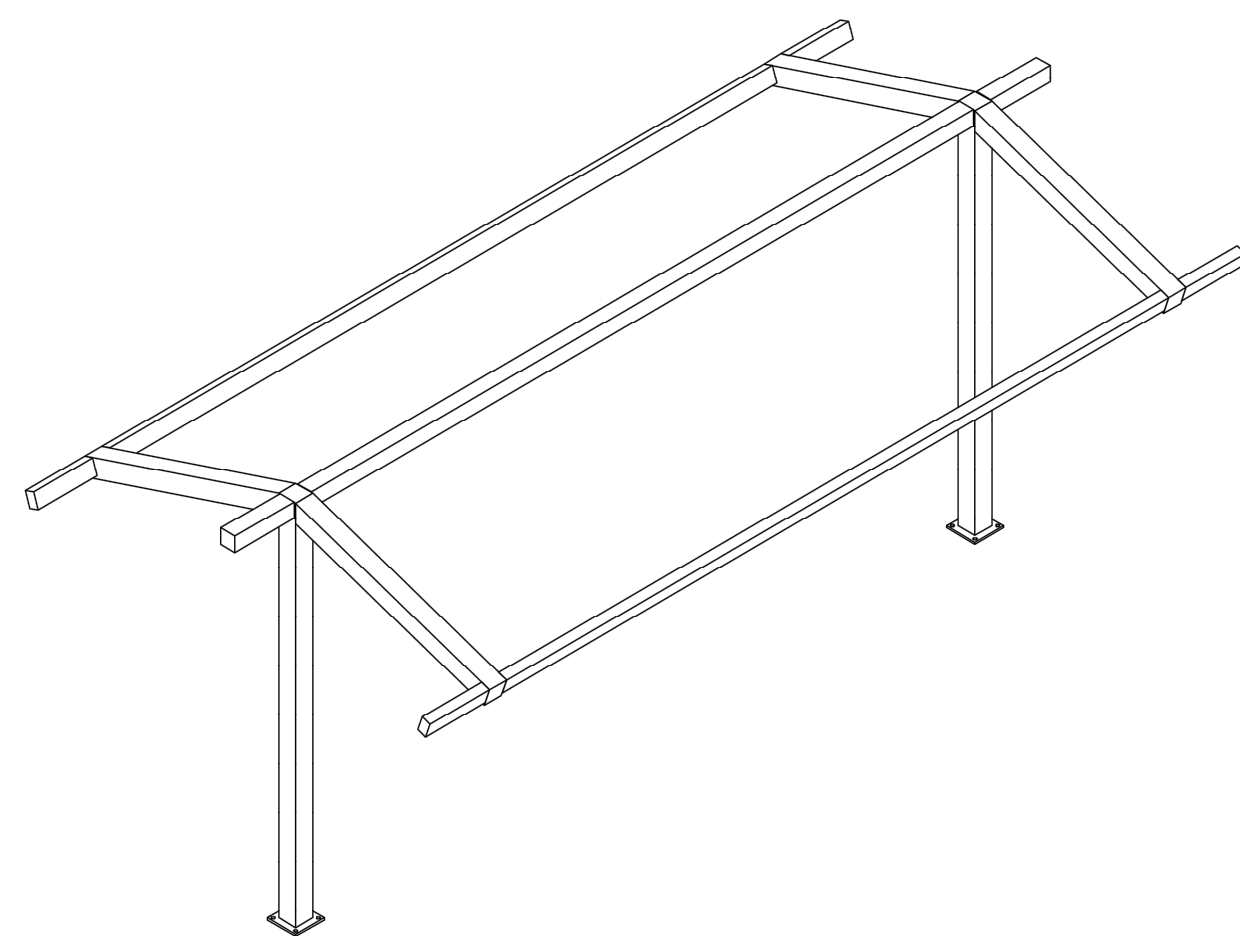
SUPER NETPLEX 12' TOWER FOOTING DETAILS

Designed: MDG	Approved:	Revision	Date	By	PREPARED BY:  MELTON DESIGN GROUP, INC. 820 BROADWAY STREET, CHICO, CA 95928 (530) 899-1616	PREPARED FOR:  CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711	CENTENNIAL PARK SHELTER DETAILS	0 1 2 INCHES	Project Number: MDG #2397	Drawing Number L-2.4
Drawn By:	Date: July 17, 2020								Scale: NTS	Sheet 11 of 26
Checked: GVM/BDF										



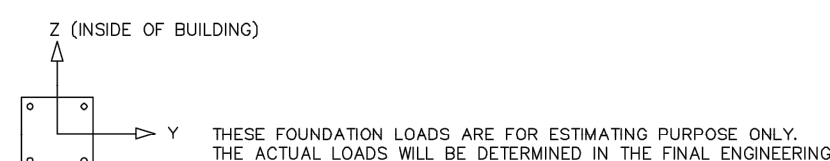


PRELIMINARY: NOT FOR
CONSTRUCTION



ALL STRUCTURAL COMPONENTS WILL BE:
TUBE: ASTM A500 GRADE B
PLATE: ASTM A36
BOLTS: ASTM A325
NUTS: ASTM A563
WELDING: GMAW

NOTE:
COLUMN SIZE: HSS 6x6x3/16

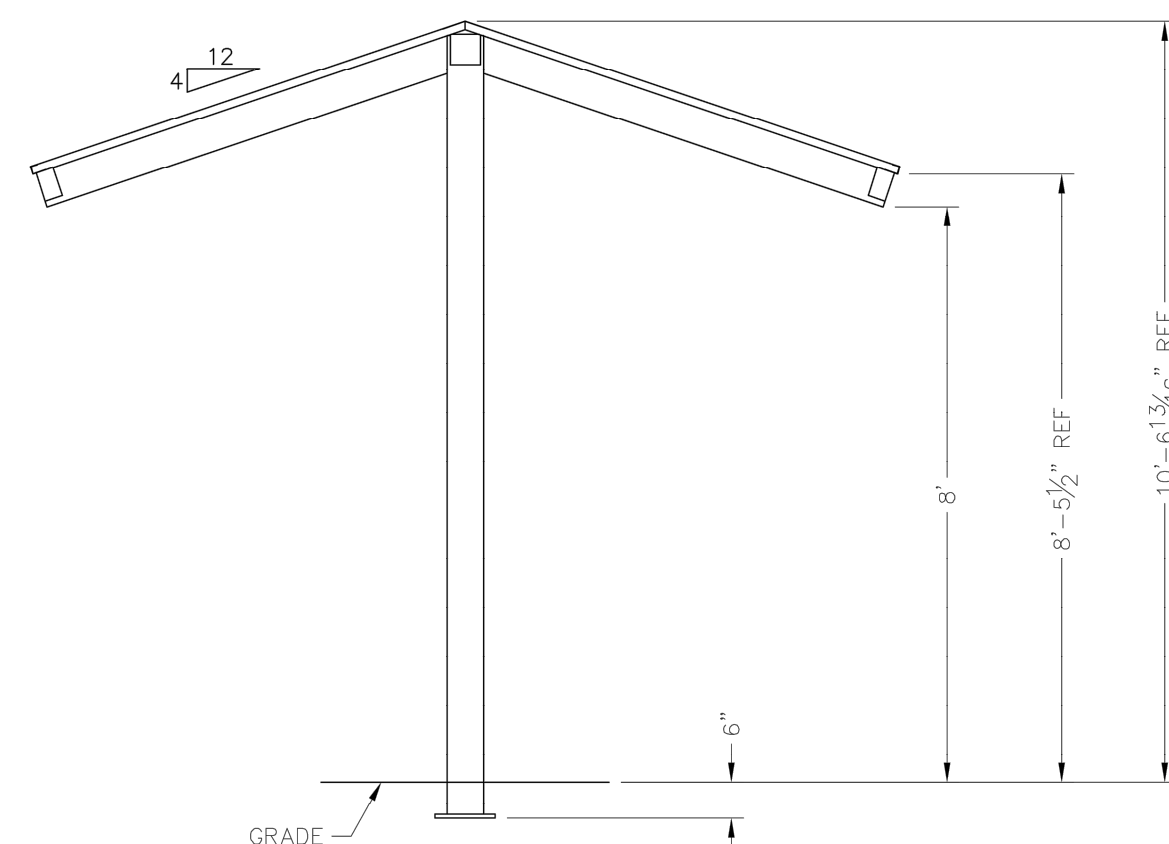


LOADS TO FOUNDATION (kPS, N-KIPS)		FOUNDATION LOADS				
LOAD COMBINATION		AXIAL (F _x)	SHEAR (F _y)	SHEAR (F _z)	MOMENT (M _y)	MOMENT (M _z)
DL		0.98	-0.14	0.00	0.00	-5.98
SLT		3.02	-0.61	0.00	0.00	-25.85
W-UPLFT		-1.61	0.59	0.00	0.00	34.87
W-FY		-1.61	0.59	0.00	0.00	34.87
W-FZ		0.89	0.20	-0.41	3.26	8.37
E-FY		-0.09	0.31	0.00	0.00	25.23
E-Z		0.00	0.00	-0.31	35.75	0.00

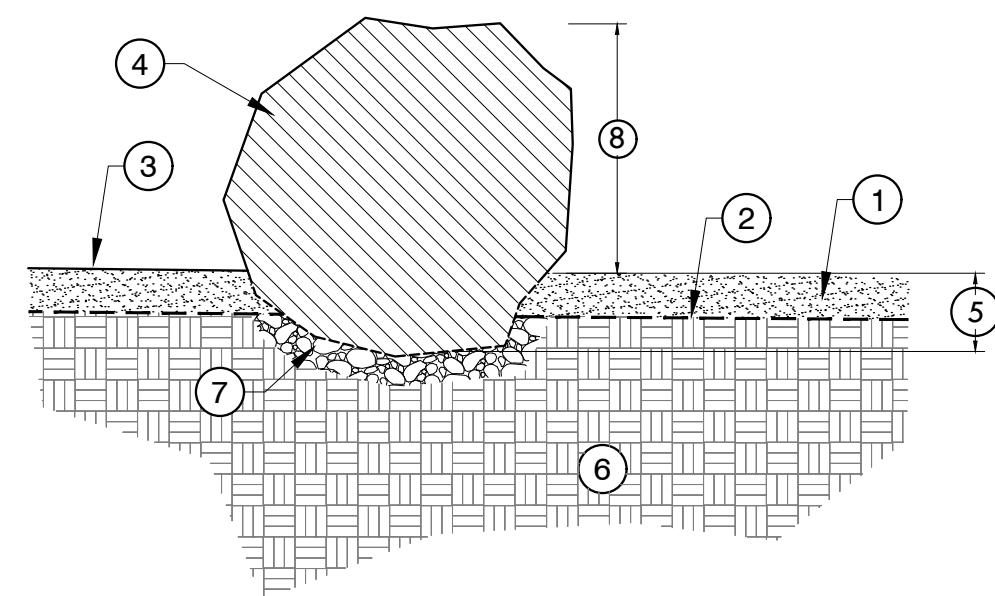
NOTES:

- TABLE SHOWS UNFACTORED SERVICE LOADS
- A FOUNDATION DESIGN HAS NOT BEEN PERFORMED BY ICON SHELTER SYSTEMS INC.
- A LICENSED ENGINEER FAMILIAR WITH SOIL CONDITIONS AT CONSTRUCTION SITE MUST PERFORM A FOUNDATION DESIGN.
- THE STRUCTURE HAS BEEN ENGINEERED AS AN OPEN STRUCTURE.
- CONSULT ICON SHELTER SYSTEMS INC. IF THE STRUCTURE IS TO BE ENCLOSED.
- COORDINATES ARE LOCAL TO THE COLUMN.

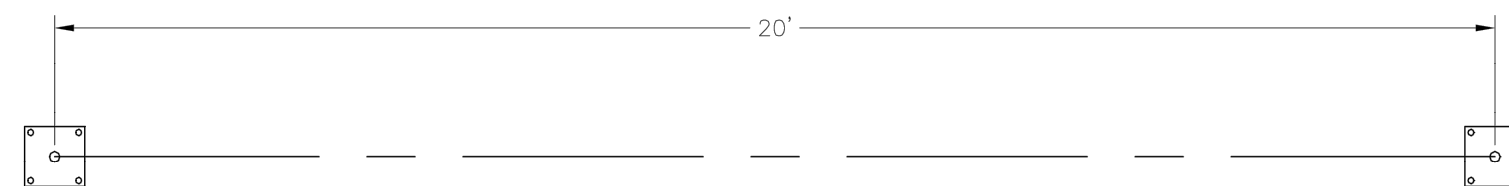
DEFINITIONS:
 DL = SERVICE LEVEL DEAD LOAD REACTION WITH THE GREATEST AXIAL LOAD
 SL = SERVICE LEVEL SNOW LOAD REACTION WITH THE GREATEST AXIAL LOAD
 W-U = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST UPLIFT LOAD
 W = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Z DIRECTION
 W-Z = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST SHEAR VALUE ACTING IN THE SAME DIRECTION AS THE DL SHEAR LOAD
 E-Y = SERVICE LEVEL SEISMIC LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Y DIRECTION
 E-Z = SERVICE LEVEL SEISMIC LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Z DIRECTION



PRELIMINARY: NOT FOR
CONSTRUCTION



- ① 4" DECOMPOSED GRANITE WITH WEED BARRIER FABRIC; COLOR: GOLD.
- ② WEED BARRIER FABRIC; WOVEN POLYPROPYLENE, UV RESISTANCE, 4.1 OZ PER SQUARE YARD.
- ③ FINISH GRADE OF DECOMPOSED GRANITE. SEE GRADING SHEET L-1.0
- ④ WATER WASHED GRANITE BOULDERS, SIZE PER PLAN. AVAILABLE FROM SIERRA BOULDER, ROBERT WRIGHT (916) 955-0649. CONTRACTOR SHALL PROVIDE PHOTO SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL.
- ⑤ INSTALL BOULDER SO THAT 25% OF BOULDER IS BELOW FINISH GRADE.
- ⑥ NATIVE UNDISTURBED SUBGRADE
- ⑦ 6" CLASS II AGGREGATE BASE, COMPACT TO 90% RELATIVE DENSITY.
- ⑧ HEIGHT AND WEIGHT VARIES 2'-6" LONG X 2'-4" WIDE. SEE CONSTRUCTION SHEET L-2.0



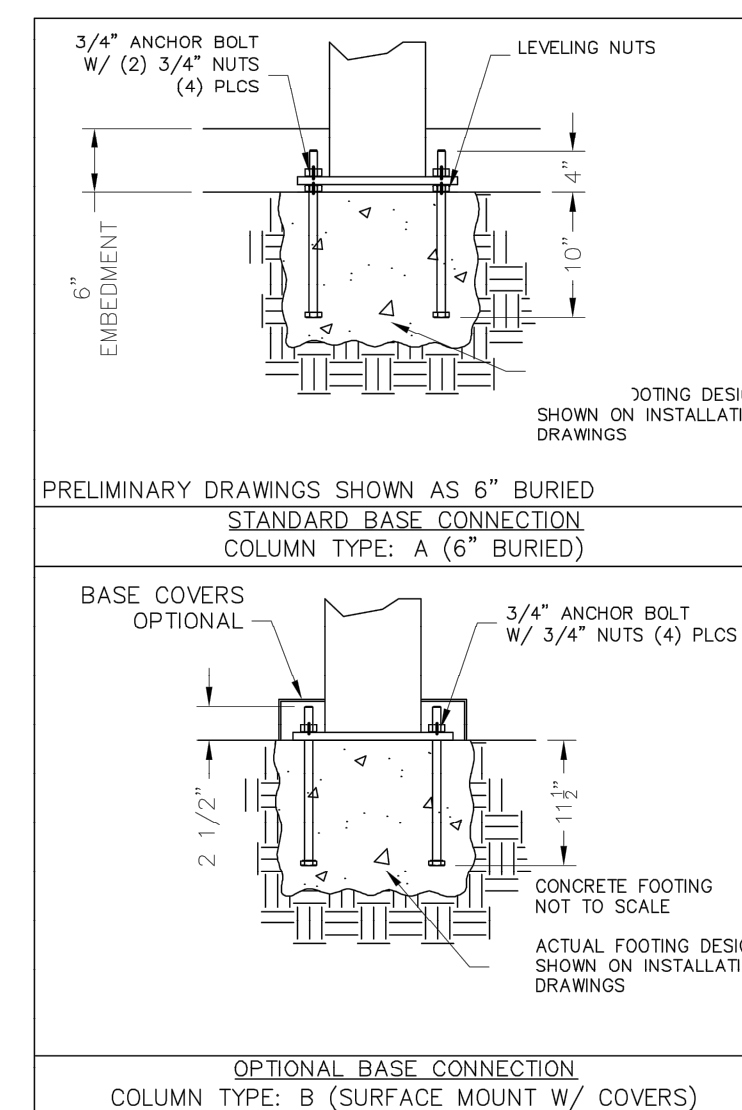
CALL BEFORE YOU DIG

**CITY OF CHICO
PUBLIC WORKS**

**UNDERGROUND
SERVICE ALERT**
of Northern California


**Call: TOLL FREE
1-800-227-2600**

TWO WORKING DAYS BEFORE YOU DIG



NTS

BOULDER PLACEMENT

Designated: MDG Drawn By: Checked: GVM/BDF	Approved:	Revision	Date	By	PREPARED BY:  MELTONDESIGNGROUP
	Date: July 17, 2020				

MELTON DESIGN GROUP, INC.
820 BROADWAY STREET.
CHICO, CA 95928
(530) 899-1616

CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711



CENTENNIAL PARK SHADE STRUCTURE DETAILS

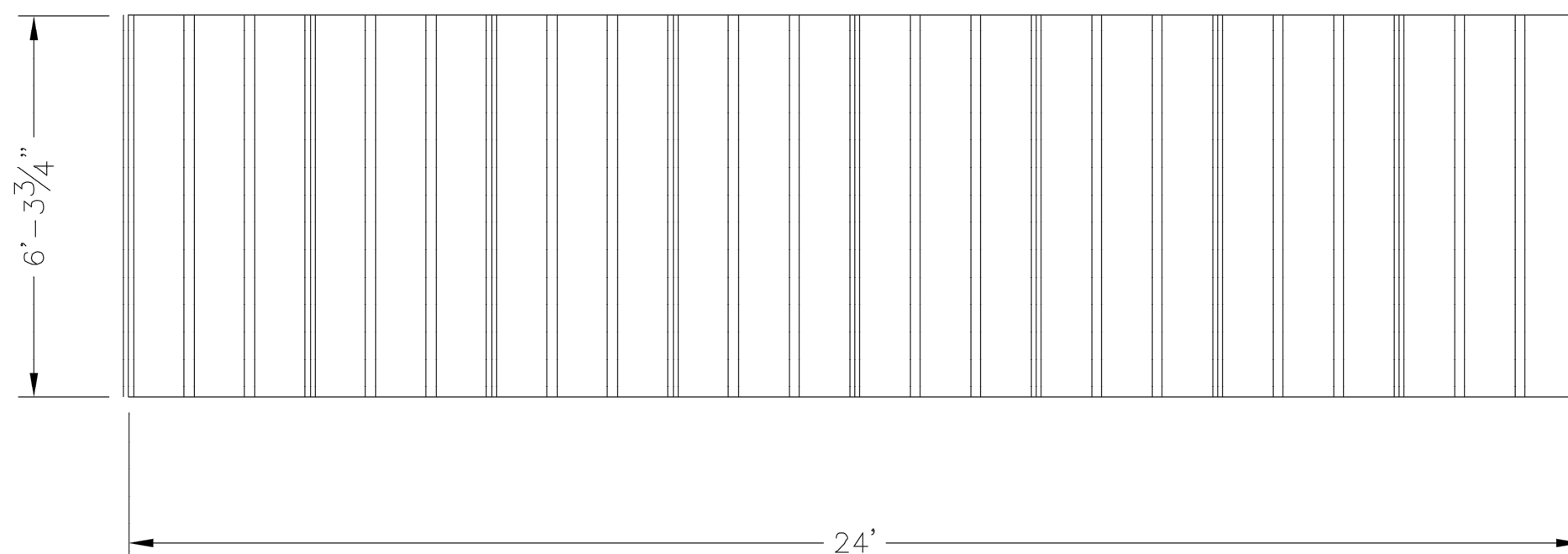
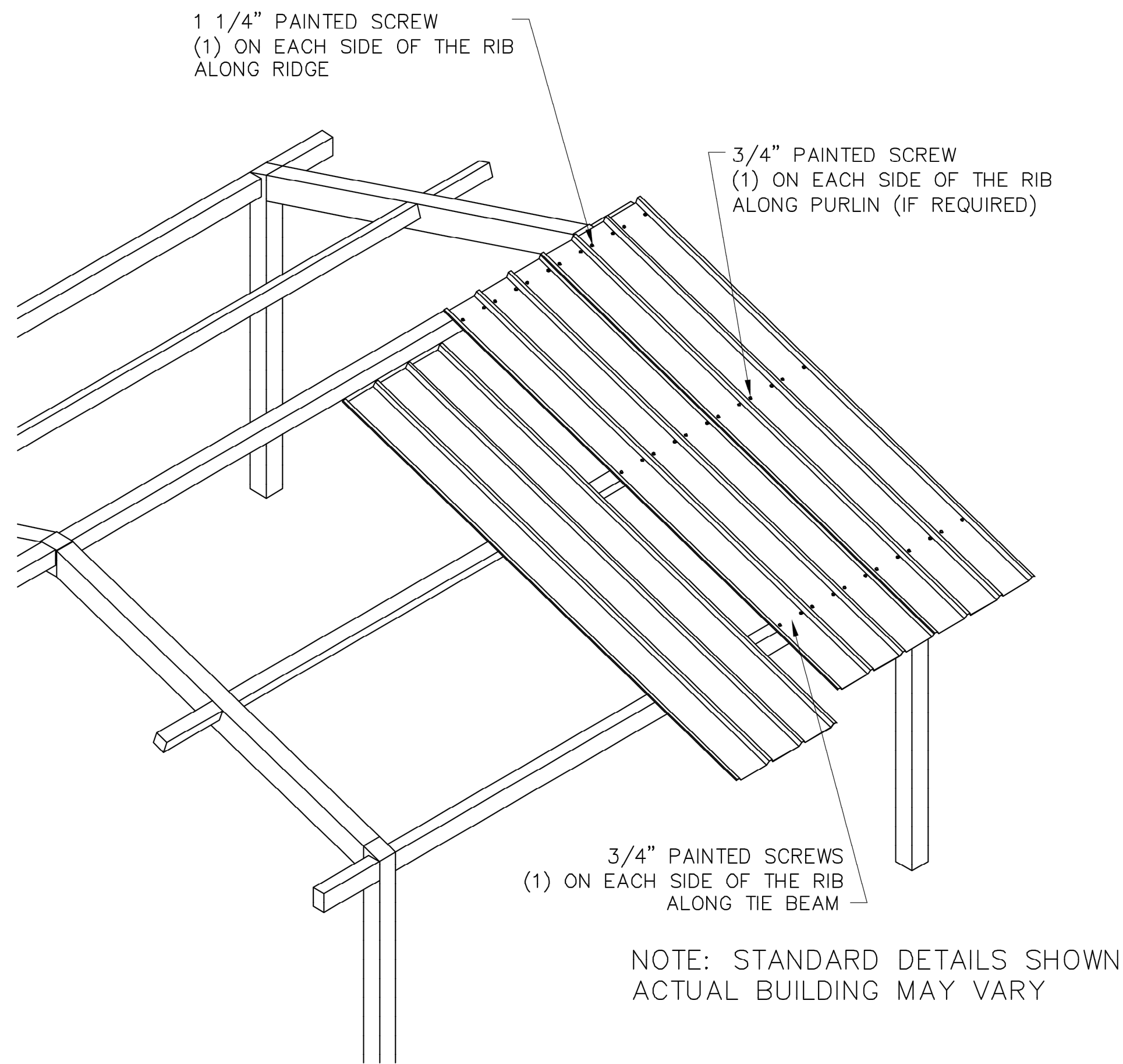
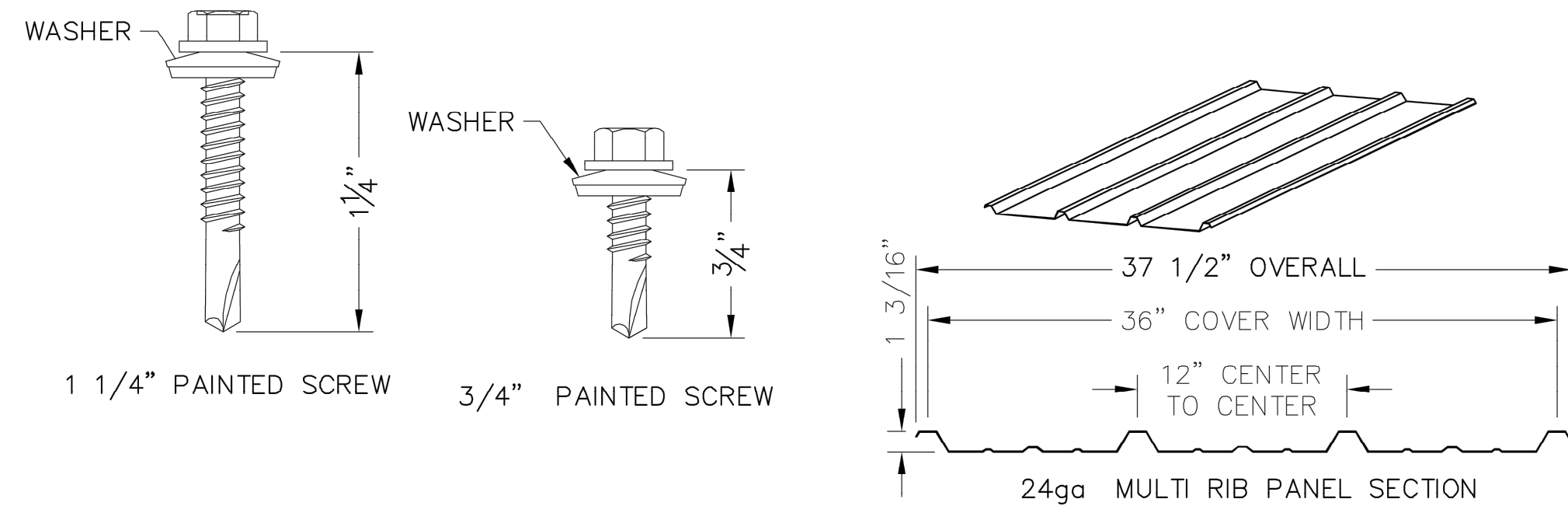
A horizontal number line with tick marks at 0 and 1, labeled "INCHES".

Project Number:
MDG #2397

Scale:
NTS

Drawing Number L-2.6
Sheet <u>13</u> of <u>2</u>

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record



PRELIMINARY: NOT FOR
CONSTRUCTION

ICON
Shelter Systems Inc
DISTINCTIVE STEEL SHELTERS
WWW.ICONSHelters.COM
COPYRIGHT 2004, ICON SHELTER
SYSTEMS, INC.
1455 LINCOLN AVE.
HOLLAND MI, 49423
616.396.0919
800.748.0985
616.396.0944 FX

Roof Layout

DRAWN BY:

LB

DATE:

11/13/14

JOB NO.:

STANDARD

REVISION:

BUILDING TYPE:

SG12x24M-P4

PROJECT NAME:

-20-90-40

SHEET

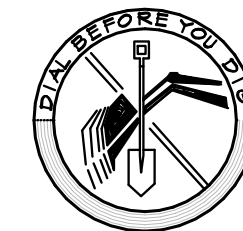
4.0

Engineering Viscer/Sandford/Visser/Visser VCDP/RETS
07-22-01-02

CALL BEFORE YOU DIG

CITY OF CHICO
PUBLIC WORKS

Call:
530-894-4200



UNDERGROUND
SERVICE ALERT
of Northern California

Call: TOLL FREE
1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



NTS

SHADE STRUCTURE

Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GVM/BDF				

PREPARED BY:
MDG
MELTON DESIGN GROUP, INC.
820 BROADWAY STREET.
CHICO, CA 95928
(530) 899-1616

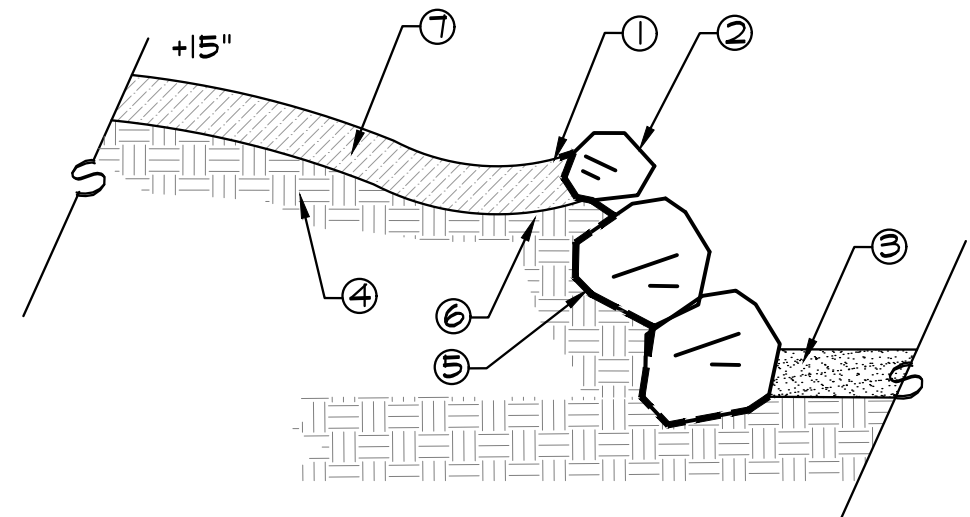
PREPARED FOR:
CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711



CENTENNIAL PARK
SHADE STRUCTURE DETAILS

0 1 2
INCHES

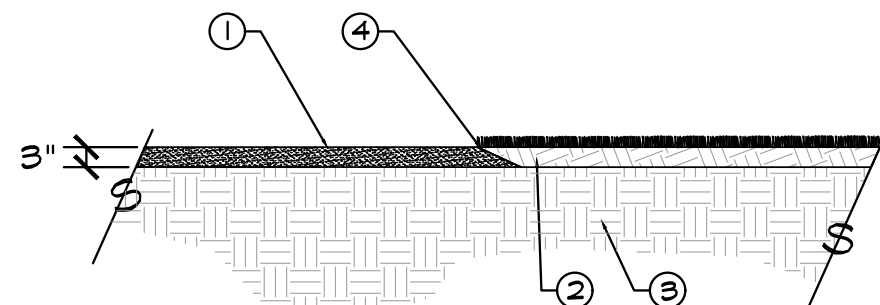
Project Number: MDG #2397	Drawing Number L-2.7
Scale: NTS	Sheet 14 of 26



- ① SWALE AROUND BACK OF WALL
② FIELD STONE BOULDERS (8"-12") TYP. 14" 12 PER SIDE (24 TOTAL RANDOMLY DISPERSED IN EACH WALL)
③ DG PER PLAN
④ TOP SOIL FILL
⑤ DENSE LANDSCAPE FABRIC
⑥ FILL SOIL
⑦ BARK MULCH (4")

NTS

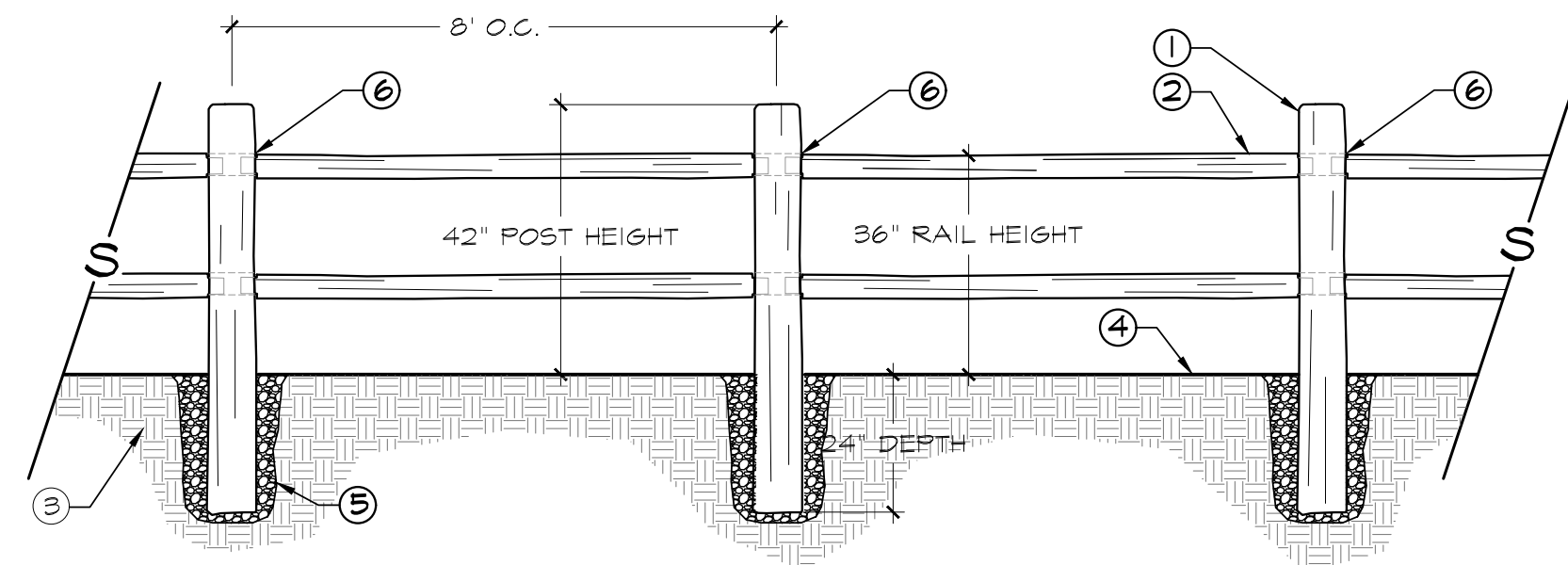
ROCK EMBANKMENT WALL



- ① 3" MINIMUM LAYER DECOMPOSED GRANITE IN PLANTER. WATER IN AND RAKE. SLOPE TO DRAIN PER PLAN, PROVIDE SAMPLE FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION
② TOP SOIL FOR PLANTING AREAS OR UNDERNEATH TURF AREA
③ COMPACT SUBGRADE TO 90% RELATIVE DENSITY
④ PLACE WHERE DECOMPOSED GRANITE MEETS SOIL OR TURF, ADD EXTRA DG UNDERNEATH SOIL FOR CLEAN TRANSITION

NTS

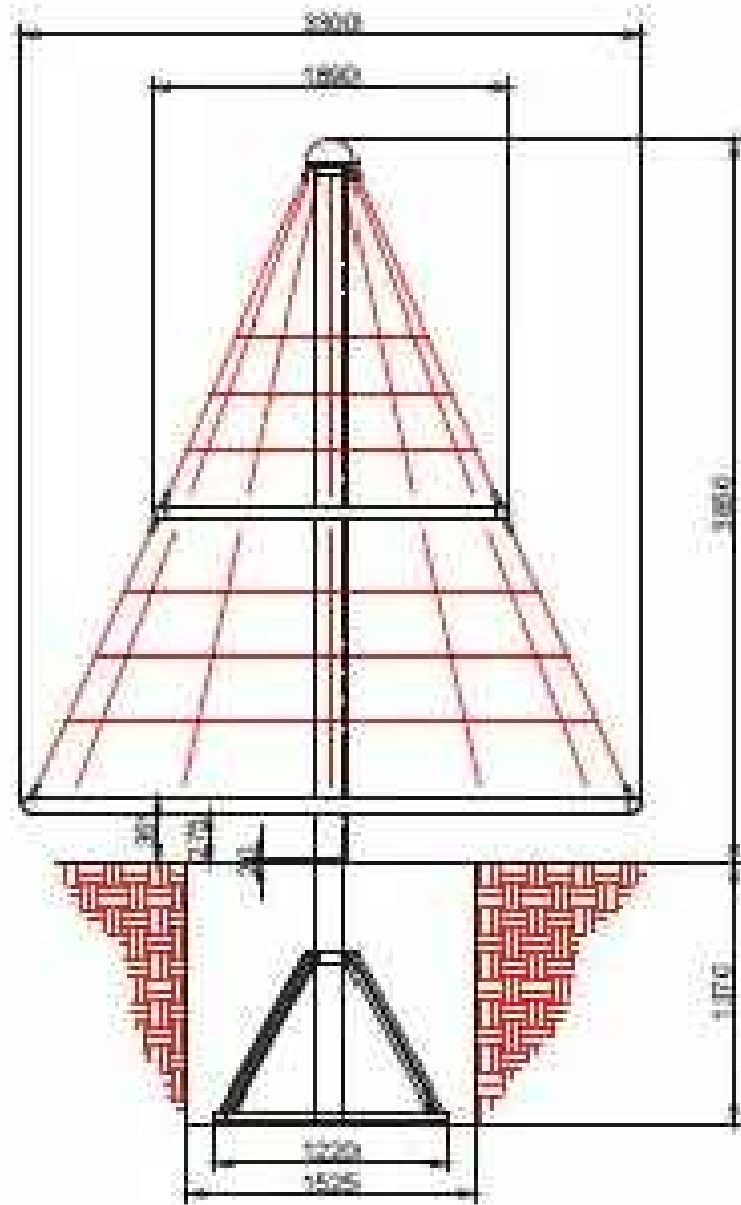
DECOMPOSED GRANITE TRANSITION



- ① 6"x6" 'SPLIT' CEDAR FENCE POST
② 3"x5" 'SPLIT' CEDAR RAIL (ALL RAILS WILL BE CHECKED FOR STRUCTURAL INTEGRITY)
③ POSTS SET IN CLASS II AGGREGATE BASE GRAVEL
④ FINISH GRADE
⑤ BACK FILL AND COMPACT OR SETTLE WITH WATER
⑥ FASTEN RAIL TO POST WITH 3" WOOD SCREW ON BACK SIDE OF POST
NOTE:
TREAT POST FOOTINGS WITH JASCO WOOD PRESERVATIVE PRODUCT NO. 113-TERMIN8G1; AVAILABLE THROUGH WHITE CAP INDUSTRIES INC. 1-800-WHITE CAP. OR APPROVED EQUAL.

NTS

SPLIT RAIL FENCE



KLD
ROPES

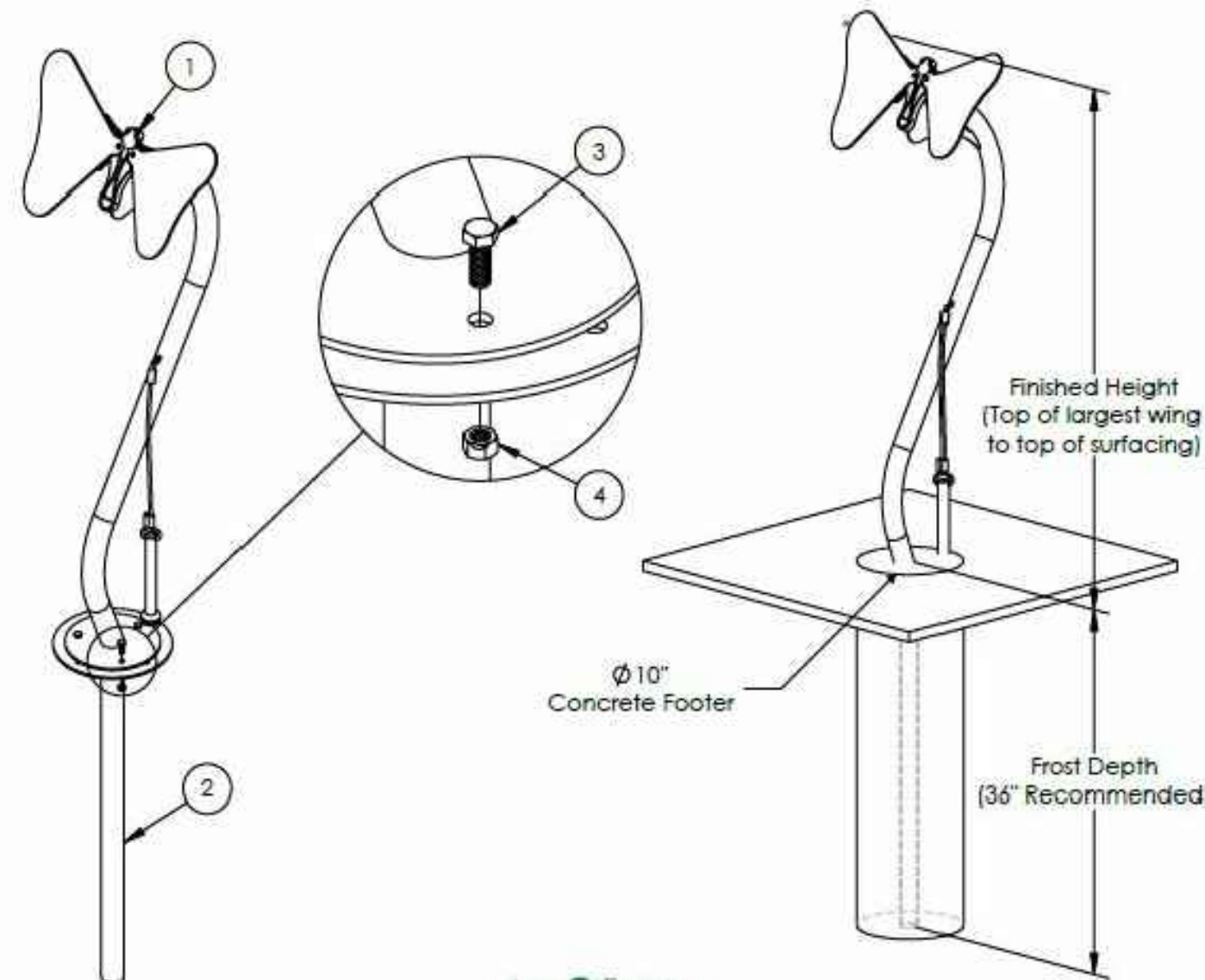
BFLY-I-INSTALL

Indigo Butterfly - Installation Guide

Inground Installation Instructions

- With the remaining Loctite, apply a couple drops to the end of the threads on the 3/8"-16 Hex Head Screws.
- Attach the Instrument Pre-Assembly to the In Ground Post Extension by aligning the holes on each component and fastening them together with the (3) 3/8" Hex Head Screws and the (3) 3/8"-16 Hex Nuts.
- Excavate one 10" diameter hole, 36" deep, at the installation location. (A deeper excavated hole or shortening the In Ground Post Extension will be required if the desired age groups are between 2-12) Be sure to account for surfacing thickness if it is to be used.
Finished Height Guideline: (Ages 2-5, 43.75") (Ages 5-12, 47.75") (Ages 13+, 51.75")
- With two people, lower instrument with Post Extension attached into the excavated hole. Verify correct placement and levelness of the instrument. Check for sufficient clearance around the instrument, a 36" perimeter around the instrument is recommended for wheelchair accessibility.
- Last pour concrete around the In Ground Extension. If necessary, brace the instrument to hold it rigid while the concrete cures. Leave to set according to the concrete manufacturers guidelines. Approximately (3) 80lb. bags will be needed.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	BFLY-I-BOM	Pre-Assembly - Indigo Butterfly Instrument	1
2	POST-STL-IG-EXT-FP	In Ground Steel Post Extension (Powder-coated)	1
3	92240A624	3/8"-16 Hex Head Screw, 1"lg. SS	3
4	91845A031	3/8"-16 Hex Nut, SS	3



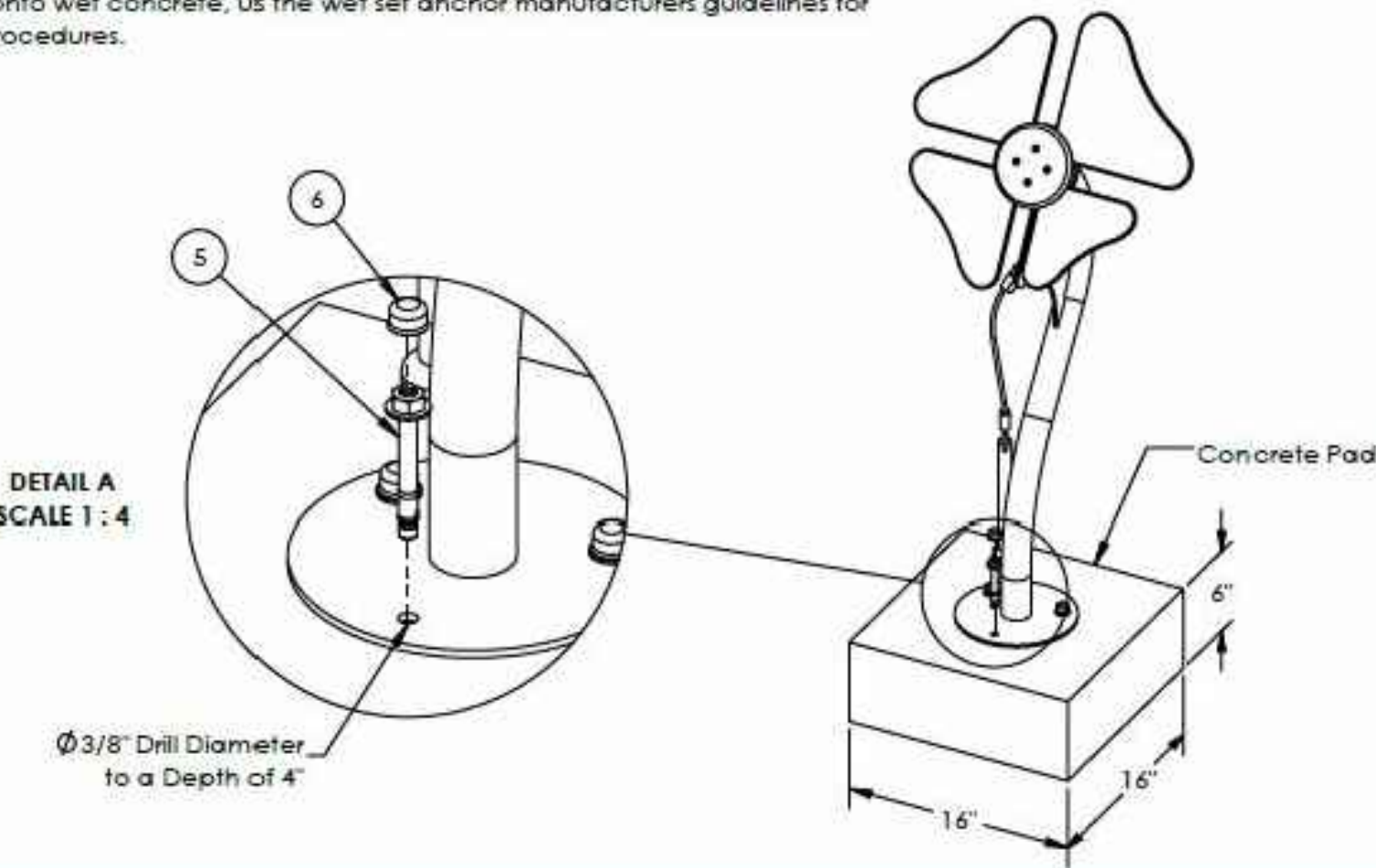
www.freenotes-harmonypark.com
833.262.1569

Freenotes
Harmony
Park
PLAYSCAPE SYSTEM

Revised: 12/19/2019
Sheet 3 of 5

NTS

FLOWER INSTRUMENT FOOTING DIAGRAM



DETAIL A
SCALE 1:4

Ø 3/8" Drill Diameter
to a Depth of 4"

NTS

BUTTERFLY INSTRUMENT FOOTING DIAGRAM

KLD SPINNER FOOTING DIAGRAM

Designed: MDG	Approved:	Revision	Date	By
Drawn By:				
Checked: GVM/BDF	Date: July 17, 2020			



MELTON DESIGN GROUP, INC.
820 BROADWAY STREET,
CHICO, CA 95928
(530) 899-1616

PREPARED FOR:

CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711



CENTENNIAL PARK
SITE DETAILS

0 1 2
INCHES

Project Number: MDG #2397	Drawing Number L-2.8
Scale: AS-SHOWN	Sheet <u>15</u> of <u>26</u>

Freenotes
Harmony
Park
PLAYSCAPE SYSTEM

114000 DRIVE, 1000 F.
DENVER CO 80202
TEL: (303) 755-1000
FAX: (303) 755-1000
WWW.FREENOTES-HARMONY.PARK.COM

DISCLAIMER AND CONFIDENTIALITY
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FREENOTES-HARMONY PARK. ANY REPRODUCTION OR PART OR ALL, WHOLE OR PART, WITHOUT THE WRITTEN PERMISSION OF FREENOTES-HARMONY PARK IS PROHIBITED.

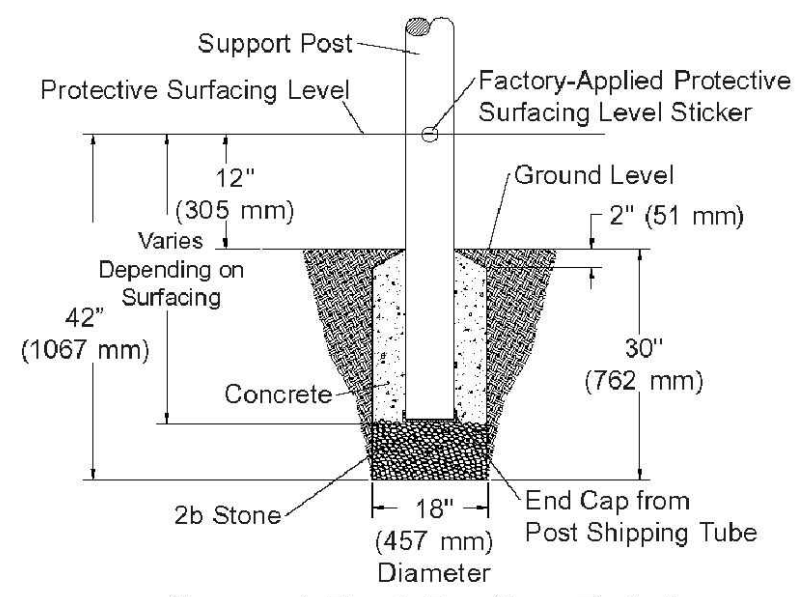
REVISION: A
SCALE: 1:12
DATE: 10/4/2017
SHEET 3 OF 3

DWG. NO. FWR-INSTALL

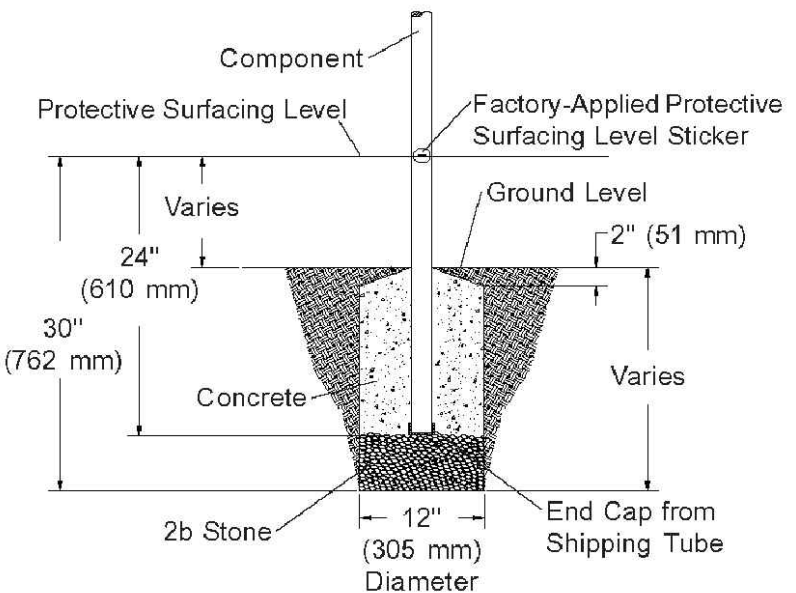
CALL BEFORE YOU DIG
CITY OF CHICO
PUBLIC WORKS
Call: 530-894-4200
UNDERGROUND SERVICE ALERT
of Northern California
Call: TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG



NTS



Support Post Footing Detail



Component Footing Detail

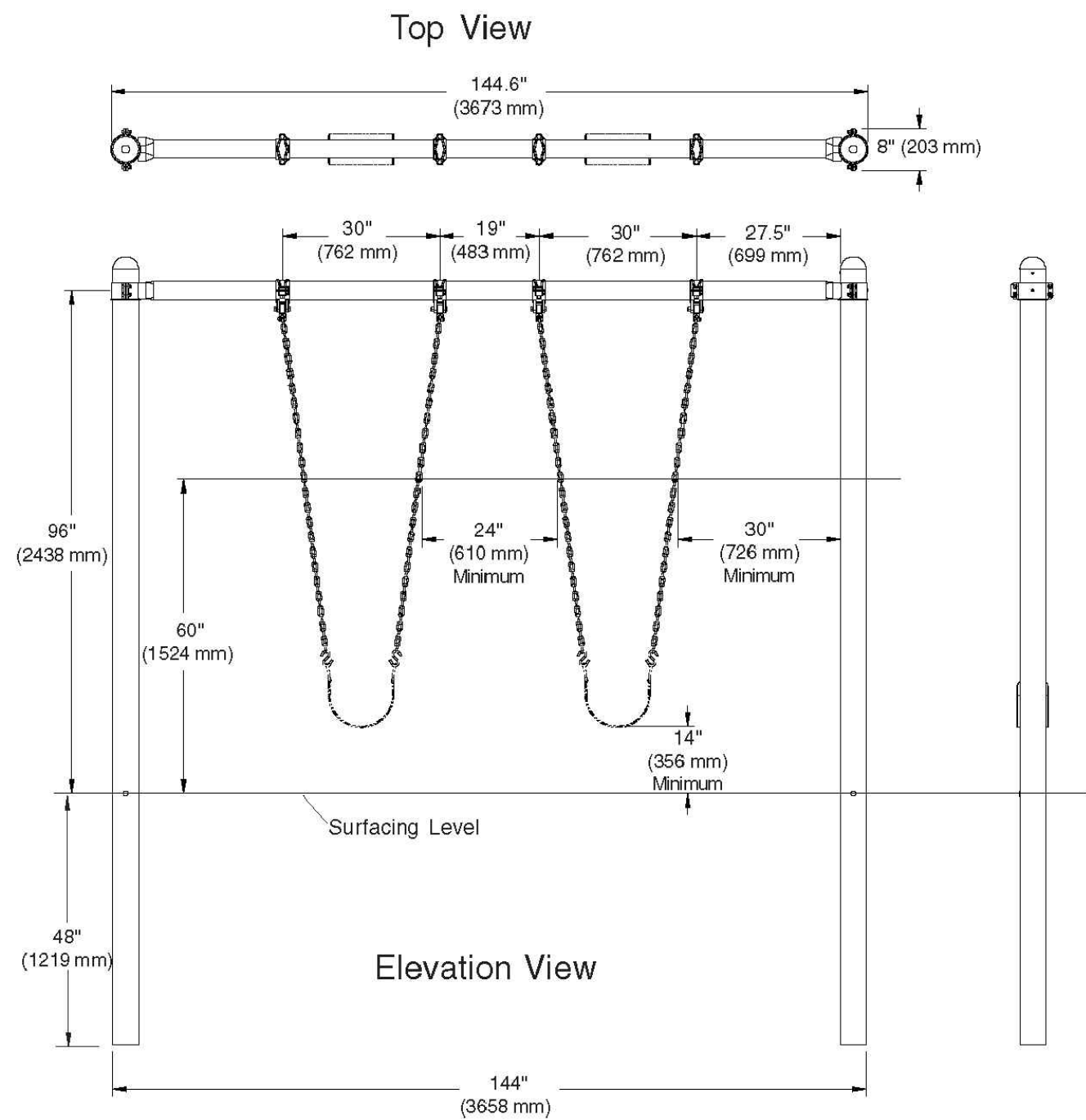
INSTALLATION INSTRUCTIONS

INGROUND FOOTING INSTALLATION NOTES

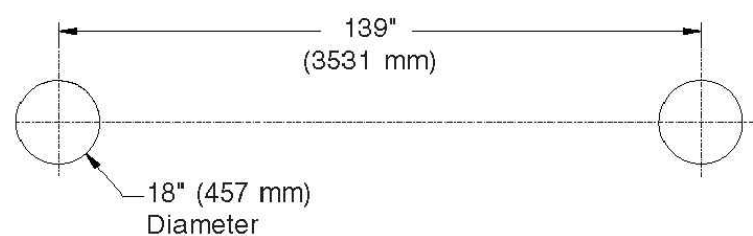
- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
Exceptions: See provided system footing diagram for spiral slide and chain net climber footings.
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post on a perforated end cap from the shipping tube directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions. For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.
- Comparison of protective surfacing materials is available in Handbook for Public Playground Safety published by U. S. Consumer Product Safety Commission.



CHALLENGER PLAY STRUCTURE FOOTING DETAIL

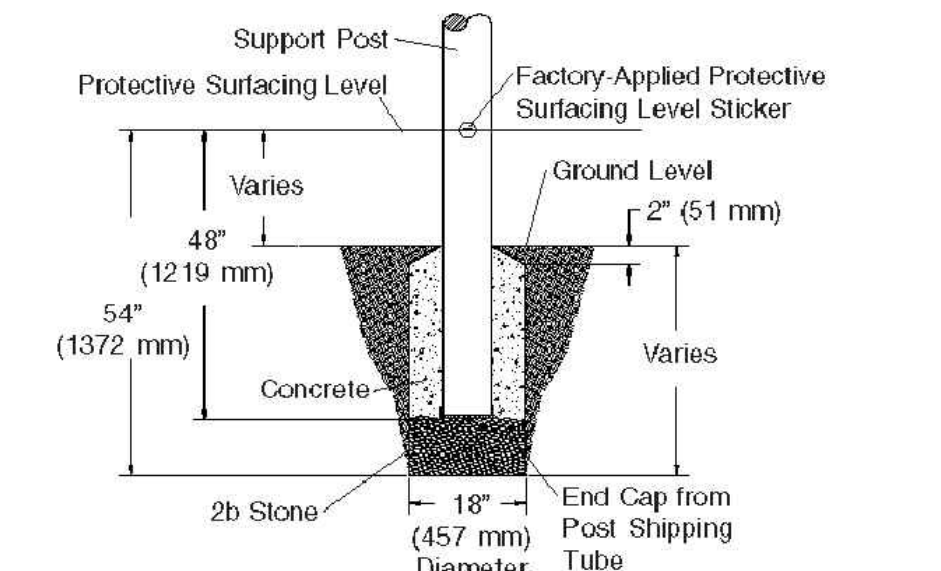


INSTALLATION INSTRUCTIONS

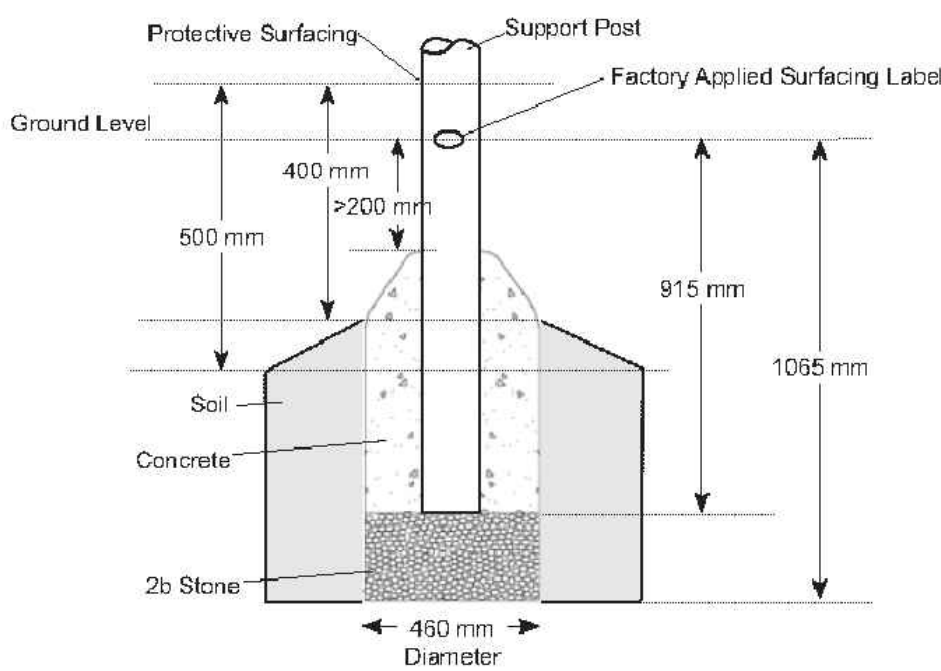


Footing Diagram

INSTALLATION INSTRUCTIONS



Support Post Footing Detail



Footing Detail Support Post (EN)

FOOTING NOTES

- Footing depth for support posts equals 42 in. (1067 mm) less the depth of the protective surfacing material. Posts are designed for 24 in. (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm) with 6 in. (150 mm) of packed stone.
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post on a *perforated* end cap from the shipping tube directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions. For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.



CALL BEFORE YOU DIG

CITY OF CHICO PUBLIC WORKS
Call: 530-894-4200

UNDERGROUND SERVICE ALERT
of Northern California
Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

NTS

2

SWING DETAILS

Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GYM/BDF				

PREPARED BY:

MDG MELTON DESIGN GROUP, INC.
820 BROADWAY STREET,
CHICO, CA 95928
(530) 899-1616

PREPARED FOR:

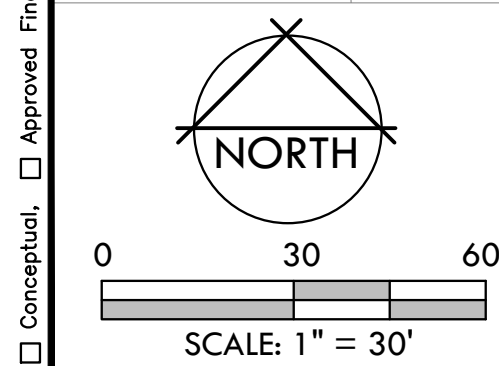
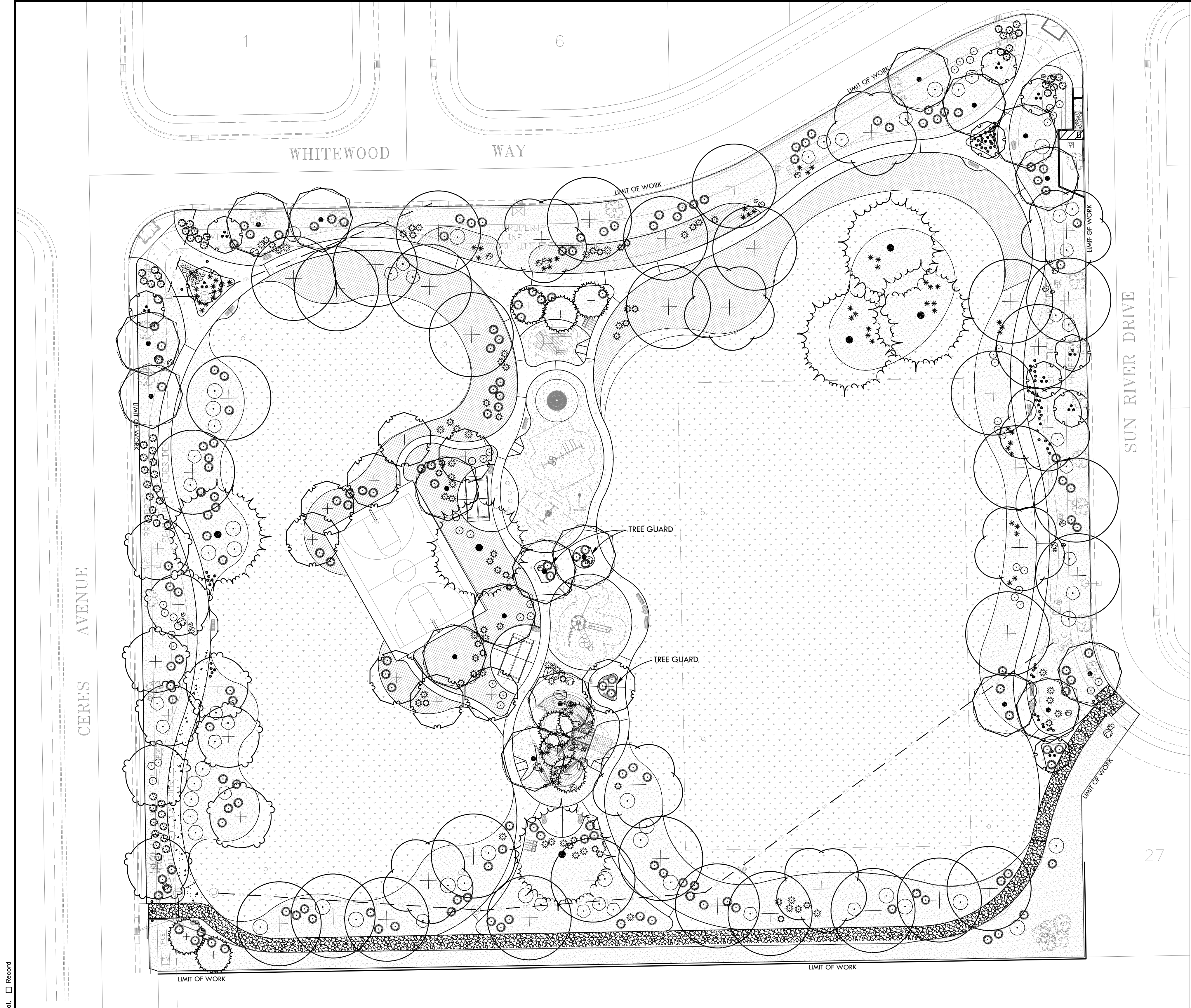
CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711



**CENTENNIAL PARK
PLAY EQUIPMENT DETAILS**

0 1 2
INCHES







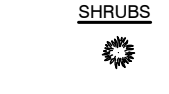



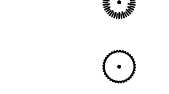

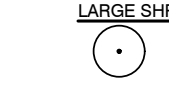

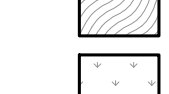


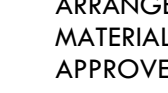

Project Number: MDG #2397	Drawing Number L-2.10
Scale: AS-SHOWN	Sheet 17 of 26



Plan Status:	Designed: MDG	Approved:	Revision	Date	By	PREPARED BY: <div><div>MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616</div></div>	PREPARED FOR: <div><div>CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711</div></div>		CENTENNIAL PARK PLANTING PLAN	01 INCHES2	Project Number: MDG #2397	Drawing Number L-3.0
	Drawn By:		Date: July 17, 2020	Scale: 1"=30'	Sheet 18 of 26							
	Checked: GVM											

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record

PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	ACE AUT	ACER RUBRUM 'AUTUMN FLAME'	AUTUMN FLAME MAPLE	24"	BOX	18
	ARB TRE	ARBUTUS UNEDO	STRAWBERRY TREE MULTI-TRUNK	24"	BOX	10
	CED DEO	CEDRUS DEODARA	DEODAR CEDAR	36"	BOX	6
	PIN CAN	PINUS CANARIENSIS	CANARY ISLAND PINE	24"	BOX	9
	QUE COC	QUERCUS COCCINEA	SCARLET OAK	24"	BOX	9
	QUE LOB	QUERCUS LOBATA	VALLEY OAK	24"	BOX	33
	TRI SEB	TRIADICA SEBIFERA	CHINESE TALLOW	24"	BOX	9
	ULM DRA	ULMUS PARVIFOLIA 'DRAKE'	DRAKE ELM	24"	BOX	9
SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	CDZ	CAREX DIVULSA	BERKELEY SEDGE	1 GAL	LOW	70
	CT	CHONDROPETALUM TECTORIUM	CAPE RUSH	1 GAL	LOW	64
	JS	JUNPERUS SQUAMATA 'BLUE CARPET'	BLUE CARPET JUNIPER	1 GAL	LOW	54
	TC	TEUCRIUM CHAMAEDRYS	GERMANDER	1 GAL	LOW	11
GRASSES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	CK	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	5 GAL	LOW	86
	MR	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	LOW	175
	SC	SALVIA CLEVELANDII	CLEVELAND SAGE	1 GAL	LOW	42
INTERMEDIATE SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	FN	FRANGULA CALIFORNICA 'EVE CASE'	EVE CASE COFFEEBERRY	1 GAL	LOW	34
LARGE SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	AH	ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCMINN'	HOWARD MCMINN MANZANITA	5 GAL	LOW	32
GROUND COVERS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	QTY
	AP	AGROSTIS PALLENS	NO-MOW NATIVE BENTGRASS	SOD		20,542 SF
	BF	BOLERO PLUS	DWARF FESCUE/BLUEGRASS	SOD		95,232 SF

PLANTING NOTES

- VERIFY EXACT LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
- ALL PLANT MATERIAL TO BE SET UP FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. NO SUBSTITUTIONS FOR PLANT MATERIAL WILL BE ALLOWED UNLESS PRIOR ARRANGEMENTS HAVE BEEN APPROVED BY LANDSCAPE ARCHITECT. IN THE EVENT OF PLANT MATERIAL UNAVAILABILITY, CONTACT LANDSCAPE ARCHITECT FOR ALTERNATIVE SOURCES OR APPROVED SPECIES SUBSTITUTION.
- PLANT QUANTITIES ARE FOR CONVENIENCE OF THE CONTRACTOR. CONTRACTOR TO CONFIRM EXACT NUMBER.
- TREE STAKES ARE TO BE PLACED PERPENDICULAR TO PREVAILING WINDS. REMOVE NURSERY STAKES, REPLACE WITH STAKES PER DETAIL. TREE TIES SHALL BE CINCH-TIE OR EQUAL.
- ALL TREE, SHRUB AND GROUND COVER PLANTINGS TO HAVE BARK MULCH OR DECOMPOSED GRANITE PLACED AROUND PLANT BASE PER PLANTING DETAILS. SEE CONSTRUCTION PLAN. .
- REFER TO PLANS, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- PLANT MATERIAL SHALL BE BID ON THE BASIS OF SPECIES AND CONTAINER SIZE, NOT ON CONTAINER SIZE ALONE.
- INSTALL TREE GUARDS WHERE NOTED, SEE SPECIFICATIONS.

CALL BEFORE YOU DIG

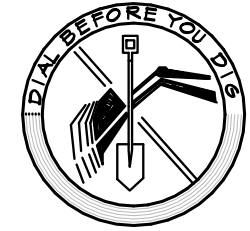
**CITY OF CHICO
PUBLIC WORKS**

Call:
530-894-4200

**UNDERGROUND
SERVICE ALERT**
of Northern California

Call: TOLL FREE
1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG







5



3



1



8



	4
--	---



2

Designed: MDG	Approved:	Revision	Date	By	PREPARED BY:	PREPARED FOR:		<div>012</div> <div>INCHES</div>	Project Number:	Drawing Number
Drawn By:					 <div>MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616 MELTONDESIGNGROUP.COM</div>	CHICO AREA RECREATION DEPARTMENT 545 YALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711			MDG #2397	L-3.1
Checked: GVM		Date: July 17, 2020								Scale: NTS

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
⊙	HUNTER I-20-04 TURF ROTOR, 4.0" POP-UP, ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER, DRAIN CHECK VALVE. STANDARD NOZZLE. SEE DETAIL.	25	3/L-4.2
⊙ 25 30 35	HUNTER I-20-04-MPR TURF ROTOR, 4.0" POP-UP, ADJUSTABLE AND FULL CIRCLE MATCH PRECIPITATION (MPR) NOZZLE. PLASTIC RISER, DRAIN CHECK VALVE. SEE DETAIL.	25	3/L-4.2
⊠	REMOTE CONTROL DRIP ZONE - HUNTER IC2-101-25 DRIP CONTROL ZONE KIT. 1" ICV GLOBE VALVE WITH 1" HY100 FILTER SYSTEM. PRESSURE REGULATION: 25PSI. FLOW RANGE: 2 GPM TO 20 GPM. SEE DETAIL.	25	3,7/L-4.2
⊠	REMOTE CONTROL DRIP ZONE - HUNTER IC2-101-25-LF (LOW FLOW) DRIP CONTROL ZONE KIT. 1" ICV GLOBE VALVE WITH 1" HY100 FILTER SYSTEM. PRESSURE REGULATION: 25 PSI. FLOW RANGE: 5 GPM TO 15 GPM. SEE DETAIL.	25	3,7/L-4.2
⊕	FLUSH VALVE - NETAFIM TL050MFV-1 AUTOMATIC FLUSH VALVE. 1/2" MALE PIPE THREAD. INSTALL ONE (1) PER 15 GPM MAX. AND PER MANUFACTURER'S SPECIFICATIONS. SEE DETAIL.	--	3/L-4.3
Δ 3.7 GPH	DRIP SHRUB RING - NETAFIM TLHCVR-053-12; INSTALL USING SIX (6) EMITTERS PER SINGLE RING SYSTEM AT 12" O/C SPACING OF EMITTERS. INSTALL ONE (1) NETAFIM TECHFLOW 5 GPH EMITTER (OR APPROVED EQUAL) AT ROOT BALL ON 1/4" POLY TUBING. INSTALL OPERATION FLAG MODEL 10-F-01 PER DRIP SHRUB RING ZONE. SEE DETAIL.	25	2,6/L-4.3
Δ 16.5 GPH	TREE DRIP RING - NETAFIM TLHCVR-053-12; INSTALL DOUBLE TREE DRIP RING WITH FIRST RING 24" FROM TREE CENTER AND SECOND DRIP RING 18" OFF FIRST DRIP RING. INSTALL TWO (2) NETAFIM TECHFLOW 1.0 GPH EMITTERS (OR APPROVED EQUAL) AT ROOT BALL ON 1/4" POLY TUBING EQUAL DISTANCE FROM TREE CENTER AND OUTSIDE OF ROOT BALL. INSTALL OPERATION FLAG MODEL 10-F-01 PER DRIP SHRUB RING ZONE. SEE DETAIL.	1,6/L-4.3	
⊠	AREA TO RECEIVE DRIP LINE - NETAFIM TLHCVR-053-12 TECHLINE HOVXR PRESSURE COMPENSATING DRIP LINE WITH CHECK VALVE AND ANTI-SIPHON FEATURE. 0.53 GPH EMITTERS AT 12" O.C. SPAGE DRIP LINE LATERALS AT 12" APART ON TOP 2/3 OF SLOPE AND 18" APART ON BOTTOM 1/3 OF SLOPE. INSTALL WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. INSTALL (1) OPERATION FLAG, MODEL 10-F-01 PER DRIP LINE ZONE. MANUFACTURER APPROVED 17MM FITTINGS. SEE DETAILS	4,5,6/L-4.3	
⊙	HUNTER ICV-G REMOTE CONTROL VALVE REMOTE CONTROL VALVES: SIZE PER PLAN, 24V SOLENOID, 1/4GA COMMON AND CONTROL WIRE IN 2" PVC SCH40 CONDUIT. INSTALL PER DETAIL IN VALVE BANKS NOT TO EXCEED FOUR (4) VALVES AT ANY ONE LOCATION. VALVE LOCATIONS SHALL BE IN SHRUB AREAS WITH A MIN. OF 3' FLAT AREA. CONTRACTOR SHALL LOCATE VALVE BANKS FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO INSTALLATION. SEE DETAILS.	2,7/L-4.2	
⊠	RAIN BIRD 44-LRC - 1" BRASS QUICK-COUPLING VALVE. LOCKING RUBBER COVER. PROVIDE TWO (2) SH-HOSE SWIVEL AND TWO (2) 44-K QUICK COUPLER KEYS TO OWNER. SEE DETAIL.	1,7/L-2	
⊠	ISOLATION VALVE - 2" AND SMALLER - WILKINS 860-T FULL PORT BALL VALVE WITH 1" HANDLE 2-1/2" AND LARGER NIBCO 619-RW-SON FLANGED GATE VALVE WITH SO. OP. NUT. SIZE PER PIPE SIZE. LOCATION SHOWN FOR GRAPHIC CLARITY. INSTALL IN PLANTER. CONTRACTOR SHALL LOCATE FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO INSTALLATION.	7,8/L-4.2 7/L-4.2	
⊠	MASTER VALVE - WEATHER TRAK WT-MV-200G-SNO 2" SOLENOID, NORMALLY OPEN MASTER VALVE. INSTALL DOWNSTREAM OF BACKFLOW PREVENTER AS SHOWN. SEE DETAIL.	5/L-4.1 7/L-4.2	
⊠	REDUCED PRESSURE BACKFLOW DEVICE: 2" ZURN 975XL2 INSTALL IN STRONG BOX SBBC-45CR LOW PROFILE ENCLOSURE AND WITH POLAR BEARER INSULATED COVER, MODEL PB8-45. CONTRACTOR SHALL BE RESPONSIBLE TO CERTIFY BACKFLOW PREVENTER WITHIN SEVEN (7) DAYS OF INSTALLATION. LOCATION SHOWN FOR GRAPHIC CLARITY. CONTRACTOR SHALL LOCATE BACKFLOW FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO INSTALLATION. LOCATE WITHIN PLANTER. SEE DETAIL.	4/L-4.1	
⊠	CONTROLLER - HYDRO POINT WTXR-C-42-SPT 42 STATION/42 USED: INSTALL IN VIT STRONGBOX STAINLESS STEEL TOP ENTRY ENCLOSURE MODEL NO. SB-16SS. INSTALL CONTROL AND COMMON WIRE IN 3" SCHEDULE 40 CONDUIT WITH PULL BOXES AT 100' MAX. (NOT SHOWN). SEE DETAIL.	2,3/L-4.1	
⊠	FLOW SENSOR - WEATHERTRAK WTLQWHD-P-200 2" PLASTIC ULTRASONIC FLOW SENSOR IN PVC SCH80 TEE W/SOCKET ENDS, FLOW RANGE 0.92-138 GPM. PLACE A MINIMUM OF 24" DOWNSTREAM OF MASTER VALVE AND 12" UPSTREAM OF ANY FITTINGS. SEE DETAIL.	6/L-4.1 7/L-4.2	
⊠	ELECTRIC METERED SERVICE - TESCO 28-000 BY OTHERS. STUB OUT EMPTY 2" CONDUIT WITH PULL TAPE FROM METERED SERVICE TO FUTURE PUMP LOCATION BY BACKFLOW PREVENTER.	1/L-4.1	
⊠	WATER METER 2" BY OTHERS.	--	
---	IRRIGATION LATERAL LINE: 2" AND SMALLER PVC SCHEDULE 40, 2-1/2" AND LARGER PVC CLASS 315. MIN. SIZE 1".	5,6/L-4.2	
---	IRRIGATION MAINLINE: 2" AND SMALLER PVC SCHEDULE 40, 2-1/2" AND LARGER PVC CLASS 315. MIN. SIZE 1". INSTALL CONDUIT AND CONTROL/COMMON WIRE ADJACENT TO MAIN LINE TO VALVES. (CONDUIT NOT SHOWN)	5,6/L-4.2	
---	PIPE SLEEVE: 4" AND SMALLER PVC SCHEDULE 40, 6" AND LARGER HDPE SMOOTH INTERIOR WALL (N12 OR APPROVED EQUAL). INSTALL MAINLINE AND LATERALS IN SLEEVES WHEN CROSSING ALL PAVING. SLEEVE MAY BE SIZED FOR MULTIPLE PIPES LEAVING 25% VOID SPACE.	5/L-4.2	
⊠	Valve Callout		
⊠	STATION NUMBER		
⊠	STATION FLOW (GPM)		
⊠	VALVE SIZE (INCHES)		
⊠	PRECIPITATION RATE (INHR)		

CRITICAL ANALYSIS

P.O.C. NUMBER: 01
Water Source Information: 2" Water Meter by Others.

FLOW AVAILABLE
Water Meter Size: 2"
Flow Available: 77.18 gpm

PRESSURE AVAILABLE
Static Pressure at POC: 55.00 psi
Elevation Change: 0.00 ft
Service Line Size: 2"
Length of Service Line: 20.00 ft
Pressure Available: 54.00 psi

DESIGN ANALYSIS
Maximum Station Flow: 33.60 gpm
Flow Available at POC: 77.18 gpm
Residual Flow Available: 43.58 gpm

Pressure Req. at Critical Station: 36.95 psi
Loss for Fittings: 0.04 psi
Loss for Main Line: 0.39 psi
Loss for POC to Valve Elevation: 0.00 psi
Loss for Backflow: 13.50 psi
Loss for Master Valve: 1.90 psi
Loss for Water Meter: 0.72 psi
Critical Station Pressure at POC: 53.20 psi
Pressure Available: 54.00 psi
Residual Pressure Available: 0.80 psi

IRRIGATION NOTES:

1. THIS SYSTEM IS DESIGNED FOR A MAXIMUM DEMAND OF 34 GPM AND 55 PSI AT POINT OF CONNECTION WITH A 12-HOUR WATER WINDOW. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY EXISTING CONDITIONS. COORDINATE WITH OWNER TO REVIEW IRRIGATION SYSTEM PRIOR TO START OF WORK. IN THE EVENT THAT EXISTING CONDITIONS ARE DIFFERENT THAN STATED, CONTACT LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.

2. THE INTENT OF THIS IRRIGATION SYSTEM IS TO PROVIDE THE MINIMUM AMOUNT OF WATER REQUIRED TO SUSTAIN GOOD PLANT HEALTH. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROGRAM THE IRRIGATION CONTROLLER BASED ON RECOMMENDATIONS FROM THE LANDSCAPE WATER AUDIT AND AS REQUIRED BY THE 2015 UPDATED MODEL WATER EFFICIENT LANDSCAPE ORDINANCE, CALIFORNIA CODE OF REGULATIONS TITLE 23, DIVISION 2, CHAPTER 2.7 AND EXISTING FIELD CONDITIONS. THE CONTRACTOR SHALL MAKE SCHEDULING ADJUSTMENTS AS NEEDED TO ACHIEVE THE MOST EFFICIENT APPLICATION OF WATER BASED ON PLANT TYPE, WATER USE REQUIREMENTS, SOIL TYPE, GRADES, SUN EXPOSURE, SHADE, WIND, ETC.

3. THIS DRAWING IS DIAGRAMMATIC. IRRIGATION COMPONENTS SHOWN BENEATH PAVING, UTILITIES, PLANTINGS, ETC. ARE FOR GRAPHIC CLARITY ONLY. PLACE ALL PIPING, VALVES, AND OTHER IRRIGATION COMPONENTS WITHIN THE ADJACENT PLANTER EXCEPT WHERE PIPES CROSSOVER BENEATH PAVING, STRUCTURES, WALLS, ETC.. THE CONTRACTOR SHALL PLACE PIPING TO PREVENT CONFLICT WITH UTILITIES, TREE LOCATIONS, PLANTING, HARDSCAPE COMPONENTS, WATER PLAY FEATURES, PLAY AREAS AND FURNISHINGS. SEE PLANTING PLAN FOR PLANT COUNT AND LAYOUT. REFER TO CONTRACT DOCUMENTS FOR PROJECT SCOPE.

4. THE CONTRACTOR SHALL PROVIDE COMPLETE RECORD DRAWINGS TO OWNER AT COMPLETION OF PROJECT AND AS REQUIRED BY CONTRACT DOCUMENTS.

5. THE IRRIGATION SYSTEM IS DESIGNED TO OPERATE AT THE FOLLOWING PRESSURES: HUNTER 120 ROTORS-25PSI, DRIP TREE AND SHRUB RINGS-25PSI, DRIPPER LINE - 25PSI. ALL IRRIGATION SHALL BE INSTALLED BY CONTRACTOR AT THE LOCATIONS INDICATED ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT OF ANY DEVIATION WHICH MAY AFFECT THE SPACING OR LOCATION OF THE IRRIGATION LAYOUT.

6. TRENCH IRRIGATION MAIN LINES TO A DEPTH OF 24". TRENCH ROTOR LINES TO A DEPTH OF 18", TRENCH DRIP LINES TO A DEPTH OF 2"-4". TRENCH ALL MAIN AND LATERAL LINES TO A DEPTH OF 24" WHERE CROSSING BENEATH PAVEMENT AND PLACE WITHIN SLEEVE. SIZE AND TYPE PER PLAN, SLEEVE CONTROL AND COMMON WIRES SEPARATELY IN 3" PVC SCHEDULE 40 CONDUIT ALONG ENTIRE LENGTH AND WHEN CROSSING BENEATH PAVEMENT AS REQUIRED.

7. CONTRACTOR SHALL BE RESPONSIBLE TO SLEEVE ALL MAIN LINES AND LATERAL LINES WHEN CROSSING BENEATH PAVEMENT, WALKWAYS, BUILDINGS, WALLS, ETC. WHETHER OR NOT SHOWN ON THE IRRIGATION PLAN. SIZE PER PLAN AND/OR AS NEEDED BASED ON THE NUMBER OF IRRIGATION LINES AND SIZES. CONTROL WIRES SHALL BE SLEEVED INDEPENDENTLY. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH OTHER TRADES TO INSTALL SLEEVES REQUIRED.

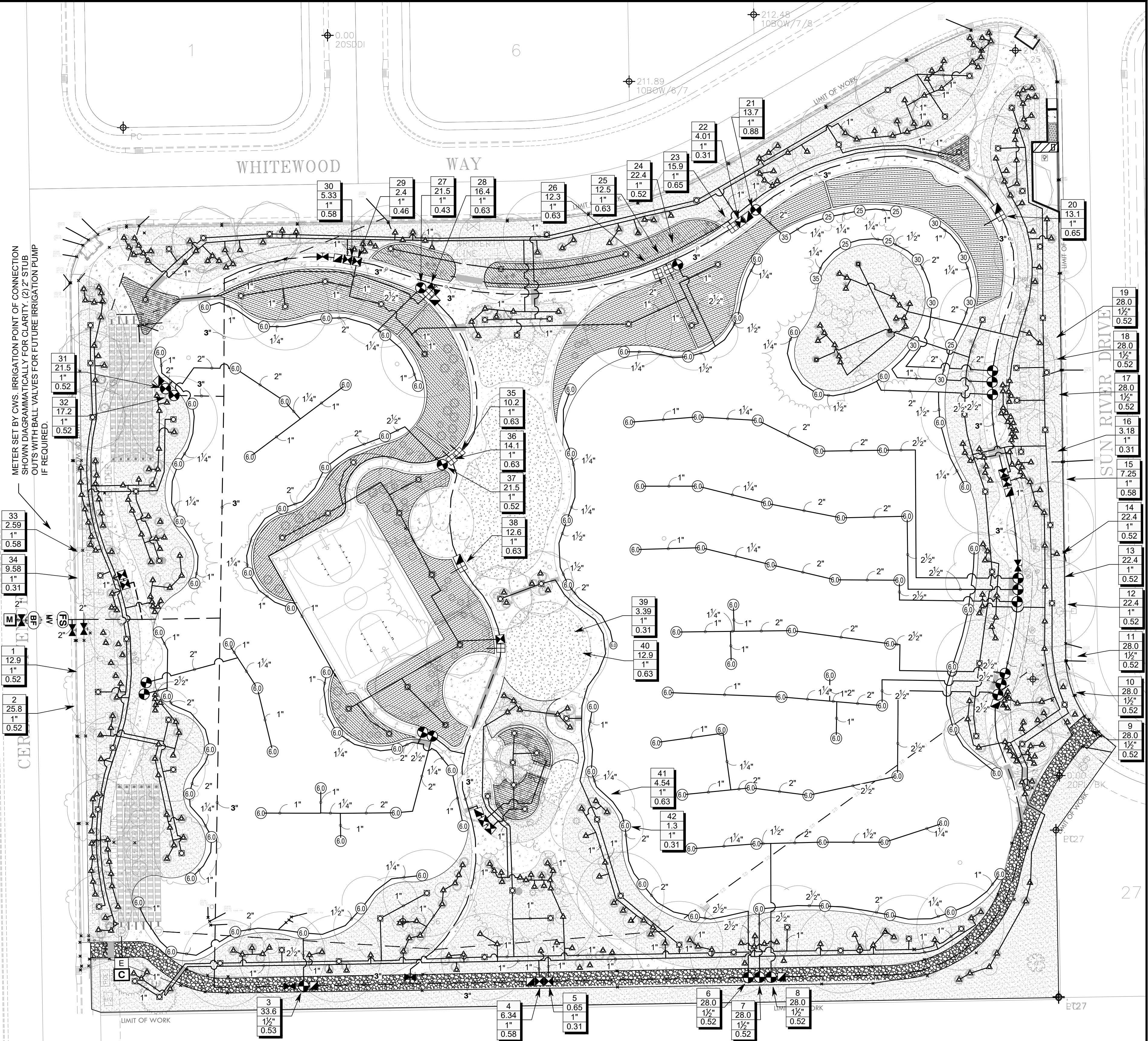
8. ALL IRRIGATION REMOTE CONTROL VALVES, QUICK COUPLER VALVES, ELECTRIC PULL BOXES SHALL BE INSTALLED IN PLANTED AREAS AND IN VALVE BOXES. NO VALVES/VALVE BOXES SHALL BE INSTALLED IN PAVED AREAS OR IN TURF AREAS. VALVE BOXES SHALL BE GREEN.

9. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONNECT THE NEW IRRIGATION CONTROLLER TO 110V POWER AND BE RESPONSIBLE TO COORDINATE WITH OTHERS. PROVIDE OWNER TRAINING ON CONTROLLER SCHEDULING FOR BOTH ESTABLISHMENT AND MAINTENANCE SCHEDULES.

10. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE LANDSCAPE WATER AUDIT PER REQUIREMENTS SET FORTH IN THE 2015 UPDATED MODEL WATER EFFICIENT LANDSCAPE ORDINANCE, CALIFORNIA CODE OF REGULATIONS TITLE 23, DIVISION 2, CHAPTER 2.7. CONTRACTOR SHALL MAKE FINAL ADJUSTMENTS TO THE IRRIGATION SYSTEM BASED ON LANDSCAPE WATER AUDIT RECOMMENDATIONS. SEE CONTRACT DOCUMENTS.

11. MAIN LINE PIPE SIZE TO BE 3" PIPE. LATERAL PIPE SIZE DOWNSTREAM OF LAST PIPE SIZE CALL OUT TO BE 1" PIPE.

12. SEE CONTRACT DOCUMENTS, SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION.



CALL BEFORE YOU DIG

CITY OF CHICO PUBLIC WORKS

Call: 530-894-4200

UNDERGROUND SERVICE ALERT

of Northern California

Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

RECEIVED LANDSCAPE ARCHITECT

STATE OF CALIFORNIA

EXP. 11-21

Designed: MDG	Approved:	Revision	Date	By
Drawn By: PLG	Date: July 17, 2020			
Checked: GVM				

PREPARED BY:

MDG

MELTON DESIGN GROUP, INC.

820 BROADWAY STREET,
CHICO, CA 95928
(530) 899-1616

PREPARED FOR:

CHICO AREA RECREATION DEPARTMENT

545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711

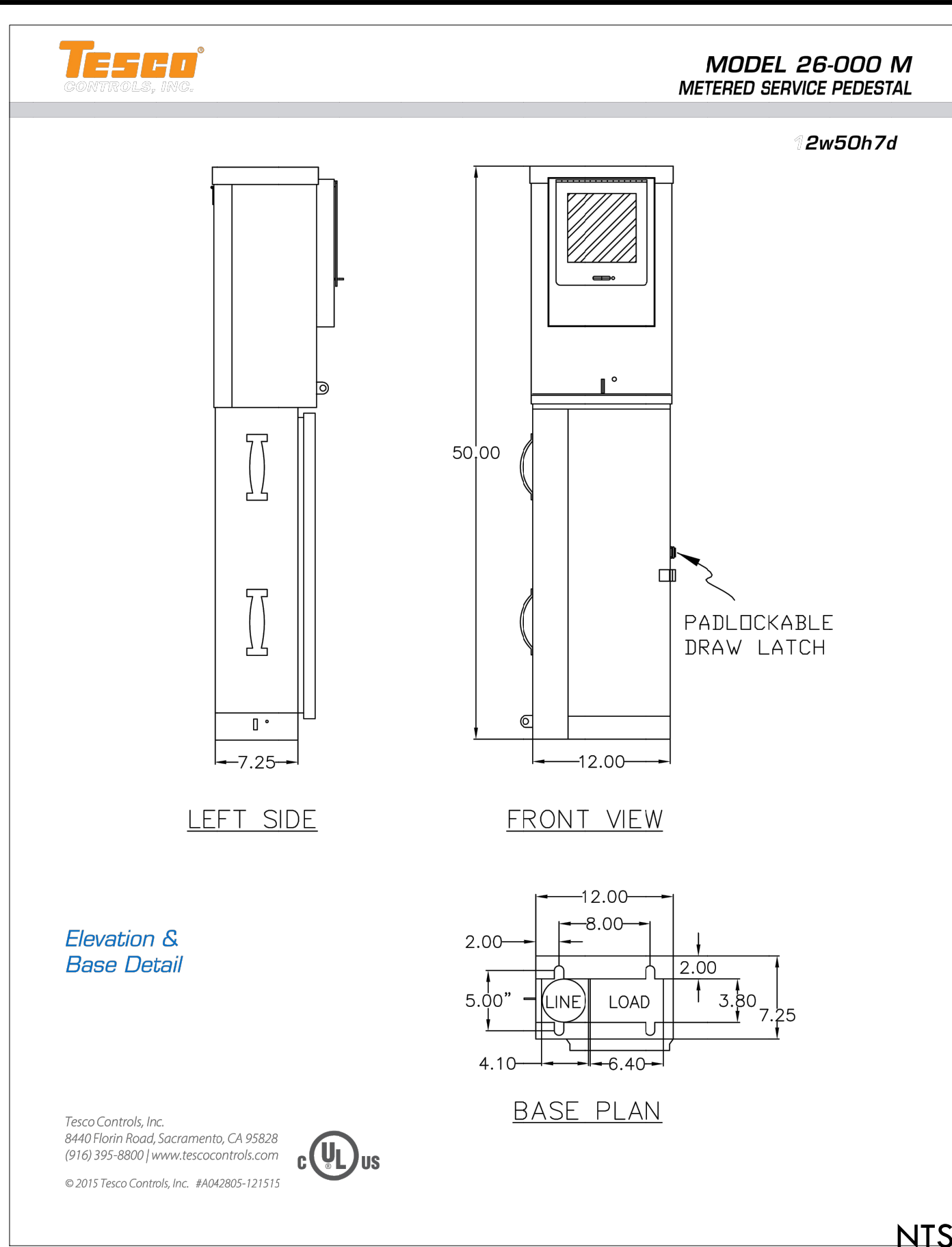


CENTENNIAL PARK IRRIGATION PLAN

0 1 2
INCHES

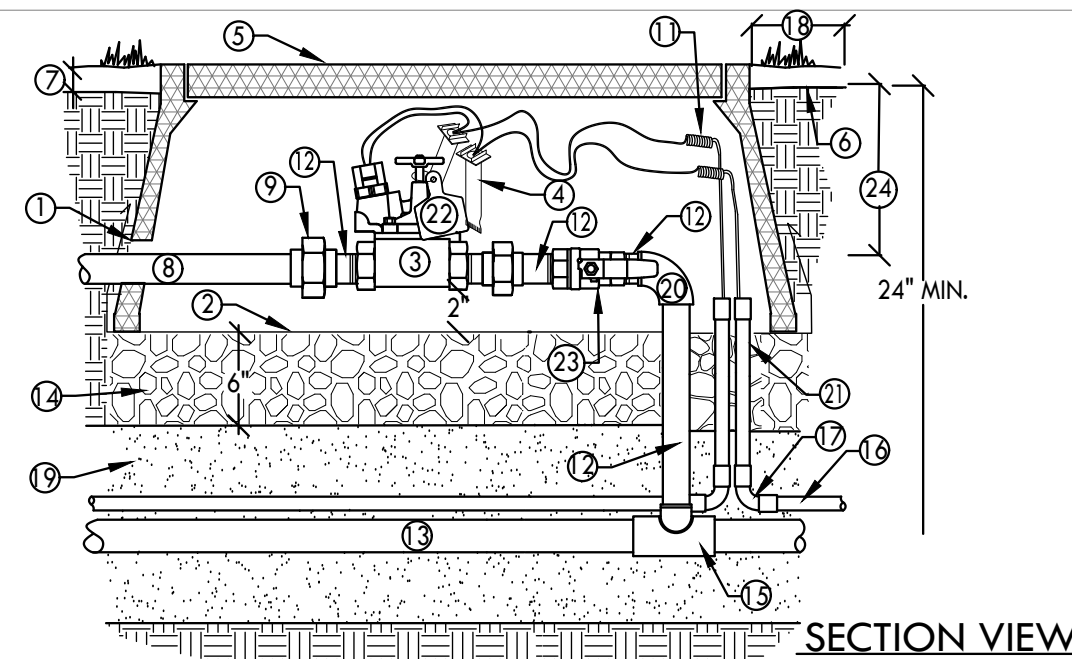
Project Number: MDG #2397	Drawing Number L-4.0
Scale: 1"=30'	Sheet 20 of 26

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record



METERED SERVICE PEDESTAL

1

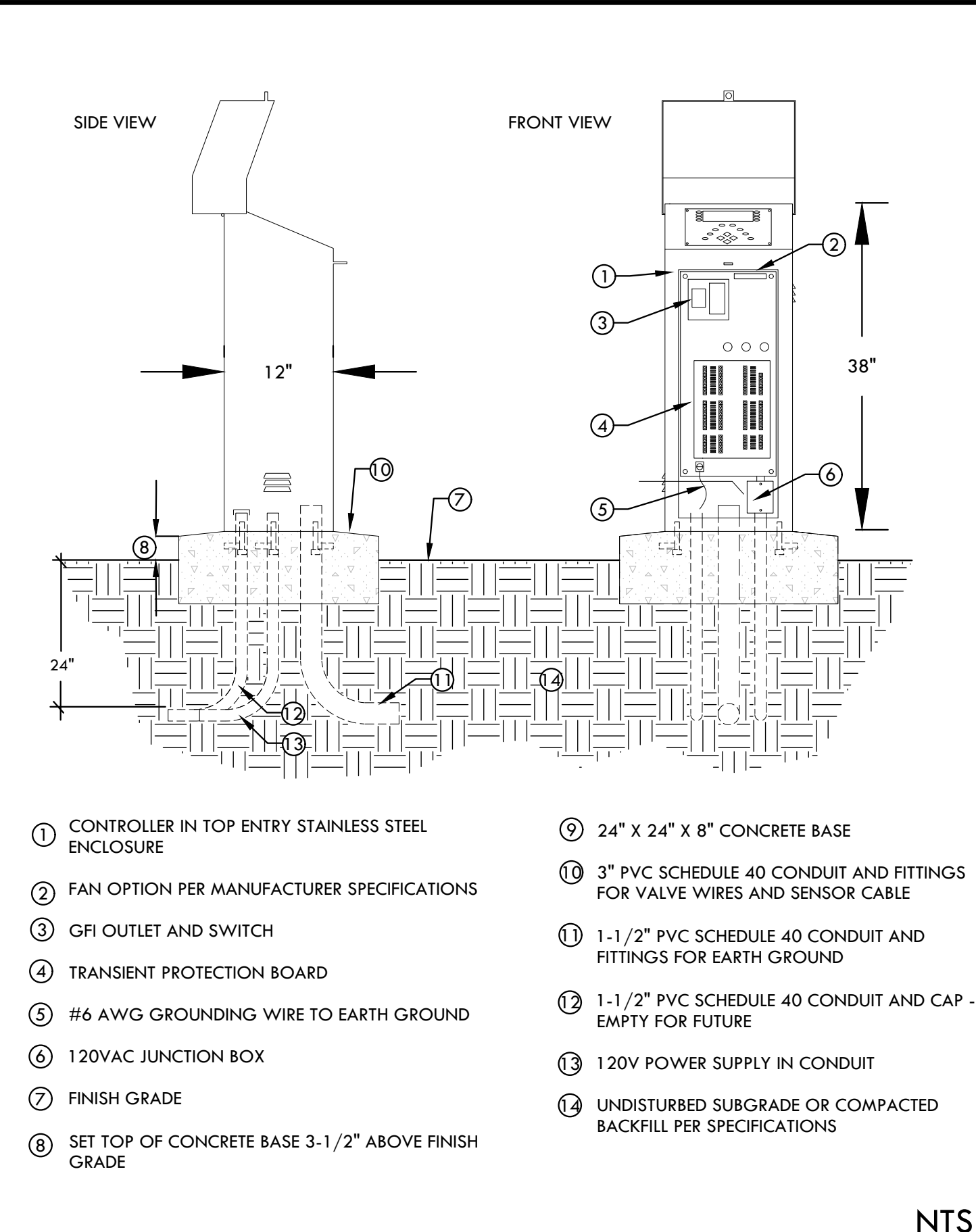


- 1 TRIM VALVE BOX TO PROVIDE 1" CLEARANCE OVER PIPE
- 2 1/4" GALVANIZED WIRE CLOTH - INSTALL ON TOP OF CRUSHED DRAIN ROCK 6" BEYOND EDGE OF VALVE BOX IN ALL DIRECTIONS
- 3 MASTER VALVE ASSEMBLY; NORMALLY OPEN. SIZE AND MODEL PER PLAN.
- 4 LOCKING WATERPROOF WIRE CONNECTOR, DBR/Y-6 OR APPROVED EQUAL
- 5 CARSON PLASTIC VALVE BOX 1220 WITH LOCK KIT AND L-BOLT, GREEN OR APPROVED EQUAL. VALVE BOX TO BE LARGE ENOUGH TO ENCLOSE ENTIRE VALVE ASSEMBLY. LID MARKED IRRIGATION.
- 6 FINISH GRADE - SEE GRADING PLAN.
- 7 SET TOP OF BOX ABOVE SUBGRADE: 3-1/4" DECOMPOSED GRANITE; 1-1/2" IN TURF. SET VALVE BOX HEIGHT TO MATCH GRADE OF ADJACENT HARDSCAPE.
- 8 PVC LATERAL LINE; SIZE AND TYPE PER PLAN. PROVIDE 18" LENGTH PRIOR TO FIRST FITTING.
- 9 SCHEDULE 80 PVC UNION, SXS (TYP. 2 PLCS.)
- 10 PVC SCHEDULE-80 90 DEG ELBOW, SXS
- 11 12 GA COMMON WIRE (WHITE), 14 GA CONTROL WIRE (RED) PER SPECIFICATIONS - PROVIDE 24" SPARE LOOP WRAPPED NEAT ALONG INTERIOR VALVE BOX. INSTALL (1) SPARE 12 GA COMMON WIRE (GREEN) AND (1) SPARE 14 GA CONTROL WIRE (YELLOW) ALONG ENTIRE MAIN LINE AND LOOPED INTO EACH VALVE BOX.
- 12 PVC SCHEDULE 80 T.O.E. NIPPLE, LENGTH AS NEEDED, MIN. 6" LENGTH
- 13 PVC MAIN LINE; SIZE AND TYPE PER PLAN. 24" MINIMUM COVER. SEE SPECIFICATIONS.
- 14 3/4" CRUSHED ROCK; 6" DEPTH. EXTEND 6" BEYOND VALVE BOX IN ALL DIRECTIONS.
- 15 SCHEDULE 80 PVC TEE (SxSxS)
- 16 3" PVC SCHEDULE 40 CONDUIT
- 17 3" PVC SCHEDULE 40 CONDUIT SWEEP, COUPLED BOTH ENDS
- 18 12" FROM HARDSCAPE
- 19 SAND BACKFILL; 4" ABOVE AND 2" BELOW MAIN LINE
- 20 PVC SCHEDULE 80 ELBOW, SXS
- 21 3" PVC SCHEDULE 40 CONDUIT RISER. INSTALL COUPLERS AT END, CLR 2" ABOVE DRAIN ROCK
- 22 T.CHRISTY ID TAG ID-MAX-B2-NP012. ATTACH BOTH TAGS TO VALVE STEM USING NYLON CABLE TIE.
- 23 PVC SCH80 BALL VALVE, SIZE PER VALVE SIZE
- 24 HEIGHT BELOW GRADE TO ALLOW MIN. 3" CLR

NTS

MASTER VALVE

5

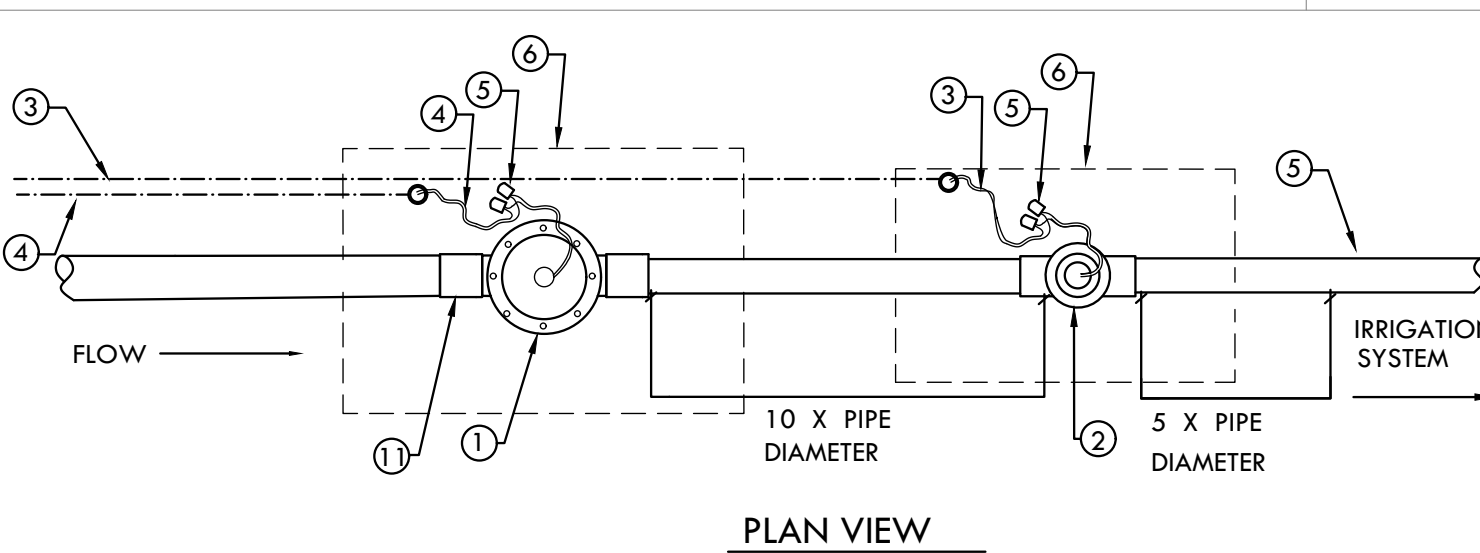


- 1 CONTROLLER IN TOP ENTRY STAINLESS STEEL ENCLOSURE
- 2 FAN OPTION PER MANUFACTURER SPECIFICATIONS
- 3 GFI OUTLET AND SWITCH
- 4 TRANSIENT PROTECTION BOARD
- 5 #6 AWG GROUNDING WIRE TO EARTH GROUND
- 6 120VAC JUNCTION BOX
- 7 FINISH GRADE
- 8 SET TOP OF CONCRETE BASE 3-1/2" ABOVE FINISH GRADE
- 9 24" X 24" X 8" CONCRETE BASE
- 10 3" PVC SCHEDULE 40 CONDUIT AND FITTINGS FOR VALVE WIRES AND SENSOR CABLE
- 11 1-1/2" PVC SCHEDULE 40 CONDUIT AND FITTINGS FOR EARTH GROUND
- 12 1-1/2" PVC SCHEDULE 40 CONDUIT AND CAP - EMPTY FOR FUTURE
- 13 120V POWER SUPPLY IN CONDUIT
- 14 UNDISTURBED SUBGRADE OR COMPACTED BACKFILL PER SPECIFICATIONS

NTS

CONTROLLER IN TOP ENTRY ENCLOSURE

2



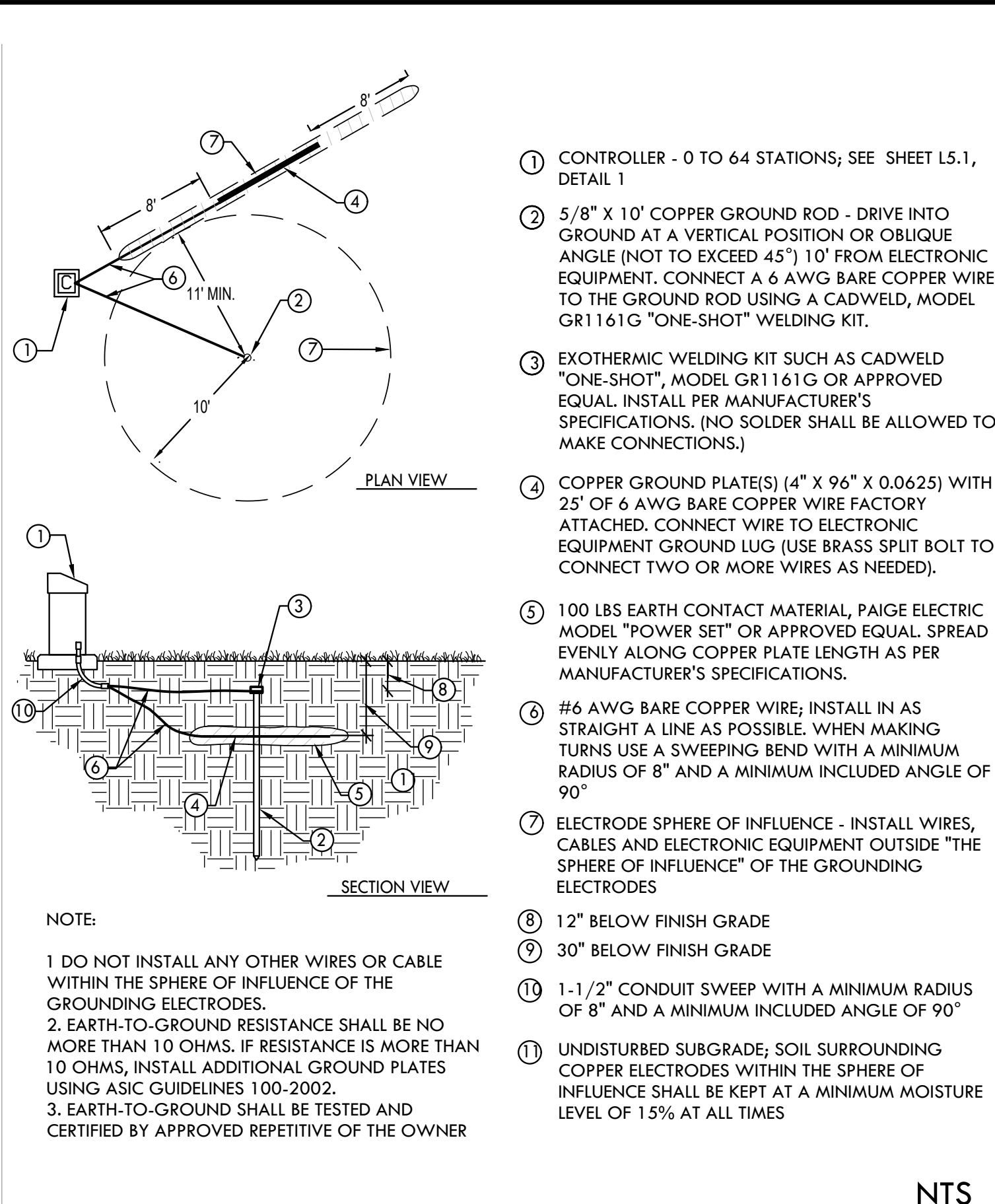
- 1 NORMALLY OPEN MASTER VALVE; INSTALL DOWNSTREAM OF BACKFLOW PREVENTER PER MANUFACTURER'S SPECIFICATIONS
- 2 1220 RECTANGULAR VALVE BOX WITH LOCK KIT AND BOLTS (GREEN). CONTRACTOR TO SUPPLY L-BOLTS
- 3 PVC SCHEDULE 80 UNION (TXT) (TYP. 2 PLCS.)
- 4 PVC SCHEDULE 80 T.O.E. NIPPLE; SIZE PER VALVE SIZE, LENGTH AS REQUIRED, MIN. 6" LENGTH
- 5 PVC SCHEDULE 80 COUPLINGS (S X S), SIZE AS REQUIRED
- 6 PVC SCHEDULE 80 PIPE AND FITTINGS (TYPICAL).
- 7 TEE MOUNTED ULTRASONIC FLOW SENSOR IN SCHEDULE 80 TEE. INSTALL AT 20 DEG. - 45 DEG. ANGLE.
- 8 PAIGE ELECTRIC PE39 CABLE IN 1 1/2" CONDUIT FROM SENSOR TO CONTROLLER. NOTE POLARITY ON SENSOR TO SENSOR CABLE HOOKUP. ALLOW 2" OF EXTRA CABLE AT VALVE NEATLY COILED AROUND INTERIOR OF VALVE BOX
- 9 VALVE COMMON WIRE #12 GA AND CONTROL WIRE #14 GA IN 2" CONDUIT FROM VALVE TO CONTROLLER. SIZE AS REQUIRED.
- 10 WATERPROOF CONNECTIONS AS PER MANUFACTURER'S SPECIFICATIONS (TYPICAL) - DBR/Y-6 OR APPROVED EQUAL

- NOTE:
1. FLOW SENSOR MUST BE INSTALLED WITH INSERT (TOP) POSITIONED VERTICALLY AND BODY (TEE) POSITIONED HORIZONTALLY.
 2. INSTALL FLOW SENSOR CABLE N 1 1/4" CONDUIT FROM FLOW SENSOR TO CONTROLLER.
 3. CONTRACTOR SHALL INSTALL MISCELLANEOUS LEEMCO FITTINGS AS NEEDED

NTS

FLOW SENSOR

6

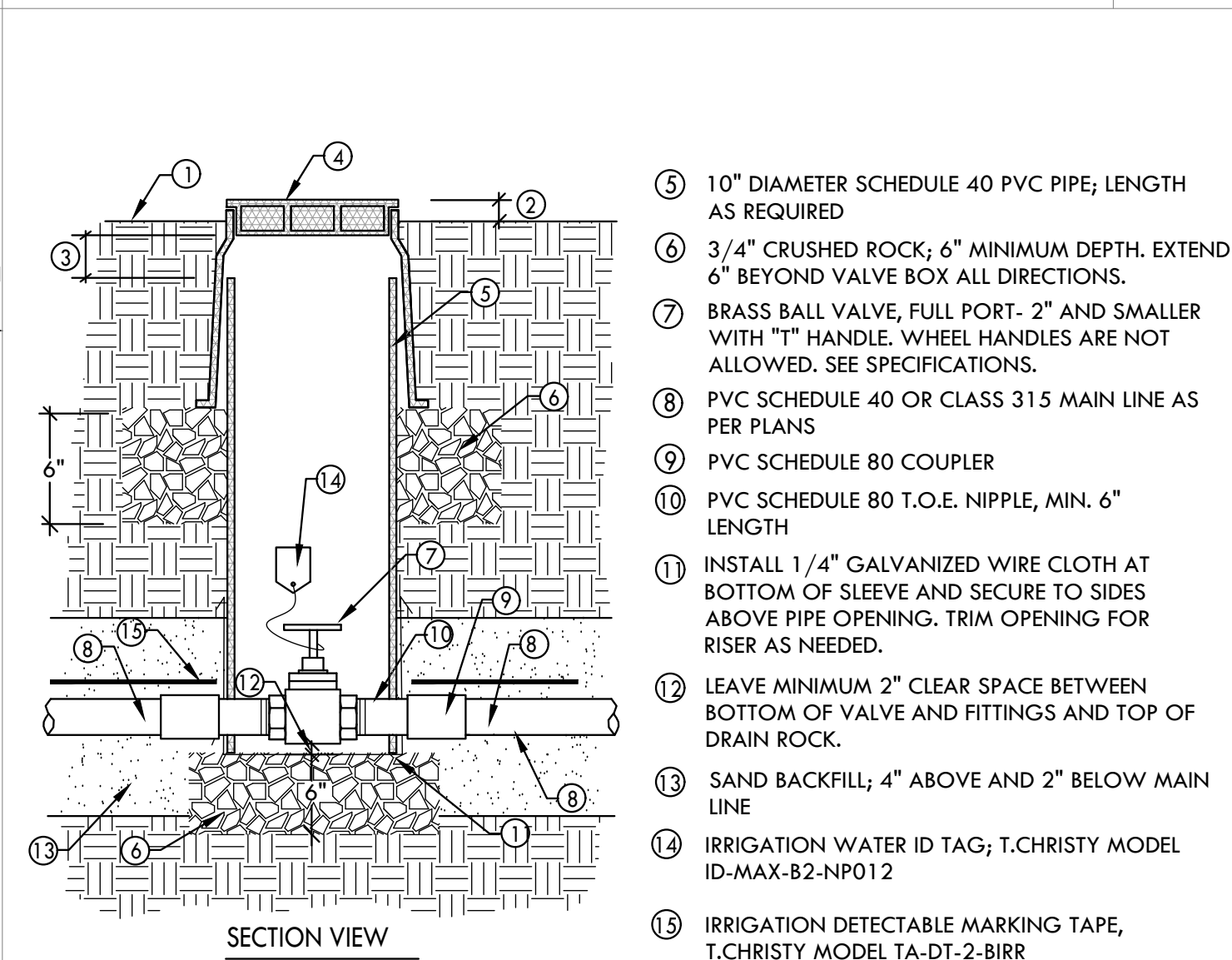


- NOTE:
- 1 DO NOT INSTALL ANY OTHER WIRES OR CABLE WITHIN THE SPHERE OF INFLUENCE OF THE GROUNDING ELECTRODES.
 2. EARTH-TO-GROUND RESISTANCE SHALL BE NO MORE THAN 10 OHMS. IF RESISTANCE IS MORE THAN 10 OHMS, INSTALL ADDITIONAL GROUND PLATES USING ASIC GUIDELINES 100-2002.
 3. EARTH-TO-GROUND SHALL BE TESTED AND CERTIFIED BY APPROVED REPETITIVE OF THE OWNER

CONTROLLER EARTH GROUND (0-64 STATIONS)

NTS

3



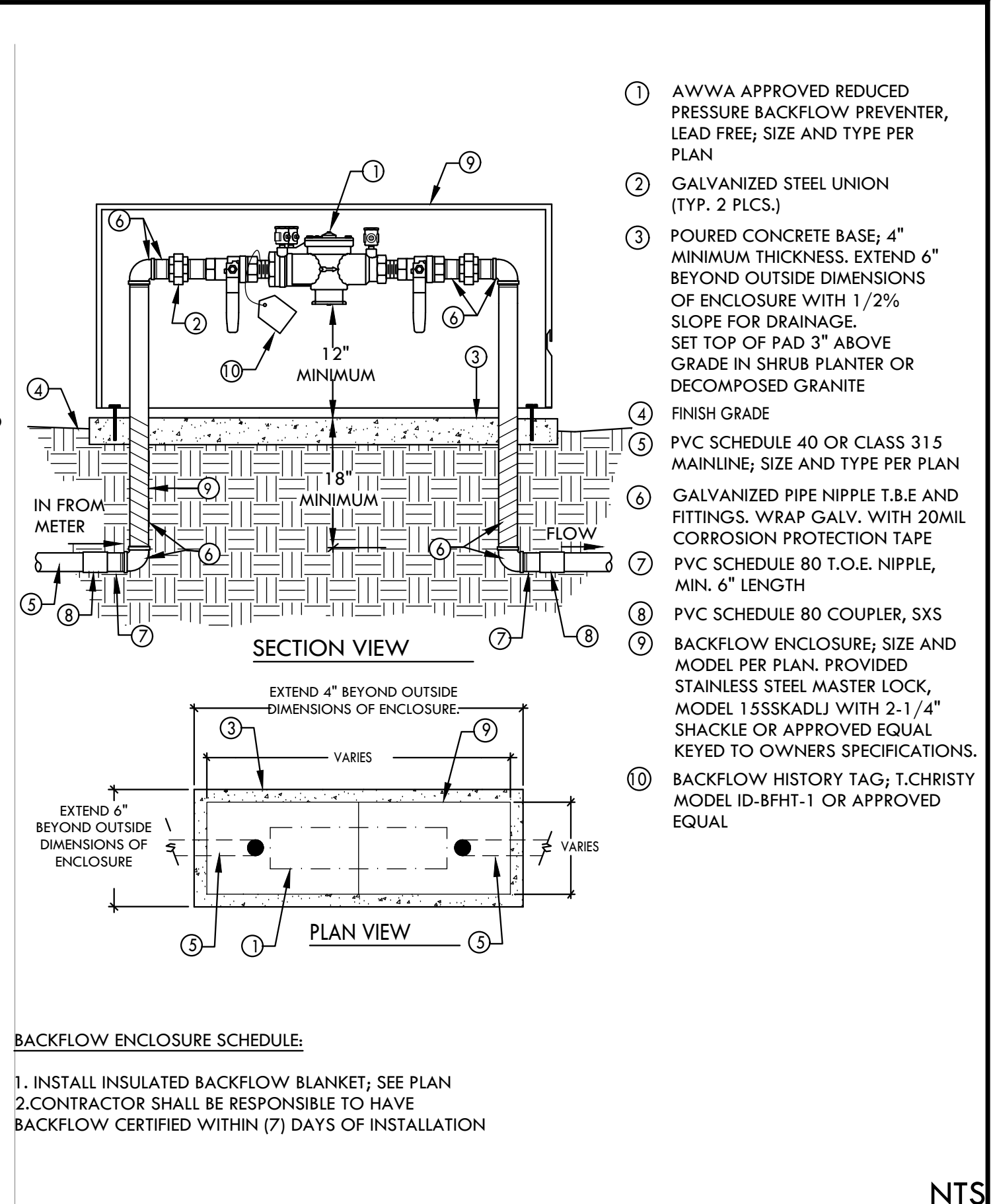
- 1 FINISH GRADE
- 2 SET TOP OF BOX ABOVE FINISH GRADE: 3-1/4" IN PLANTER OR DECOMPOSED GRANITE.
- 3 ALLOW 3" BETWEEN TOP OF THE INTERIOR VALVE BOX COVER AND PVC PIPE.
- 4 GREEN PLASTIC VALVE BOX WITH LOC-KIT AND L-BOLT; CARSON MODEL 910 OR APPROVED EQUAL
- 5 10" DIAMETER SCHEDULE 40 PVC PIPE; LENGTH AS REQUIRED
- 6 3/4" CRUSHED ROCK; 6" MINIMUM DEPTH. EXTEND 6" BEYOND VALVE BOX ALL DIRECTIONS.
- 7 BRASS BALL VALVE, FULL PORT - 2" AND SMALLER WITH "T" HANDLE. WHEEL HANDLES ARE NOT ALLOWED. SEE SPECIFICATIONS.
- 8 PVC SCHEDULE 40 OR CLASS 315 MAIN LINE AS PER PLANS
- 9 PVC SCHEDULE 80 COUPLER
- 10 PVC SCHEDULE 80 T.O.E. NIPPLE, MIN. 6" LENGTH
- 11 INSTALL 1/4" GALVANIZED WIRE CLOTH AT BOTTOM OF SLEEVE AND SECURE TO SIDES ABOVE PIPE OPENING. TRIM OPENING FOR RISER AS NEEDED.
- 12 LEAVE MINIMUM 2" CLEAR SPACE BETWEEN BOTTOM OF VALVE AND FITTINGS AND TOP OF DRAIN ROCK.
- 13 SAND BACKFILL; 4" ABOVE AND 2" BELOW MAIN LINE
- 14 IRRIGATION WATER ID TAG; T.CHRISTY MODEL ID-MAX-B2-NP012
- 15 IRRIGATION DETECTABLE MARKING TAPE, T.CHRISTY MODEL TA-DT-2-BIRR

- NOTE:
1. GATE VALVES 2" AND SMALLER SHALL BE THREADED.
 2. WHEN THE MAIN LINE IS TERMINATED AT THE VALVE, EXTEND MAIN LINE 48" BEYOND VALVE BOX AND CAP.

NTS

ISOLATION VALVE 2" AND SMALLER

7

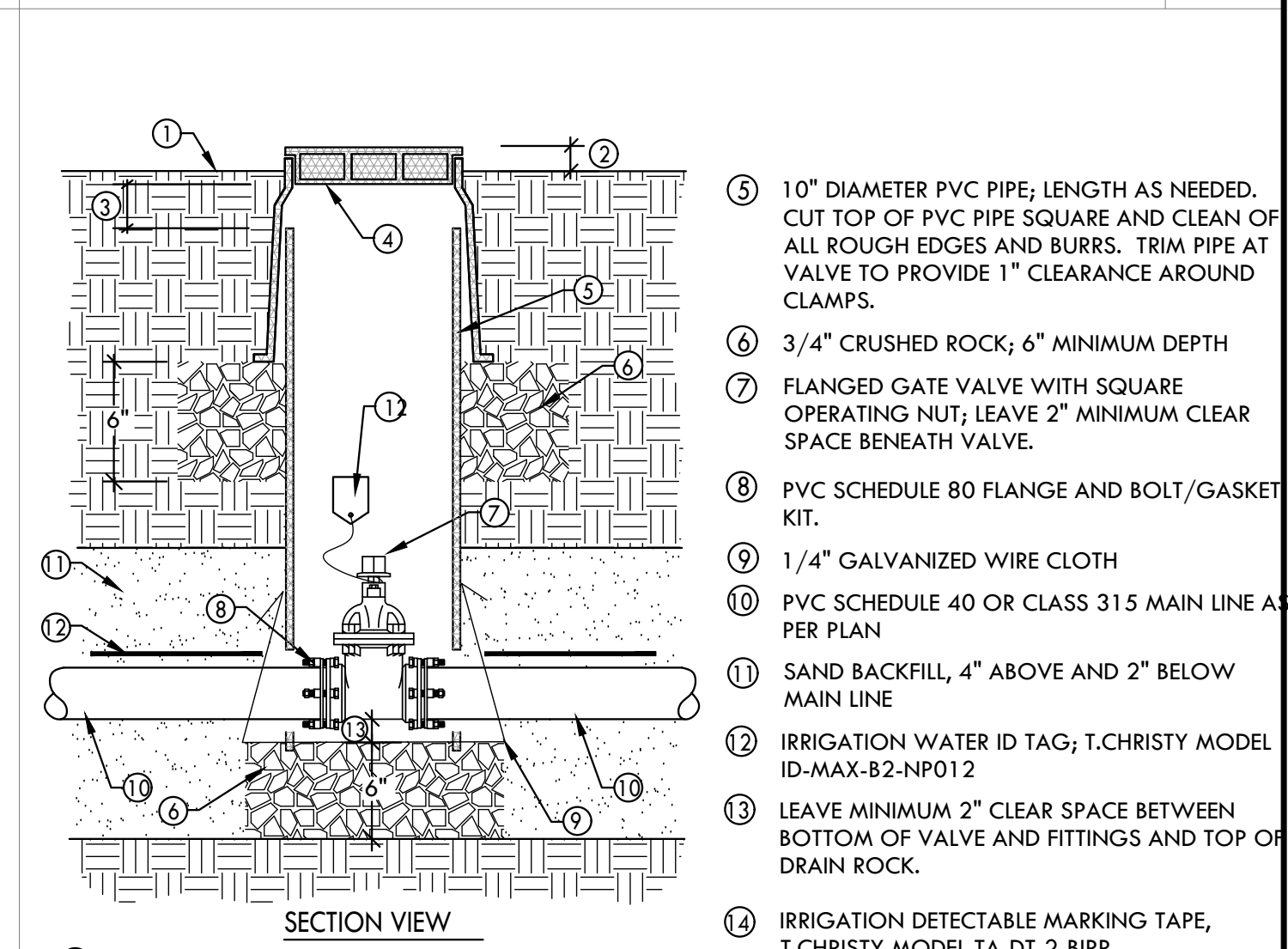


- BACKFLOW ENCLOSURE SCHEDULE:
1. INSTALL INSULATED BACKFLOW BLANKET; SEE PLAN
 - 2.CONTRACTOR SHALL BE RESPONSIBLE TO HAVE BACKFLOW CERTIFIED WITHIN (7) DAYS OF INSTALLATION

BACKFLOW PREVENTER AND ENCLOSURE

NTS

4



- 1 FINISH GRADE
- 2 SET TOP OF BOX ABOVE FINISH GRADE: 3-1/4" IN PLANTER OR DECOMPOSED GRANITE.
- 3 ALLOW 3" BETWEEN TOP OF THE INTERIOR VALVE BOX COVER AND PVC PIPE.
- 4 GREEN PLASTIC VALVE BOX WITH BOLT DOWN LOC-KIT; CARSON MODEL 910 OR APPROVED EQUAL
- 5 10" DIAMETER PVC PIPE, LENGTH AS NEEDED. CUT TOP OF PVC PIPE SQUARE AND CLEAN OF ALL ROUGH EDGES AND BURRS. TRIM PIPE AT VALVE TO PROVIDE 1" CLEARANCE AROUND CLAMPS.
- 6 3/4" CRUSHED ROCK; 6" MINIMUM DEPTH
- 7 FLANGED GATE VALVE WITH SQUARE OPERATING NUT; LEAVE 2" MINIMUM CLEAR SPACE BENEATH VALVE.
- 8 PVC SCHEDULE 80 FLANGE AND BOLT/GASKET KIT.
- 9 1/4" GALVANIZED WIRE CLOTH
- 10 PVC SCHEDULE 40 OR CLASS 315 MAIN LINE AS PER PLAN
- 11 SAND BACKFILL, 4" ABOVE AND 2" BELOW MAIN LINE
- 12 IRRIGATION WATER ID TAG; T.CHRISTY MODEL ID-MAX-B2-NP012
- 13 LEAVE MINIMUM 2" CLEAR SPACE BETWEEN BOTTOM OF VALVE AND FITTINGS AND TOP OF DRAIN ROCK.
- 14 IRRIGATION DETECTABLE MARKING TAPE, T.CHRISTY MODEL TA-DT-2-BIRR

- NOTES:
1. WHEN THE MAIN LINE IS TERMINATED AT THE VALVE, EXTEND MAIN LINE 48" BEYOND VALVE BOX AND INSTALL SELF RESTRAINED CAP, ROMAC ALPHA CAP OR APPROVED EQUAL.

CALL BEFORE YOU DIG

CITY OF CHICO PUBLIC WORKS

Call: 530-894-4200

UNDERGROUND SERVICE ALERT
of Northern California

Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711

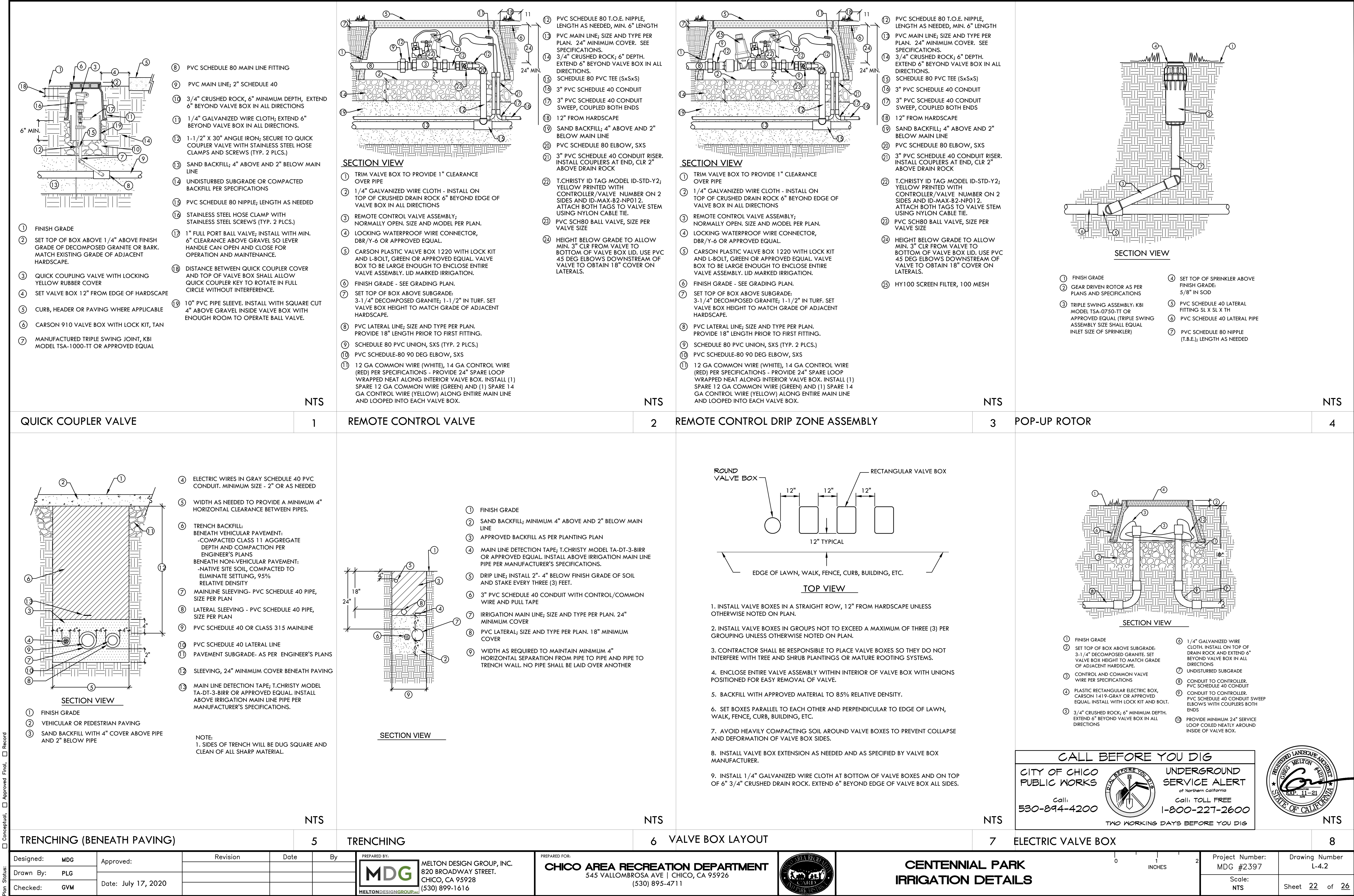
CENTENNIAL PARK IRRIGATION DETAILS

Project Number: MDG #2397

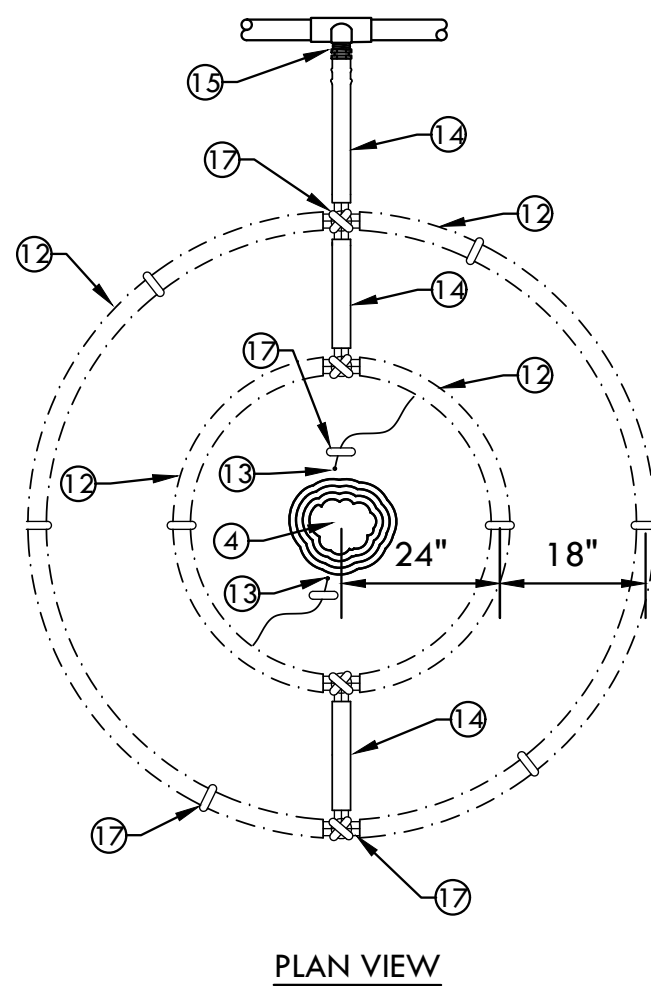
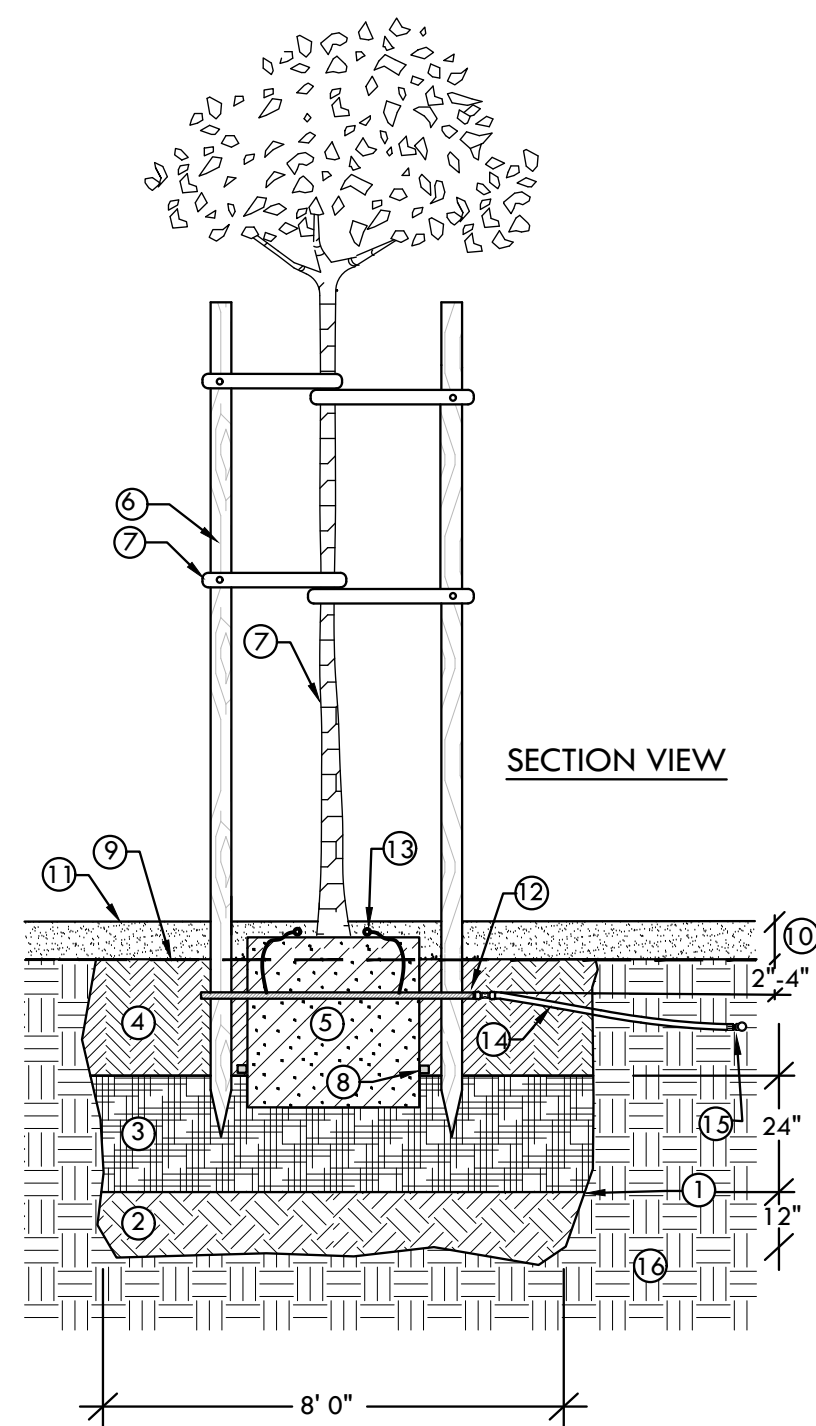
Drawing Number: L-4.1

Scale: NTS

Sheet 21 of 26



Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record

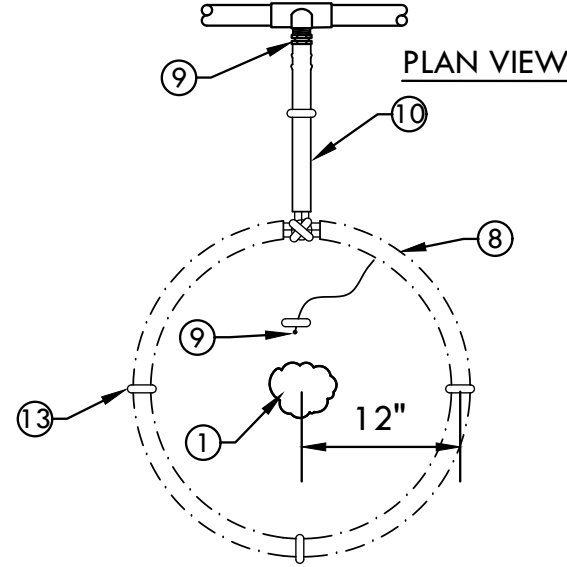
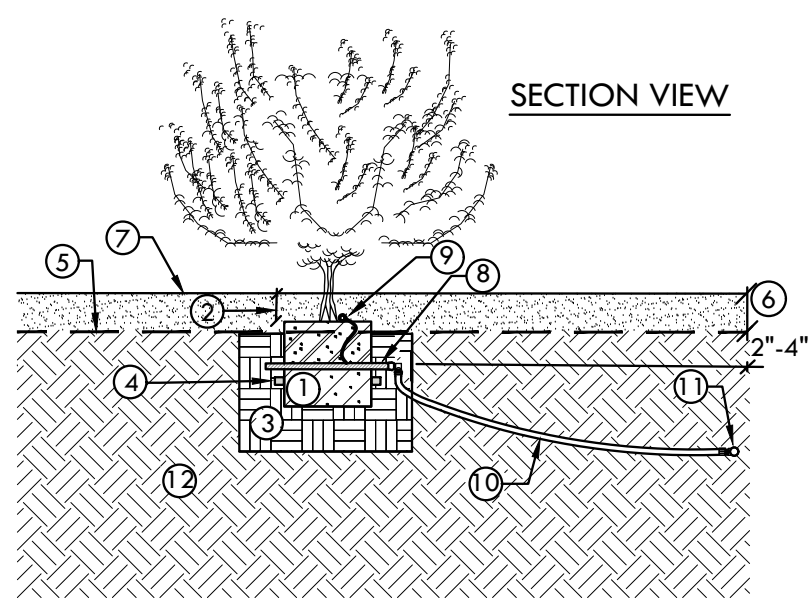


- 1 EXCAVATE TO DEPTH OF 48"
- 2 ROUGHLY SCARIFY TO 60" DEPTH, LEAVE IN PLACE.
- 3 SOIL MIX - 50% IMPORT TOP SOIL, 50% EXISTING SITE SOIL
- 4 24" DEPTH IMPORT TOP SOIL
- 5 ROOT BALL, SET CROWN 1" ABOVE FINISH GRADE
- 6 (2) 2"x 10" LODGEPOLE STAKE CUT OFF BELOW LOWEST LIMB. PLACE STAKES PERPENDICULAR TO PREVAILING WINDS.
- 7 32" CINCH TIE TREE TIES AT (2) PLACES PER STAKE
- 8 FERTILIZER TABLETS, AS PER SPECIFICATIONS
- 9 FILTER FABRIC PER PLANTING PLAN; INSTALL BENEATH 4" DECOMPOSED GRANITE ON TERRACE. NO FILTER FABRIC BELOW 6" DECOMPOSED GRANITE ON TRANSITION ZONE. SEE CONSTRUCTION PLAN
- 10 4" DECOMPOSED GRANITE OVER FABRIC COMPACTED TO 90% SEE CONSTRUCTION PLAN
- 11 FINISH GRADE OF DECOMPOSED GRANITE
- 12 DRIP LINE TREE RING - 35 EMITTERS PER TREE RING PLUS 2 SUPPLEMENTAL EMITTERS. MANUFACTURER AND MODEL PER PLAN. INSTALL WITH 2"-4" SOIL COVER BELOW FABRIC. SECURE AT 3' INTERVALS WITH 6" GALVANIZED SOIL STAPLES ALONG ENTIRE LENGTH OF TUBING AND AT EACH FITTING. DRIP LAYOUT SHALL BE INSPECTED BY LANDSCAPE ARCHITECT PRIOR TO BEING BURIED.
- 13 SUPPLEMENTAL 1 GPH PC EMITTER (TYP 2 PLCS); PLACE ON TOP OF ROOT BALL AND SECURE WITH 6" GALVANIZED SOIL STAPLE.
- 14 BLANK DRIP LINE TO PVC LATERAL; NOT TO EXCEED 48" IN LENGTH
- 15 PVC LATERAL LINE AND START CONNECTION
- 16 NATIVE SUBGRADE
- 17 6" GALVANIZED SOIL STAPLE AT 3' O.C. AND AT FITTINGS.

NTS

TREE DRIP RING

1

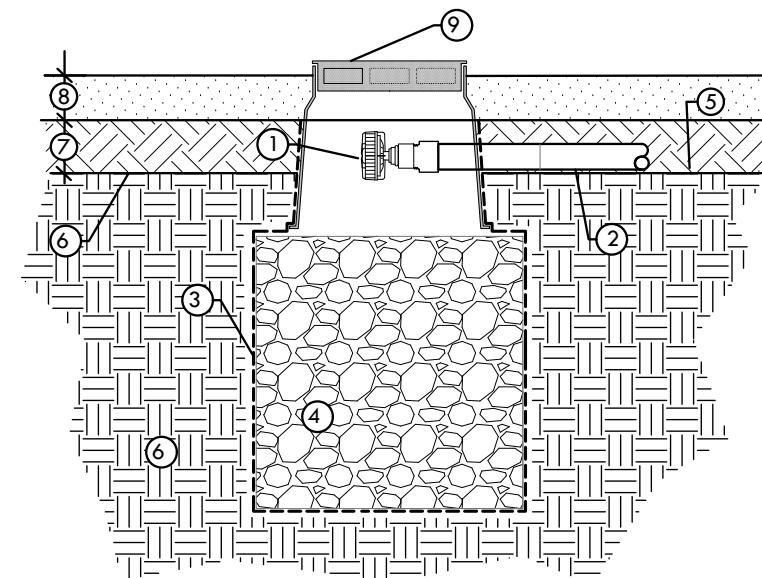


- 1 SHRUB AND ROOT BALL PER PLANTING PLAN
- 2 SET ROOT CROWN 2" BELOW FINISH GRADE OF DECOMPOSED GRANITE.
- 3 PLANTING HOLE AND MIX BACKFILL PER SPECIFICATIONS. PLANTING PIT TO BE TWICE DIAMETER OF ROOT BALL
- 4 FERTILIZER TABLETS; TYPE AND QUANTITY PER PLANTING SPECIFICATIONS
- 5 FILTER FABRIC PER PLANTING PLAN; INSTALL BENEATH 4" DECOMPOSED GRANITE ON TERRACE. NO FILTER FABRIC BELOW 6" DECOMPOSED GRANITE ON TRANSITION ZONE. SEE CONSTRUCTION PLAN
- 6 4" DECOMPOSED GRANITE OVER FABRIC OR 6" DECOMPOSED GRANITE WITHOUT FABRIC BASED ON PLANT LOCATION. SEE CONSTRUCTION PLAN.
- 7 FINISH GRADE OF DECOMPOSED GRANITE
- 8 DRIP LINE SHRUB RING - 7 EMITTERS PER SHRUB RING PLUS SUPPLEMENTAL EMITTER. MANUFACTURER AND MODEL PER PLAN. INSTALL WITH 2"-4" SOIL COVER BELOW FABRIC. AND SECURE AT 3' INTERVALS WITH 6" GALVANIZED SOIL STAPLES (MIN. 3 PINS PER SHRUB RING). SLIT FABRIC BELOW DRIP RING TO ALLOW WATER TO FLOW DOWNWARD.
- 9 SUPPLEMENTAL 1 GPH PC EMITTER; PLACE ON TOP OF ROOT BALL AND SECURE WITH 6" GALVANIZED SOIL STAPLE.
- 10 BLANK DRIP LINE TO PVC LATERAL; NOT TO EXCEED 48" IN LENGTH
- 11 PVC LATERAL LINE AND START CONNECTION
- 12 NATIVE SUBGRADE
- 13 6" GALVANIZED SOIL STAPLE AT 3' O.C. AND AT FITTINGS.

NTS

SHRUB DRIP RING - SECTION VIEW

2

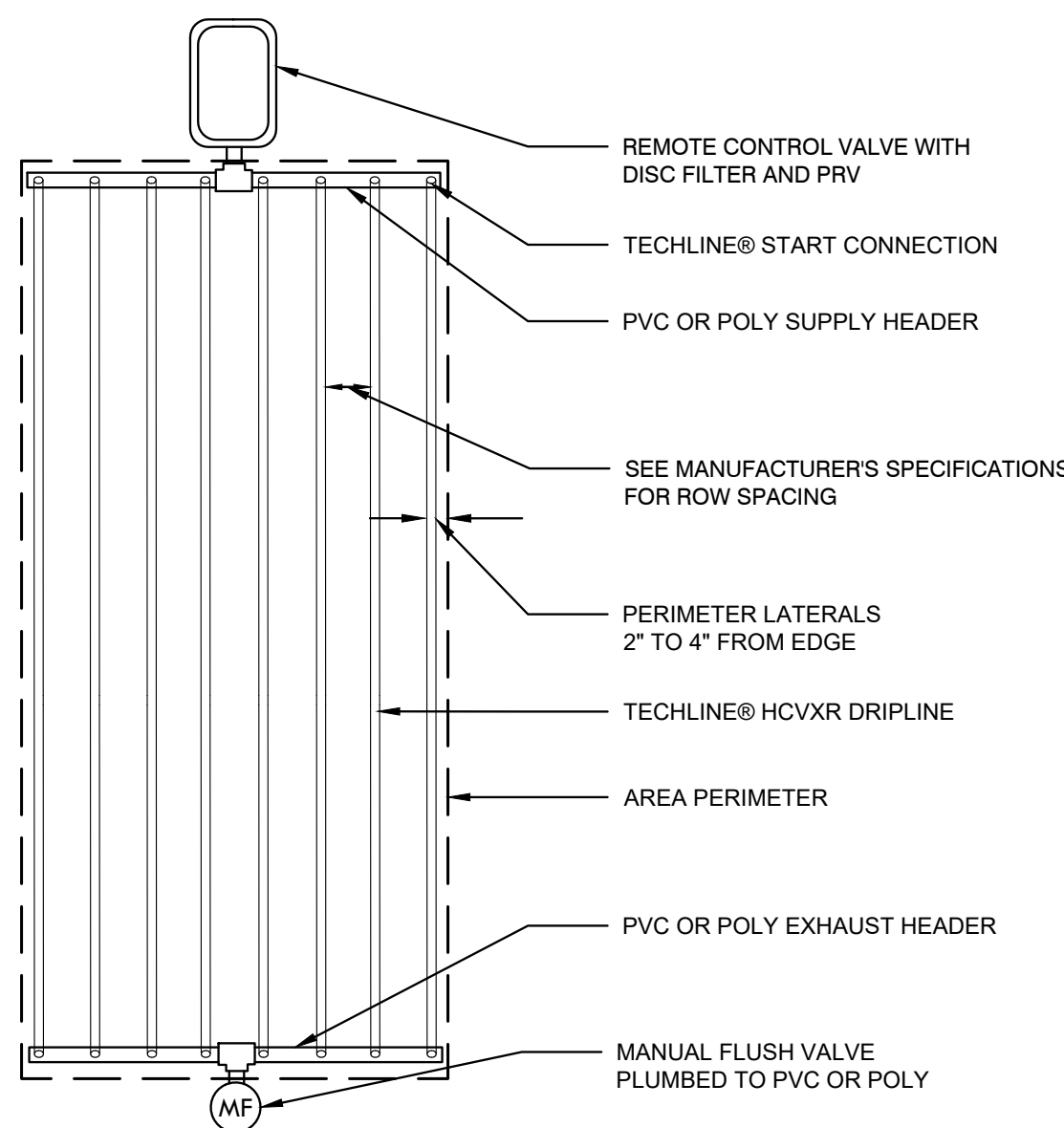


- 1 AUTOMATIC FLUSH VALVE PER MANUFACTURER'S SPECIFICATION
- 2 PVC EXHAUST HEADER OR DRIPPERLINE PER PLAN
- 3 GEO-TEXTILE FILTER FABRIC; ENCASE DRAIN SUMP AND STAPLE TO EXTERIOR OF VALVE BOX.
- 4 3/4" CRUSHED ROCK DRAIN SUMP; 2' DIA. X 2' DEPTH.
- 5 FINISH GRADE - SEE LANDSCAPE PLAN
- 6 UNDISTURBED SUBGRADE
- 7 4" BACKFILL LAYER FOR TREE AND SHRUB RINGS; COMPACTED TO SAME DENSITY AS SUBGRADE
- 8 MULCH; SEE PLANTING PLAN
- 9 ROUND PLASTIC VALVE BOX CARSON MODEL 708 TAN OR APPROVED EQUAL

NTS

DRIP FLUSH VALVE

3

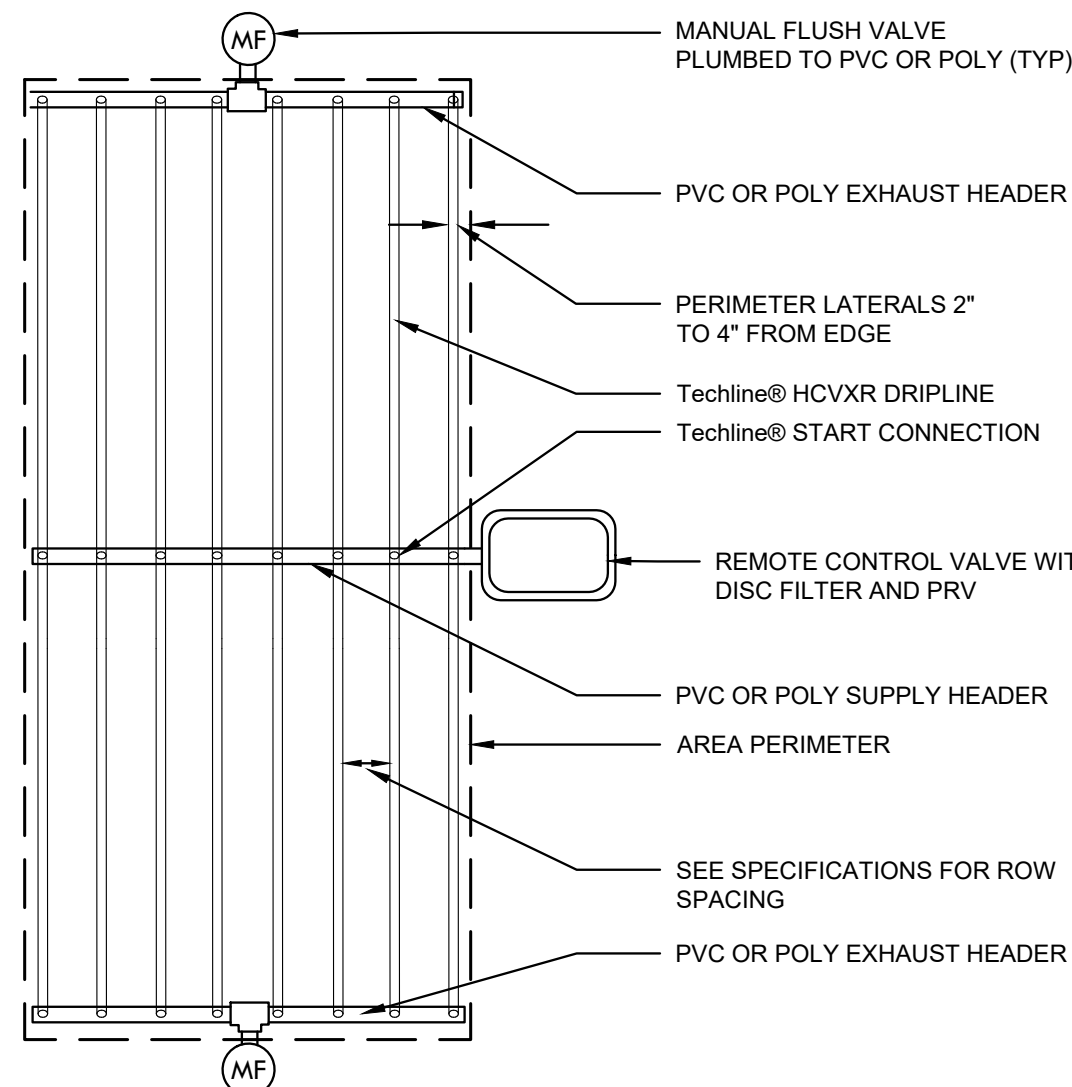


- NOTE:
1. RECOMMENDED MINIMUM FILTRATION: 120 MESH
 2. PRESSURE AT FLUSH VALVE SHALL BE MIN 21.8 PSI
 3. HIGH CHECK VALVE (MAX 8.5' OF WATER (ELEVATION CHANGE))
 4. REFER TO MAXIMUM LENGTH OF A SINGLE LATERAL CHART

NTS

DRIP LINE END FEED LAYOUT

4

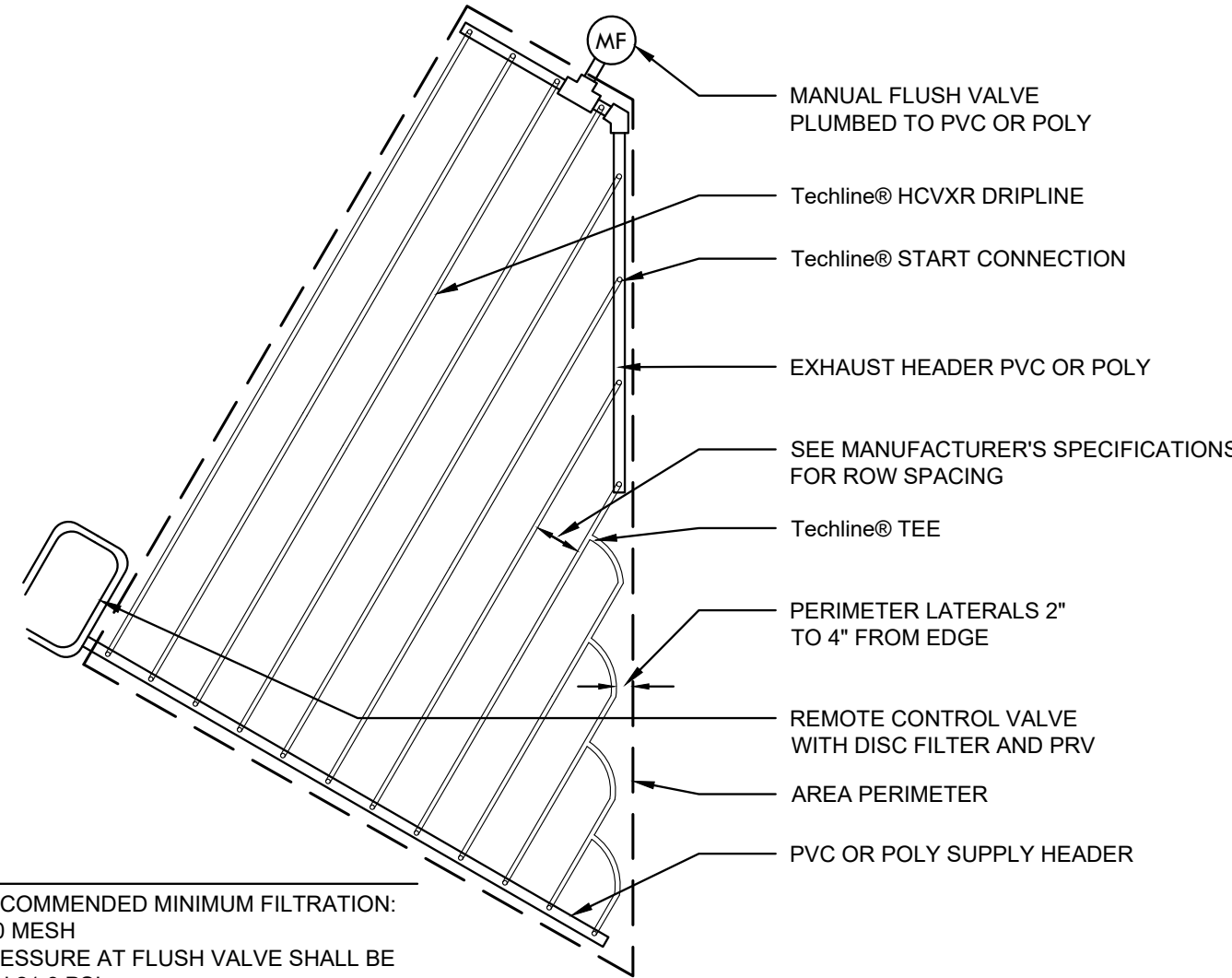


- NOTE:
1. RECOMMENDED MINIMUM FILTRATION: 120 MESH
 2. PRESSURE AT FLUSH VALVE SHALL BE MIN 21.8 PSI
 3. HIGH CHECK VALVE (MAX 8.5' OF WATER (ELEVATION CHANGE))
 4. REFER TO MAXIMUM LENGTH OF A SINGLE LATERAL CHART

NTS

DRIP LINE CENTER FEED LAYOUT

5

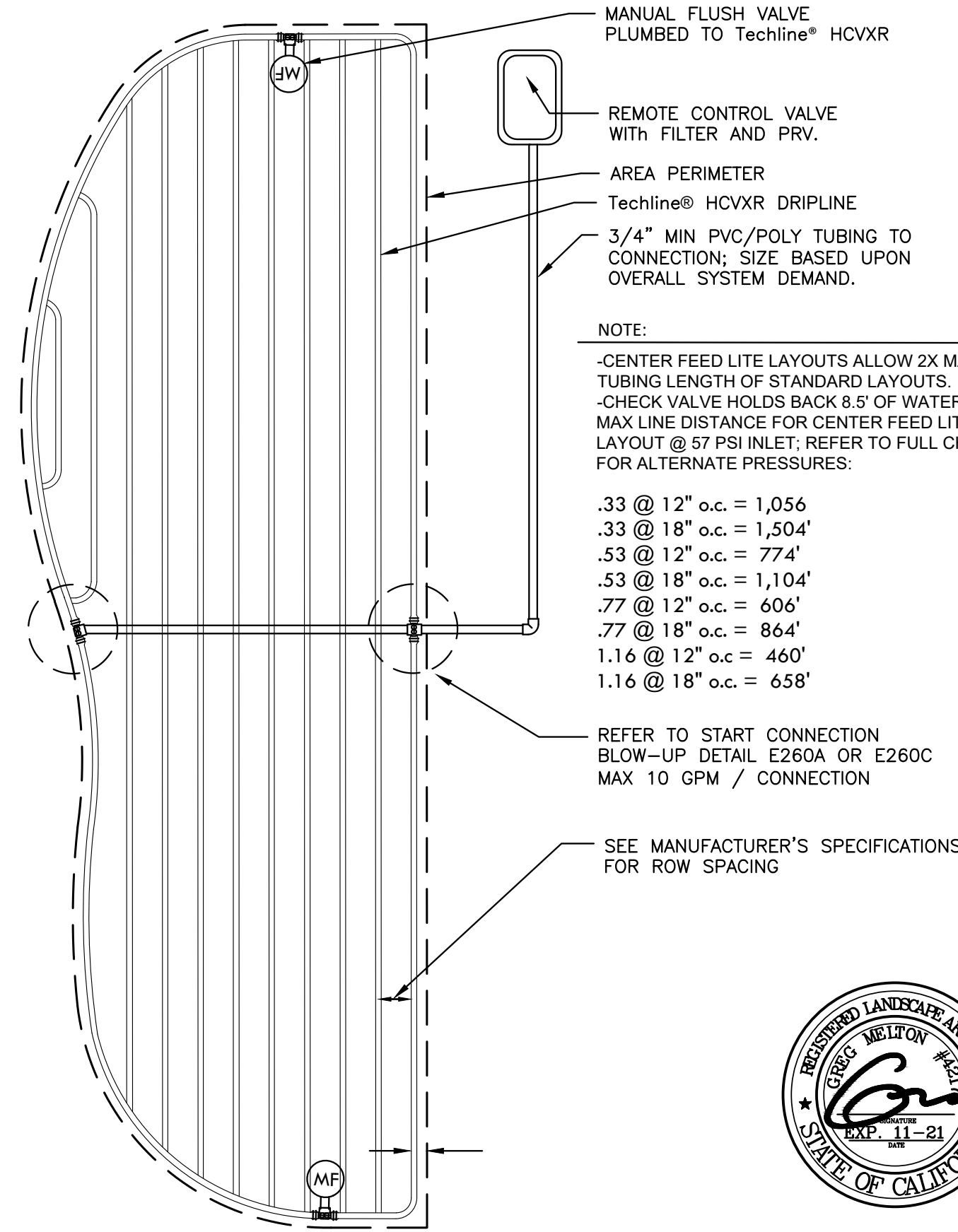


- NOTE:
1. RECOMMENDED MINIMUM FILTRATION: 120 MESH
 2. PRESSURE AT FLUSH VALVE SHALL BE MIN 21.8 PSI
 3. HIGH CHECK VALVE (MAX 8.5' OF WATER (ELEVATION CHANGE))
 4. REFER TO MAXIMUM LENGTH OF A SINGLE LATERAL CHART

NTS

DRIP LINE IRREGULAR AREA LAYOUT

6



- NOTE:
- CENTER FEED LITE LAYOUTS ALLOW 2X MAX TUBING LENGTH OF STANDARD LAYOUTS.
- CHECK VALVE HOLDS BACK 8.5' OF WATER MAX LINE DISTANCE FOR CENTER FEED LITE LAYOUT @ 57 PSI INLET. REFER TO FULL CHART FOR ALTERNATE PRESSURES:
- | | |
|-------------------|--------|
| .33 @ 12" o.c. = | 1,056' |
| .33 @ 18" o.c. = | 1,504' |
| .53 @ 12" o.c. = | 774' |
| .53 @ 18" o.c. = | 1,104' |
| .77 @ 12" o.c. = | 606' |
| .77 @ 18" o.c. = | 864' |
| 1.16 @ 12" o.c. = | 460' |
| 1.16 @ 18" o.c. = | 658' |
- REFER TO START CONNECTION BLOW-UP DETAIL E260A OR E260C MAX 10 GPM / CONNECTION
- SEE MANUFACTURER'S SPECIFICATIONS FOR ROW SPACING

NTS

DRIPLINE LAYOUT IRREGULAR AREA

7

Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked: GVM				

PREPARED BY:	MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616
--------------	--

PREPARED FOR:	CHICO AREA RECREATION DEPARTMENT 545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711
---------------	---



CENTENNIAL PARK
IRRIGATION DETAILS




Project Number: MDG #2397	Drawing Number L-4.3
Scale: NTS	Sheet 23 of 26

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record

<div></div>		<div></div>		<div></div>		<div></div>	
DRIP LINE LAYOUT TOP OF SLOPE ONE VALVE		DRIP LINE SUBGRADE INSTALLATION		DRIP LINE SUBHEADER INSTALLATION		DRIP LINE SOD INSTALLATION	
1		2		3		4	
<div></div>						<div><div>CALL BEFORE YOU DIG</div><div>CITY OF CHICO PUBLIC WORKS</div><div>Call: 530-894-4200</div><div>UNDERGROUND SERVICE ALERT</div><div>at Northern California</div><div>Call: TOLL FREE 1-800-227-2600</div><div>TWO WORKING DAYS BEFORE YOU DIG</div></div>	
DRIP LINE START CONNECTIONS							
5				7		8	
Designed: MDG		Approved:		Revision		Project Number: MDG #2397	
Drawn By:		Date: July 17, 2020		Date		Scale: NTS	
Checked: GVM				By		Sheet 24 of 26	
PREPARED BY: MDG		PREPARED FOR: CHICO AREA RECREATION DEPARTMENT		CENTENNIAL PARK IRRIGATION DETAILS			
MELTON DESIGN GROUP, INC. 820 BROADWAY STREET. CHICO, CA 95928 (530) 899-1616		545 VALLOMBROSA AVE CHICO, CA 95926 (530) 895-4711					

Plan Status: ☐ Conceptual, ☐ Approved Final, ☐ Record

LIGHTING SCHEDULE

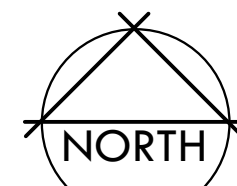
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	KH20QF1X37U5KCZ KELSEY KANE EASYLED SMALL KITTY HAWK INCLUDE HAND HOLDS AT EACH LIGHT BASE FOR WIRE PULL BRONZE, MOUNTED ON POLE AT 18' LAMP: LED, 5000K	6
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	PULLBOX	1
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	2" PVC CONDUIT WITH (2) #10CU, #10CUG.	597 LF

HEMMING LANE

CERES AVENUE

WHITEWOOD WAY

SUN RIVER DRIVE




0 30 60
SCALE: 1" = 30'

CALL BEFORE YOU DIG

CITY OF CHICO
PUBLIC WORKS

Call:
530-894-4200



**UNDERGROUND
SERVICE ALERT**
of Northern California

Call: TOLL FREE
1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



Designed: MDG	Approved:	Revision	Date	By
Drawn By:	Date: July 17, 2020			
Checked:				

PREPARED BY:



MELTON DESIGN GROUP, INC.
820 BROADWAY STREET.
CHICO, CA 95928
(530) 899-1616

PREPARED FOR:

CHICO AREA RECREATION DEPARTMENT
545 VALLOMBROSA AVE | CHICO, CA 95926
(530) 895-4711



**CENTENNIAL PARK
ELECTRICAL PLAN**

Project Number: MDG #2397	Drawing Number L-5.0
Scale: NTS	Sheet 26 of 26

PROJECT CONTRACT
CHICO AREA RECREATION DISTRICT/_____

ROTARY CENTENNIAL PARK

THIS CONTRACT ("CONTRACT") is made as of _____, 2020, by and between the CHICO AREA RECREATION DISTRICT, a municipal corporation of the State of California ("District"), and _____, a/an individual, partnership, corporation ("Contractor").

District and Contractor agree as follows:

ARTICLE 1 BASIC INFORMATION

- | | | |
|------|--|--|
| 1.1 | District: | CHICO AREA RECREATION DISTRICT |
| 1.2 | District's Representative: | General Manager |
| 1.3 | District's address: | 545 Vallombrosa, Chico, CA 95926 |
| 1.4 | Contractor: | _____ |
| 1.5 | Contractor's Representative: | _____ |
| 1.6 | Contractor's address: | _____ |
| 1.7 | Project name and location: | _____
_____ |
| 1.8 | District's Project Manager,
Contract Documents prepared by: | _____
_____ |
| 1.9 | The following listed
addenda are incorporated: | Exhibit "A" Description of Project
Exhibit "B" Bid Forms
Schedule "A" (PF-8 through PF-10)
Schedule "B" (PF-11)
Schedule "C" (Contractor to Provide) |
| 1.10 | Terms defined in District's General Conditions shall have the same meanings when used
in this Contract. | |

ARTICLE 2 WORK

- 2.1 Contractor shall provide all labor, materials, equipment, tools, and services required by District and shall perform all work described in the Contract Documents. Contractor agrees to do additional Work arising from changes ordered by District pursuant to Article 7 of the General Conditions.

ARTICLE 3 CONTRACT TIME

- 3.1 Contractor shall commence the Work on the date specified in District's Notice to Proceed. The Work shall be fully completed before **March 4, 2020** (the "Contract Time") after the date of commencement specified in District's Notice to Proceed.

ARTICLE 4 LIQUIDATED DAMAGES

- 4.1 District and Contractor agree that if the Work is not completed within the Contract Time, District's damages would be extremely difficult or impracticable to determine. Therefore, District and Contractor agree that if Contractor fails to complete the Work within the Contract Time, Contractor shall pay to District, on demand, as liquidated damages and not as a penalty, the sum of One Thousand Dollars (\$1,000) for each day after the expiration of the Contract Time that the Work remains incomplete, and that this amount is a reasonable estimate of and a reasonable sum for such damages. District may deduct any liquidated damages owed to District, as determined by District, from any payments otherwise payable to Contractor under this Contract.
- 4.2 Nothing contained herein shall limit District's rights or remedies against Contractor for any default other than failure to complete the Work within the Contract Time. This provision for liquidated damages shall not be applicable nor act as a limitation upon District if Contractor abandons the Work. In such event, Contractor shall be liable to District for all losses incurred.

ARTICLE 5 CONTRACT SUM

- 5.1 The Contract Sum is: _____ Dollars (\$_____).
- 5.2 District shall pay to Contractor, for the performance of the Work, the Contract Sum subject to adjustment for alternates, unit price items, changes ordered by District, and as otherwise provided in the Contract Documents.
- 5.3 Unit prices, if any, and their respective estimated quantities, if specified, are listed in Exhibit "B" Contract Sum - Unit Prices.

The Contract Sum will be increased by an amount equal to the unit price multiplied by the actual number of units of each unit price item incorporated in the Work. Adjustment of unit prices, if actual quantities vary from estimated quantities, is subject to the provisions of Section 7.5 of the General Conditions.

ARTICLE 6 CONTRACT DOCUMENTS

- 6.1 The Contract Documents consist of this Contract, General Conditions, Special Provisions, Technical Specifications, Exhibits, List of Drawings and Drawings, Addenda, Bid Form, Certificates of Insurance, Performance Bond, Labor and Materials Bond, List of Subcontractors, Notice to Proceed, Contract Modifications, and all other documents identified in this Agreement copies of which have been provided to Contractor by District.

ARTICLE 7 DUE AUTHORIZATION

- 7.1 The person or persons signing this Contract on behalf of Contractor hereby represent and warrant to District that this Contract is duly authorized, signed, and delivered by Contractor.

THIS CONTRACT is entered into as of the date first written above and is executed in at least three original counterparts. One counterpart original shall be delivered to Contractor and two counterpart originals shall be delivered to District.

CHICO AREA RECREATION DISTRICT

CONTRACTOR

By: General Manager

(Name)

(Title)

APPROVED AS TO FORM:

(Name and Classification of License)

Jeff Carter, CARD Attorney

(California License Number)

(Expiration Date)

(Complete notary acknowledgment for all signatures of Contractor. If signed by other than the sole proprietor, a general partner, or corporate officer, attach original notarized power of attorney or corporate resolution.)

ACKNOWLEDGMENT

STATE OF CALIFORNIA }
 } SS
 COUNTY OF BUTTE }

On _____, before me, the undersigned, a Notary Public in and for the County of Butte, State of California, personally appeared _____, personally known to me (or proved to me on the 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.

WITNESS my hand and official seal.

Notary Public
in and for the County of Butte,
State of California

Exhibit A
Description of Project

The work, in general, to be done under this contract consists of the grading of existing soil, construction of a park that includes playground features, turf, picnic areas, concrete sidewalks, site lighting, and irrigation; all within the confines of the property located on Ceres Ave. at Whitewood Way in Chico, CA. In addition, this is a collaborative project with the Chico Rotary Clubs and will require coordinator between the contractor and Rotary Clubs to provide volunteer labor for identified sections of the project.

CHICO AREA RECREATION AND PARK DISTRICT
CHICO, CALIFORNIA

BID PROPOSAL

ROTARY CENTENNIAL PARK

TO THE CHICO AREA RECREATION AND PARK DISTRICT

The undersigned declares to have carefully examined the location of the proposed work, the contract plans and specifications, and read the accompanying General and Special Provisions, and hereby proposes to furnish all materials and do all the work required to complete the said work in accordance with said contract plans, if any, and specifications, and General and Special Provisions, for the unit prices or lump sum set forth in the following attached schedules.

The undersigned further agrees that in case of default in executing the required contract, with necessary bonds within ten (10) days, not including Sunday, after having received notice that the contract is ready for signature, the proceeds of the Bidder's guaranty accompanying the undersigned's bid shall become the property of the CHICO AREA RECREATION AND PARK DISTRICT.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price:

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentagewise the unit price or item total in the District's Final Estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed irregular. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placement. Cents symbols also have no significance in establishing any unit price or item total since all such figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the District, and such discretion will be exercised in the manner deemed by the District to best protect the public interest in the prompt and economical completion of the work. The decision of the District respecting the amount of a bid, or the existence or treatment of an irregularity in a bid shall be final.

City of Chico Business License No. _____

Taxpayer Identification No. _____

Dept. of Industrial Relations (DIR) Registration Number: _____

Licensed in accordance with an act providing for the registration of contractors:

License No. _____

Signature of Bidder: _____

(If an individual, so state. If a firm or co-partnership, state the firm name and give names of all individual co-partners composing the firm. If a corporation, state legal name of corporation, also names of president, secretary, treasurer, and manager thereof.)

Date: _____ 20 _____

Business Address

Phone No. _____

ROTARY CENTENNIAL PARK
LIST OF SUBCONTRACTORS - NON SPECIALTY ITEMS FOR CONTRACTOR

SUB-CONTRACTOR LIST
(Submit as part of Bid Form)

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

Item of Work: _____

Subcontractors Name: _____

Address/Phone: _____

License Number: _____ *DIR Reg. Number:* _____

BIDDERS SIGNATURE: _____ *DATE* _____

TOTAL AMOUNT SUBCONTRACT WORK \$ _____

The following calculation is to be made by the contractor:

% Subcontract Work = $\frac{\text{Total Amount Non Specialty Subcontract Work}}{\text{Total Bid - Total Amount of Specialty Items}} \times 100 =$ _____

ROTARY CENTENNIAL PARK

PRE-AWARD QUALIFICATIONS AND QUESTIONNAIRE

The District has established that prospective bidders shall submit information regarding their qualifications for performing park construction contracts and irrigation sub-contracts for installation of pump station, main line and central control systems of equivalent complexity. Please provide at least three references for both the contractor and irrigation contractor on the following page. Bidders shall submit responses to the Pre-Award Qualification Questionnaire included in this Proposal. Deficiencies noted by the District prior to Award may be cause for determination that the bidder is not capable of meeting the contract requirements. Deficiencies will be considered negative references and/or 'Yes' answers to any of the questions on the Pre-Award Questionnaire.

If the District determines it necessary, a pre-award qualification review meeting will be conducted. The apparent low bidder shall participate in a pre-award qualification review meeting conducted by one or more agents of the District and the Engineer. Notification by the District will be within 7 days after the bid opening, and will be provided at least 48 hours prior to the qualifications review meeting. Non-attendance to the qualification review meeting by the apparent low bidder shall be just cause for rejection of the bid. At the qualifications review meeting, the low bidder shall be prepared to discuss and answer questions relative to the Pre-Award Qualifications and Questionnaire submitted with the bid. The District's determination on the bidder's qualifications for performing referenced construction work in a manner that is safe for the workers and the public and of the highest possible quality, will be based on the following:

1. Bidder's experience in construction work of this nature.
2. Qualifications of on-site supervisory personnel capable of completing the work in a safe and timely manner.
3. Safety history of the bidder and its supervisory personnel.

Successful completion of the pre-award qualifications process does not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in project plans and specifications.

The second and third apparent low bidders shall participate in pre-award qualifications review meetings if requested to do so by the District. Non-attendance by the second or third apparent low bidder at any such requested meeting shall be just cause for rejection of bid. The contract provisions described herein shall be considered part of the cost of preparing bids and no separate payment will be made therefor.

STATEMENT OF QUALIFICATIONS

Previous projects completed in the last ten years of equivalent complexity with references.

PRIME CONTRACTOR: Name, Address and Telephone Number

CONTRACTOR REFERENCES (Three Minimum - Name, Address and Telephone Number)

IRRIGATION SUB-CONTRACTOR: Name, Address and Telephone Number

IRRIGATION SUB-CONTRACTOR REFERENCES

(Three Minimum - Name, Address and Telephone Number)

PRE-AWARD QUALIFICATION QUESTIONNAIRE

1. Has your contractor's license been revoked at any time in the last 5 years?
2. Has any Contractor's State License Board license held by your firm or its Responsible Managing Employee (RME) or Responsible Managing Officer (RMO) been suspended with in the last 5 years?

If yes, please explain on a separate signed sheet...

3. At any time during the last 5 years, has your firm or any of its owners or officers, been convicted of a crime involving the awarding of a contract of a government construction project, or the bidding or performance of a government contact?
4. In the last 5 years has your firm been denied an award of a public works contract based on a finding by a public agency that your company was not a responsible bidder?
5. At any time during the last 5 years, has any surety company made any payments on your firm's behalf as a result of a default, to satisfy any claims made against a performance or payment bond issued on your firm behalf, in connection with a construction project, either public or private?

If yes, explain on a separate signed sheet the amount of each claim, the name and telephone number of the claimant, the date of the claim, the grounds for the claim, the present status of the claim, the date of resolution of such claim if resolved, the method by which such claim was resolved, the nature of the resolution and the amount, if any, at which the claim was resolved.

6. Has your firm or any of its owners, officers or partners ever been convicted of a crime involving any federal, state or local law related to construction?

If yes, explain on a separate signed sheet, including who was involved, the name of the public agency, the date of the conviction and the grounds for conviction.

7. Has the Federal Occupation Safety and Health Administration cited and assessed penalties against your firm in the past 5 years?

If yes, attach a separate signed sheet describing.

Signature of Prospective Bidder

In signing this Questionnaire, the prospective bidder certifies that the information and answers on the "Pre-Award Qualification Questionnaire" are complete and accurate.

**CONTRACTOR'S PROPOSAL FORM
FOR
ROTARY CENTENNIAL PARK**

Pursuant to INVITATION TO BID, and INFORMATION TO BIDDERS, the undersigned hereby proposes and agrees that on award by the District in accordance with the provisions of the Contract Documents, to execute the Agreement, with necessary bonds, to furnish and install any and all transportation, materials, equipment, tools, excavation, utilities, sheeting, shoring, bracing and supports, plant and other facilities, and all management, superintendence, permits, labor and services for the ROTARY CENTENNIAL PARK, in accordance with the Contract Documents therefor adopted and on file with CHICO AREA RECREATION AND PARK DISTRICT, within the time hereinafter set forth and at the price or prices set forth in this Bid as follows:

Schedule A -Bidder's Breakdown of Lump Sum Bid

The following breakdown of the Total Lump Sum Bid shall be given with the Bid solely for the purpose of reviewing the Bid balance. The price breakdown shall be fairly apportioned to the various parts of the Work and shall meet with the DISTRICT's approval. If so requested by the DISTRICT, the Bidder shall substantiate any price or prices with additional detail breakdown. (Schedule A: see PF-8).

Schedule B -Bidder's Unit Prices for Additions, Changes, or Deletions

The Bidder further proposes that, in the event that additions changes, or deletions are made to or from the Drawings and Specifications for the proposed Work, the total adjustments to the lump sum price shall be computed based on the following unit prices for the following types of construction. Unit prices provided shall be fully loaded and include all costs. The DISTRICT reserves the right to request a breakdown from the Contractor on the unit price and, if necessary, to delete these unit prices from the Contract Document if, from the DISTRICT's sole judgement, are unbalanced or not reasonable prices for the work. (Schedule B – See PF-11).

Schedule C -Wage and Equipment Rates

The Bidder shall provide wage and equipment rates applicable to this project on separate sheet(s) to be submitted with the bid (no exceptions). The information may be used to compute adjustments to the lump sum price per applicable portions of the General Conditions. No bid forms for Schedule C are provided; Contractor shall provide his/her own. (Schedule C – Contractor to number his pages from PF-12).

SCHEDULE A - LUMP SUM BID FORM

FOR ROTARY CENTENNIAL PARK

Pursuant to INVITATION TO BID, and INFORMATION TO BIDDERS, the undersigned hereby proposes and agrees that on award by the CHICO AREA RECREATION AND PARK DISTRICT in accordance with the provisions of the Contract Documents, to execute the Agreement, with necessary bonds, to furnish and install any and all transportation, materials, equipment, tools, excavation, utilities, sheeting, shoring, bracing and supports, plant and other facilities, and all management, superintendence, permits, labor and services for the ROTARY CENTENNIAL PARK, in accordance with the Contract Documents therefor adopted and on file with the CHICO AREA RECREATION AND PARK DISTRICT, within the time hereinafter set forth and at the price or prices set forth in this Bid as follows:

BASE BID ITEMS

(Any quantities shown are estimated and for reference only. Bidder is responsible for verifying all quantities.)

NO.	ITEM	QUANTITY	UNIT	TOTAL
1	Mobilization	1	LS	\$
2	Erosion Control	1	LS	\$
3	Rough Grading (est 208,060 SF)	1	LS	\$
4	Demo ex Curb, Gutter & AC Pavement (ADA parking area)	1	LS	\$
5	Drainpipe 6" size	1	LS	\$
6	Drainpipe 10" size	1	LS	\$
7	Drainpipe 12" size	1	LS	\$
8	Drain Inlets 12" size	1	LS	\$
9	Drain Inlets 6" size	1	LS	\$
10	Drain System Connection to Existing Manhole	1	LS	\$
11	Finish Grading (est 208,060 SF)	1	LS	\$
12	Handicap Parking & Ramp (Demo Listed Above)	1	LS	\$
13	Pedestrian Ramps	1	LS	\$
14	Colorless Broom Finish Concrete (4" Standard)	1	LS	\$
15	Decomposed Granite Outside Walk (w/ Fabric) (est 28,286 SF)- Contractor to purchase supplies, Rotary install.	1	LS	\$
16	Play Mound w/ Boulders & Logs, DG at Base of Mound	1	LS	\$
17	Turf Pad w/ Irrigation (4,400 SF)	1	LS	\$
18	Friendship Swing on Arch Frame	1	LS	\$
19	Traditional Swings on Arch Frame	1	LS	\$
20	Climbing Spinner 12' – KLD- Rotary purchased equipment, Contractor install	1	LS	\$

21	Embankment Slide, Stainless Steel (8' h x 5' w)- <i>Rotary purchased equipment, Contractor install</i>	1	LS	\$
22	Filter Fabric Under Fall Material	1	LS	\$
23	Fall Material (wood chip) (est 256 CY)	1	LS	\$
24	Picnic Tables (est qty 4)	1	LS	\$
25	Drinking Fountain & Potable Line (est qty: 1)	1	LS	\$
26	Security Lighting (w/ Future Stub-Out)	1	LS	\$
27	Park Sign	1	LS	\$
28	Boulders Inside of Path – Various Sizes	1	LS	\$
29	Trees (15 gal) Inside of Path & Triangles at Entries, Tree Pits by Rotary (est qty: 65)- <i>Installation Only</i>	1	LS	\$
30	Trees (24" box) Tree Pits by Rotary (est qty: 38)- <i>Contractor to purchase trees, Rotary install.</i>	1	LS	\$
31	Shrubs (1 gal) (est qty:568)	1	LS	\$
32	Turf – No-Mow (est 20,542 SF)	1	LS	\$
33	Turf Fields (est 95,232 SF)	1	LS	\$
34	Soil Amendments (est 2,000 CY)	1	LS	\$
35	Irrigation (Turf) Spray Heads (est 95,237 SF)	1	LS	\$
36	Irrigation Drip (Trees) Ring (est 103 SF)	1	LS	\$
37	Irrigation Drip (Shrubs) Ring (est 568 SF)	1	LS	\$
38	Irrigation Drip (Subsurface) (est 20,753 SF)	1	LS	\$
39	Irrigation System Control	1	LS	\$
40	Electrical Panel (Tesco)	1	LS	\$
41	Panel Electrical Services	1	LS	\$
42	Central Control Telephone Service	1	LS	\$
43	Project Permits	1	LS	\$
44	60-Day Maintenance Period	1	LS	\$
		BASE BID TOTAL		\$

ADD ALTERNATE BID ITEMS

NO.	ITEM	QUANTITY	UNIT	TOTAL
1	Decomposed Granite Inside Walk (w/ Fabric) (est 30,392 SF)	1	LS	\$
2	Climbing Boulder Wall (20' long x 10' high)	1	LS	\$
3	Precast Concrete Critters (est qty: 6)	1	LS	\$
4	Cozy Cocoon (est qty: 2)	1	LS	\$
5	18' Play Tower by Landscape Structures	1	LS	\$
6	Benches (est qty: 10)	1	LS	\$
7	Picnic Shade Structures (est qty: 2)	1	LS	\$
8	Basketball Court	1	LS	\$
9	Exercise Station w/ Bars	1	LS	\$
10	Bike Rack (Embedded Post) (est qty: 2)	1	LS	\$
11	Trash / Recycle Receptacle (est qty: 8)	1	LS	\$
	TOTAL ADD ALTERNATE BID			\$

Notes:

1. Contractors must use this form to provide bids (no exceptions or alterations are permitted).
2. Bid item totals must roll up to the base bid total and include all materials and labor required for a complete installation.

Total Lump Sum Base Bid \$ _____

Total Add Alternate Bid \$ _____

Total Base Bid and Add Alternate \$ _____ (In Figures)

\$ _____ (In Words)

BID AMOUNT OF EACH OF THE ABOVE BID ITEMS MUST BE FILLED IN AND COMPLETED IN INK.

*Signature of Bidder: _____

Company Name (printed): _____

*If Corporation, two officer signatures are required.

SCHEDULE B - UNIT PRICES BID FORM**FOR
ROTARY CENTENNIAL PARK**

NO.	ITEM	QUANTITY	UNIT	TOTAL
1		1		\$
2		1		\$
3		1		\$
4		1		\$
5		1		\$
6		1		\$
7		1		\$
8		1		\$
9		1		\$
10		1		\$
11		1		\$
12		1		\$
13		1		\$
14		1		\$
15		1		\$
16		1		\$
17		1		\$
18		1		\$
19		1		\$
20		1		\$
21		1		\$
22		1		\$
23		1		\$
24		1		\$
25		1		\$
26		1		\$
27		1		\$

Notes:

1. Individual unit prices must include all materials and labor required for a complete installation. Unit prices will be utilized for authorized additions or deletions to the scope of work.
2. Contractors must use this form to provide bids (no exceptions or alterations are permitted).

BID AMOUNT OF EACH OF THE ABOVE BID ITEMS MUST BE FILLED IN AND COMPLETED IN INK.

*Signature of Bidder:_____

Company Name (printed):_____

*If Corporation, two officer signatures are required.