City of San Diego

CONTRACTOR'S NAME:_____
ADDRESS:_____
TELEPHONE NO.:_____ **FAX NO.:**_____
CITY CONTACT: **CLEMENTINA GIORDANO** - Contract Specialist, Email: **cgiordano@sandiego.gov**
Ph. No. **(619) 533-3481** - Fax No. **(619) 533-3633**
S BOSE / NB / LS

CONTRACT DOCUMENTS

FOR

CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

VOLUME 1 OF 2

BID NO.:	**K-13-5784-DBB-3**
SAP NO. (WBS/IO/CC):	**S-00763 / B-10025**
CLIENT DEPARTMENT:	**1714 / 2114**
COUNCIL DISTRICT:	**6**
PROJECT TYPE:	**GB / CC**

THIS CONTRACT IS SUBJECT TO THE FOLLOWING:

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM.

2:00 PM
MAY 28, 2013
CITY OF SAN DIEGO
PUBLIC WORKS CONTRACTING GROUP
1010 SECOND AVENUE, SUITE 1400, MS 614C
SAN DIEGO, CA 92101
ATTN: CONTRACT SPECIALIST

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Architect:

1) Registered Architect	4-22-2013 Date	Seal:

2) For City Engineer	4/22/13 Date	Seal:

((((((((((((((((((ATTENTION))))))))))))))))))

The 2010 edition of the City of San Diego Standard Specifications for Public Works Construction ("The WHITEBOOK") now contains the following distinct Contract Documents:

1) ***Equal Opportunity Contracting Program Requirements*** - This Contract Document sets forth the standard requirements for the City's equal opportunity contracting program. When additional requirements by the funding source e.g., federal or state agencies are physically included in the contract documents or by reference and there is a discrepancy, the funding source requirements shall govern unless specified otherwise in the Special Provisions.

2) ***City Supplement*** – The City Supplement shall be used in conjunction with the Standard Specifications for Public Works Construction ("The GREENBOOK"), 2009 Edition. The specifications contained in City Supplement take precedence over the specifications contained in The GREENBOOK, 2009 Edition.

   Certain parts of the City Supplement have been highlighted in yellow for the convenience of the users only and shall not affect the interpretation of the Contract.

To obtain The GREENBOOK contact the publisher at: http://www.bnibooks.com

The WHITEBOOK is available only in electronic format under Engineering Documents and References at: http://www.sandiego.gov/engineering-cip/

TABLE OF CONTENTS

DESCRIPTION **PAGE NUMBER**

REQUIRED DOCUMENTS SCHEDULE

This table is intended to serve as a convenient tool for listing forms and documents required at different times. It is neither exhaustive nor must be considered a Contract Document by itself. Therefore, the users must review the entire Contract Documents and become familiar with the required documentation and the submittal schedule associated with each document.

Bidder's attention is directed to the City's Municipal Code §22.0807(e),(3)-(5) for important information regarding required documentation.

The specified EOC forms are all available for download from the EOC Program's web site at:

http://www.sandiego.gov/eoc/forms/index.shtml

ITEM	WHEN	BY	WHAT
1.	BID DUE DATE/TIME	ALL BIDDERS	Proposal (Bid)
2.	BID DUE DATE/TIME	ALL BIDDERS	Bid Bond
3.	BID DUE DATE/TIME	ALL BIDDERS	Non-collusion Affidavit to be Executed By Bidder and Submitted with Bid under 23 USC 112 and PCC 7106
4.	BID DUE DATE/TIME	ALL BIDDERS	Contractors Certification of Pending Actions
5.	BID DUE DATE/TIME	ALL BIDDERS	Equal Benefits Ordinance Certification of Compliance
6.	BID DUE DATE/TIME	ALL BIDDERS	Form AA35 - List of Subcontractors
7.	BID DUE DATE/TIME	ALL BIDDERS	Form AA40 - Named Equipment/Material Supplier List
8.	BID DUE DATE/TIME	ALL BIDDERS	Form AA45 - Subcontractors Additive/Deductive Alternate
9.	WITHIN 3 WORKING DAY OF BID OPENING	ALL BIDDERS	Proof of Valid DBE-MBE-WBE-DVBE Certification Status e.g., Certs.
10.	WITHIN 3 WORKING DAY OF BID OPENING	ALL BIDDERS	SLBE-ELBE Good Faith Documentations
11.	WITHIN 3 WORKING DAY OF BID OPENING	ALL BIDDERS	Form AA60 – List of Work Made Available
12.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Names of the principle individual owners of the Apparent Low Bidder - In the event the firm is employee owned or publicly held, then the fact should be stated and the names of the firm's principals and officers shall be provided.
13.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	If the Contractor is a Joint Venture, the following information must be submitted: o Joint Venture Agreement o Joint Venture License
14.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Form BB05 - Work Force Report
15.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contract Forms - Agreement

REQUIRED DOCUMENTS SCHEDULE

ITEM	WHEN	BY	WHAT
16.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contract Forms - Payment and Performance Bond
17.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Certificates of Insurance and Endorsements
18.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractor Certification - Drug-Free Workplace
19.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractor Certification - American with Disabilities Act
20.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractors Standards - Pledge of Compliance
21.	BY 5th OF EACH MONTH	CONTRACTOR	Form CC20 - Monthly Employment Report
22.	BY 5th OF EACH MONTH	CONTRACTOR	Form CC25 - Monthly Invoicing Report
23.	PRIOR TO ACCEPTANCE	CONTRACTOR	Form CC10 - Contract Change Order (CCO)
24.	PRIOR TO ACCEPTANCE	CONTRACTOR	Form CC15 - Final Summary Report
25.	PRIOR TO ACCEPTANCE	CONTRACTOR	Affidavit of Disposal

SPECIAL NOTICE
SMALL LOCAL BUSINESS ENTERPRISES (SLBE)
AND
EMERGING LOCAL BUSINESS ENTERPRISES (ELBE)
PROGRAM

1. INTRODUCTION. This contract is subject to the requirements of the SLBE Program as specified in the SLBE-ELBE section of the City's EOCP Requirements included in The WHITEBOOK.

1.1. The Bidders are required to review The WHITEBOOK and become familiar with the detailed specifications including the required documentation and the submittal schedule as related to SLBE-ELBE program.

2. AMENDMENTS TO THE CITY'S GENERAL EOCP REQUIREMENTS.

To the EOCP General Requirements, Pages 2-10, DELETE in its entirety and SUBSTITUTE with the following:

A. INTRODUCTION.

1. This document sets forth the following specifications:

   a) City's general EOCP requirements for all construction contracts.

   b) Special Provisions for contracts subjects to SLBE and ELBE requirements only.

2. Additional requirements may apply for state or federally funded projects in lieu of (1a) and (1b) above.

3. These requirements shall be included as contract provisions for all Subcontracts.

4. The City specified forms, instructions, and guides are available for download from the EOCP's web site at: http://www.sandiego.gov/eoc/forms/index.shtml.

B. GENERAL.

1. The City of San Diego promotes equal employment and subcontracting opportunities. The City is committed to ensuring that taxpayer dollars spent on public contracts are not paid to businesses that practice discrimination in employment or subcontracting. The City encourages all companies seeking to do business with the City to share this commitment.

C. DEFINITIONS. For the purpose of these requirements:

1. Terms "Bid" and "Proposal," "Bidder" and "Proposer," "Subcontractor" and "Subconsultant," "Contractor" and "Consultant," "Contractor" and "Prime Contractor," "Consultant" and "Professional Service Provider," "Suppliers" and "Vendors," "Suppliers" and "Dealers," and "Suppliers" and "Manufacturers" may have been used interchangeably.

2. The following definitions apply:

   Emerging Business Enterprise (EBE) means a business whose gross annual receipts do not exceed the amount set by the City Manager, and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2,

Division 36. The City Manager shall review the threshold amount for EBEs on an annual basis, and adjust as necessary to reflect changes in the marketplace.

Emerging Local Business Enterprise (ELBE) means a Local Business Enterprise that is also an Emerging Business Enterprise.

Minority Business Enterprise (MBE) means a certified business which is at least 51% owned by African Americans, American Indians, Asians, Filipinos, Latinos, or combination and whose management and daily operation is controlled by one or more members of the identified ethnic groups. In the case of a publicly-owned business, at least 51% of the stock shall be owned by, and the business operated by, one or more members of the identified ethnic groups.

Women Business Enterprise (WBE) means a certified business which is at least 51% owned by one or more women and whose management and daily operation is controlled by the qualifying party(ies). In the case of a publicly-owned business, at least 51% of the stock shall be owned by, and the business operated by, one or more women.

Disadvantaged Business Enterprise (DBE) means a certified business which is at least 51% owned and operated by one or more socially and economically disadvantaged individuals and whose management and daily operation is controlled by the qualifying party(ies). In the case of a publicly-owned business, at least 51% of the stock shall be owned by, and the business operated by, socially and economically disadvantaged individuals.

Disabled Veteran Business Enterprise (DVBE) means a certified business which is at least 51% owned and operated by one or more veterans with a service related disability and whose management and daily operation is controlled by the qualifying party(ies) The firm shall be certified by the State of California's Department of General Services, Office of Small and Minority Business.

Other Business Enterprise (OBE) means any business which does not otherwise qualify as Minority, Woman, Disadvantaged or Disabled Veteran Business Enterprise.

Small Business Enterprise (SBE) means a business whose gross annual receipts do not exceed the amount set by the City Manager, and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for SBEs on an annual basis, and adjust as necessary to reflect changes in the marketplace. A business certified as a Disabled Veteran Business Enterprise by the State of California, and that has provided proof of such certification to the City Manager, shall be deemed to be an SBE.

Small Local Business Enterprise (SLBE) means a Local Business Enterprise that is also a Small Business Enterprise.

D. CITY'S EQUAL OPPORTUNITY COMMITMENT.

1. Nondiscrimination in Contracting Ordinance.

1. The Contractor, Subcontractors and Suppliers shall comply with requirements of the City's Nondiscrimination in Contracting Ordinance, San Diego Municipal Code §§22.3501 through 22.3517.

   The Contractor shall not discriminate on the basis of race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, or suppliers. The Contractor shall provide equal opportunity for subcontractors to participate in subcontracting opportunities. The Contractor understands and agrees that violation of this clause shall be considered a material breach of the contract and may result in contract termination, debarment, or other sanctions.

   The Contractor shall include the foregoing clause in all contracts between the Contractor and Subcontractors and Suppliers.

2. Disclosure of Discrimination Complaints. As part of its Bid or Proposal, the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors, or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

3. Upon the City's request, the Contractor agrees to provide to the City, within 60 days, a truthful and complete list of the names of all Subcontractors and Suppliers that the Contractor has used in the past 5 years on any of its contracts that were undertaken within San Diego County, including the total dollar amount paid by the Contractor for each subcontract or supply contract.

4. The Contractor further agrees to fully cooperate in any investigation conducted by the City pursuant to the City's Nondiscrimination in Contracting Ordinance, Municipal Code §§22.3501 through 22.3517. The Contractor understands and agrees that violation of this clause shall be considered a material breach of the Contract and may result in remedies being ordered against the Contractor up to and including contract termination, debarment and other sanctions for violation of the provisions of the Nondiscrimination in Contracting Ordinance. The Contractor further understands and agrees that the procedures, remedies and sanctions provided for in the Nondiscrimination in Contracting Ordinance apply only to violations of the Ordinance.

E. EQUAL EMPLOYMENT OPPORTUNITY OUTREACH PROGRAM.

1. The Contractor, Subcontractors and Suppliers shall comply with the City's Equal Employment Opportunity Outreach Program, San Diego Municipal Code §§22.2701 through 22.2707.

   The Contractor shall not discriminate against any employee or applicant for employment on any basis prohibited by law. Contractor shall provide equal opportunity in all employment practices. Prime Contractor shall ensure their

subcontractors comply with this program. Nothing in this section shall be interpreted to hold a prime contractor liable for any discriminatory practice of its subcontractors.

The Contractor shall include the foregoing clause in all contracts between the Contractor and Subcontractors and Suppliers.

2. If the Contract is competitively solicited, the selected Bidder shall submit a Work Force Report (Form BB05), within 10 Working Days after receipt by the Bidder of Contract forms to the City for approval as specified in the Notice of Intent to Award letter from the City.

3. If a Work Force Report is submitted, and the City determines there are under-representations when compared to County Labor Force Availability data, the selected Bidder shall submit an Equal Employment Opportunity Plan.

4. If the selected Bidder submits an Equal Employment Opportunity Plan, it shall include the following assurances:

    1. The Contractor shall maintain a working environment free of discrimination, harassment, intimidation and coercion at all sites and in all facilities at which the Contractor's employees are assigned to work.

    2. The Contractor reviews its EEO Policy, at least annually, with all on-site supervisors involved in employment decisions.

    3. The Contractor disseminates and reviews its EEO Policy with all employees at least once a year, posts the policy statement and EEO posters on all company bulletin boards and job sites, and documents every dissemination, review and posting with a written record to identify the time, place, employees present, subject matter, and disposition of meetings.

    4. The Contractor reviews, at least annually, all supervisors' adherence to and performance under the EEO Policy and maintains written documentation of these reviews.

    5. The Contractor discusses its EEO Policy Statement with subcontractors with whom it anticipates doing business, includes the EEO Policy Statement in its subcontracts, and provides such documentation to the City upon request.

    6. The Contractor documents and maintains a record of all bid solicitations and outreach efforts to and from subcontractors, contractor associations and other business associations.

    7. The Contractor disseminates its EEO Policy externally through various media, including the media of people of color and women, in advertisements to recruit, maintains files documenting these efforts, and provides copies of these advertisements to the City upon request.

    8. The Contractor disseminates its EEO Policy to union and community organizations.

9. The Contractor provides immediate written notification to the City when any union referral process has impeded the Contractor's efforts to maintain its EEO Policy.

10. The Contractor maintains a current list of recruitment sources, including those outreaching to people of color and women, and provides written notification of employment opportunities to these recruitment sources with a record of the organizations' responses.

11. The Contractor maintains a current file of names, addresses and phone numbers of each walk-in applicant, including people of color and women, and referrals from unions, recruitment sources, or community organizations with a description of the employment action taken.

12. The Contractor encourages all present employees, including people of color and women employees, to recruit others.

13. The Contractor maintains all employment selection process information with records of all tests and other selection criteria.

14. The Contractor develops and maintains documentation for on-the-job training opportunities, participates in training programs, or both for all of its employees, including people of color and women, and establishes apprenticeship, trainee, and upgrade programs relevant to the Contractor's employment needs.

15. The Contractor conducts, at least annually, an inventory and evaluation of all employees for promotional opportunities and encourages all employees to seek and prepare appropriately for such opportunities.

16. The Contractor ensures the company's working environment and activities are non-segregated except for providing separate or single-user toilets and necessary changing facilities to assure privacy between the sexes.

F. SUBCONTRACTING.

1. The City encourages all eligible business enterprises to participate in City contracts as Contractor, Subcontractor, and joint venture partner with the Contractor, Subcontractors, or Suppliers. The Contractor is encouraged to take positive steps to diversify and expand their subcontractor solicitation base and to offer subcontracting opportunities to all eligible business firms including SLBEs, ELBEs, MBEs, WBEs, DBEs, DVBEs, and OBEs.

2. For subcontractor participation level requirements, see the Notice Inviting Bids, RFP, or Special Notice included in the Contract Documents where applicable.

3. For the purpose of achieving the mandatory subcontractor participation percentage, the City will not account for the Field Orders, Additive or Deductive, and Allowance – Type II Bid Items in the calculation. Allowance – Type I Bid Items are part of the Base Bid integral to the SOW.

4. Each joint venture partner shall be responsible for a clearly defined scope of work. In addition, an agreement shall be submitted, signed by all parties, identifying the extent

to which each joint venture partner shares in ownership, control, management, risk and profits of the joint venture.

G. LISTS OF SUBCONTRACTORS AND SUPPLIERS.

1. The Bidders shall comply with the Subletting and Subcontracting Fair Practices Act, Public Contract Code §§4100 through 4113, inclusive.

2. The Bidders shall list all Subcontractors who will receive more than 0.5% of the total Bid amount or $10,000, whichever is greater on the form provided in the Contract Documents i.e., a subcontractors list.

3. The subcontractor list shall include the Subcontractor's name, tax identification number, telephone number including area code, physical and Email addresses, scope of work, the dollar amount of the proposed subcontract, Subcontractor's certification status, and name of the certifying agency.

4. The listed Subcontractor shall be appropriately licensed pursuant to the Contractor License Law.

5. For Design-Build Contracts, refer to the RFQ and RFP for each Project or Task Order.

H. SUBCONTRACTOR AND SUPPLIER SUBSTITUTIONS.

1. Listed Subcontractors and Suppliers shall not be substituted without the Express authorization of the City or its duly authorized agent.

2. Request for Subcontractor or Supplier substitution shall be made in writing to the Public Works Contracting Group, Attention Contracts Specialist, 1010 Second Avenue, Suite 1400, San Diego, CA 92101 with a copy to the Engineer.

3. The request shall include a thorough explanation of the reason(s) for the substitution, including dollar amounts and a letter from each substituted Subcontractor or Supplier stating that they (the Subcontractors or Suppliers) release all interest in working on the Project, written confirmation from the new Subcontractor or Supplier stating that they agree to work on the Project along with the dollar value of the work to be performed.

4. Written approval of the substitution request shall be received by the Contractor, from the City or its authorized officer, prior to any unlisted Subcontractor or Supplier performing work on the Project.

5. Substitution of Subcontractors and Suppliers without authorization shall subject the Contractor to those penalties set forth in Public Contract Code §4110.

6. Requests for Supplier substitution shall be made in writing at least 10 days prior to the provision of materials, supplies or services by the proposed Supplier, and shall include proof of written notice to the originally listed Supplier of the proposed substitution.

7. A Contractor whose Bid is accepted may not:

    1. Substitute a person as Subcontractor or Supplier in place of the Subcontractor, Supplier listed in the original bid, except that the City, or it's duly authorized officer, may consent to the substitution of another person as a Subcontractor or Supplier in any of the following situations:

        a) When the Subcontractor or Supplier listed in the Bid after having a reasonable opportunity to do so fails or refuses to execute a written contract with the Contractor, when that written contract, based upon the Contract Documents or the terms of that Subcontractor's or Supplier's written bid is presented to the Subcontractor or Supplier by the Contractor.

        b) When the listed Subcontractor or Supplier becomes bankrupt or insolvent.

        c) When the listed Subcontractor or Supplier fails to perform its contract.

        d) When the listed subcontractor fails or refuses to meet bond requirements as set forth in Public Contract Code §4108.

        e) When the Contractor demonstrates to the City or it's duly authorized officer, subject to the provisions set forth in Public Contract Code §4107.5, that the name of the Subcontractor was listed as the result of an inadvertent clerical error.

        f) When the listed Subcontractor is not licensed pursuant to the contractors license laws.

        g) When the listed Subcontractor is ineligible to work on a public works project pursuant to work on a public works project pursuant to §§1777.1 or 1777.7 of the Labor Code.

        h) When the City or its duly authorized agent determines that the listed Subcontractor is not a responsible contractor.

        i) When the City, or it's duly authorized officer, determines that the work performed by the listed Subcontractor or that the materials or supplies provided by the listed Supplier are substantially unsatisfactory and not in substantial accordance with the plans and specifications, or that the Subcontractor or Supplier is substantially delaying or disrupting the progress of the work.

    2. Permit a contract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor, Supplier listed in the original bid without the consent of the City, or it's duly authorized officer.

    3. Other than in the performance of "Change Orders" causing changes or deviations from the Contract, sublet or subcontract any portion of the work, or contract for materials or supplies in excess of 0.5% of the Contractor's total bid or $10,000, whichever is greater as to which his or her original bid did not designate a Subcontractor or Supplier.

8. Following receipt of notice from the Contractor of the proposed substitution of a Subcontractor or Supplier, the listed Subcontractor or Supplier who has been so notified shall have 5 Working Days within which to submit written objections to the substitution to the Contract Specialist with a copy to the Engineer. Failure to file these written objections shall constitute the listed Subcontractor or Supplier's consent to the substitution. If written objections are filed, the City shall give notice in writing of at least 5 Working Days to the listed Subcontractor or Supplier of a hearing by the City on the Contractor's request for substitution.

I. PROMPT PAYMENT.

1. The Contractor or Subcontractor shall pay to any subcontractor, not later than 7 days of receipt of each progress payment, unless otherwise agreed to in writing; the respective amounts allowed the contractor on account of the work performed by the subcontractors, to the extent of each subcontractor's interest therein. In cases of subcontractor performance deficiencies, the Contractor shall make written notice of any withholding to the Subcontractor with a copy to the Contracts Specialist. Upon correction of the deficiency, the Contractor shall pay the Subcontractor the amount previously withheld within 14 days after payment by the City.

2. Any violation of California Business and Professions Code, §7108.5 concerning prompt payment to Subcontractors shall subject the violating Contractor or Subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or Subcontractor in the event of a dispute involving late payment or nonpayment by the Prime Contractor, deficient subcontract performance, or noncompliance by a subcontractor.

J. PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS.

1. The City will hold retention from the Contractor and will make prompt and regular incremental acceptances of portions, as determined by the Engineer, of the Work, and pay retention to the Contractor based on these acceptances.

2. The Contractor or Subcontractor shall return all monies withheld in retention from a Subcontractor within 30 days after receiving payment for Work satisfactorily completed and accepted including incremental acceptances of portions of the Work by the City.

3. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the City's prior written approval. Any violation of this provision shall subject the violating the Contractor or Subcontractor to the penalties, sanctions and other remedies specified in §7108.5 of the Business and Professions Code.

4. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or Subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor, deficient subcontract performance, or noncompliance by a subcontractor.

K. CERTIFICATION. The City accepts certifications of MBE, WBE, DBE, or DVBE by any of the following methods:

1. Current certification by the State of California Department of Transportation (CALTRANS) as MBE, WBE or DBE;

2. Current MBE or WBE certification from the California Public Utilities Commission. Additional information may be obtained from:

   http://www.cpuc.ca.gov/PUC/SupplierDiversity/CertInfo.htm;

3. Current MBE certification from the San Diego Regional Minority Supplier Diversity Council. Additional information may be obtained from:

   www.supplierdiversitysd.org;

4. DVBE certification is received from the State of California's Department of General Services, Office of Small and Minority Business (916) 322-5060 or go to their link at:

   http://www.pd.dgs.ca.gov/smbus/default.htm.

5. Current certification by the City of Los Angles as DBE, WBE or MBE. For more information go to:

   http://bca.lacity.org/index.cfm?nxt_body=tutorials_c.cfm

Subcontractors' valid proof of certification status e.g., copy of MBE, WBE, DBE, or DVBE certification shall be submitted as required.

L. CONTRACT RECORDS AND REPORTS.

1. The Contractor shall maintain records of all subcontracts entered into with all firms, all project invoices received from Subcontractors and Suppliers, all purchases of materials and services from Suppliers, and all joint venture participation. Records shall show name, telephone number including area code, and business address of each Subcontractor and Supplier, and joint venture partner, and the total amount actually paid to each firm. Project relevant records, regardless of tier, may be periodically reviewed by the City.

2. The Contractor shall retain all records, books, papers, and documents directly pertinent to the Contract for a period of not less than 5 years after Notice of Completion; and allow access to said records by the City's authorized representatives.

3. The Contractor shall submit the following reporting using the City's web-based contract compliance i.e., Prism® portal:

   1. *Monthly Employment Utilization*. You and your Subcontractors and Suppliers must submit *Monthly Employment Utilization Reporting* by the 5th day of the subsequent month.

   2. *Monthly Payment*. You and your Subcontractors and Suppliers must submit *Monthly Payment Reporting* by the 5th day of the subsequent month.

Incomplete and/or delinquent reporting may cause payment delays, non-payment of invoice, or both

3. AMENDMENTS TO THE CITY'S EOCP SLBE-ELBE REQUIREMENTS.

To the SLBE-ELBE Program Requirements, Pages 12-20, DELETE in its entirety and SUBSTITUTE with the following:

THESE SPECIAL PROVISIONS SUPPLEMENT THE POLICIES AND REQUIREMENTS ESTABLISHED BY THE CITY OF SAN DIEGO EQUAL OPPORTUNITY CONTRACTING PROGRAM SPECIFIED IN THE CITY'S GENERAL EOC REQUIREMENTS FOR CONTRACTS SUBJECT TO SLBE-ELBE REQUIREMENTS.

A. GENERAL:

1. It is the City's policy to encourage greater availability, capacity development, and contract participation by SLBE firms in City contracts. This policy is, in part, intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community, ensure that it is neither an active nor passive participant in marketplace discrimination, and promote equal opportunity for all segments of the contracting community.

2. The City is committed to maximizing subcontracting opportunities for all qualified and available firms.

3. This policy applies to City-funded construction contracts. Bidders shall be fully informed of this policy as set forth in these specifications. Mandatory or voluntary subcontracting percentages, Bid Discounts, and restricted competition are specified in the Notice Inviting Bids.

4. The Bidders shall make subcontracting opportunities available to a broad base of qualified Subcontractors and shall achieve the minimum SLBE-ELBE subcontractor participation identified for this project.

5. Failure to subcontract the specified minimum (i.e., mandatory) percentages of Bid to qualified available SLBE-ELBE Subcontractors will cause a Bid to be rejected as non-responsive unless the Bidder has demonstrated compliance with the affirmative steps as specified in the City's document titled "Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL" and has submitted documentation showing that all required positive efforts were made prior to Bid submittal due date. The required Good Faith Effort (GFE) documentation shall be submitted to the Contract Specialist.

6. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website: http://www.sandiego.gov/eoc/boc/slbe.shtml.

7. At the City's sole discretion, these requirements may be waived in advance on projects deemed inappropriate for subcontracting participation.

B. DEFINITIONS. The following definitions shall be used in conjunction with these specifications:

Bid Discount – Additional inducements or enhancements in the bidding process that are designed to increase the chances for the selection of SLBE firms in competition with other firms.

Commercially Useful Function – An SLBE-ELBE performs a commercially useful function when it is responsible for execution of the Work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the SLBE-ELBE shall also be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quantity and quality, ordering the material, and installing (where applicable) and paying for the material itself.

To determine whether an SLBE-ELBE is performing a commercially useful function, an evaluation will be performed of the amount of work subcontracted, normal industry practices, whether the amount the SLBE-ELBE firm is to be paid under the contract is commensurate with the Work it is actually performing and the SLBE-ELBE credit claimed for its performance of the Work, and other relevant factors. Specifically, an SLBE-ELBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of meaningful and useful SLBE-ELBE participation, when in similar transactions in which SLBE-ELBE firms do not participate, there is no such role performed.

Good Faith Efforts. **(GFE)** – Documentation of the Bidder's intent to comply with SLBE Program goals and procedures included in the City's SLBE Program, Instructions for Completing Good Faith Effort Submittal available from the City's EOCP website or the Contract Specialist.

Independently Owned, Managed, and Operated – Ownership of a SLBE-ELBE firm shall be direct, independent, and by individuals only. Business firms that are owned by other businesses or by the principals or owners of other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements shall not be eligible to participate in the Program. Moreover, the day-to-day management of the SLBE-ELBE firm shall be direct and independent of the influence of any other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements.

Joint Venture - An association of two or more persons or business entities that is formed for the single purpose of carrying out a single defined business enterprise for which purpose they combine their capital, efforts, skills, knowledge, or property. Joint ventures shall be established by written agreement to qualify for this program.

Local Business Enterprise ("LBE") - A firm having a Principal Place of Business and a Significant Employment Presence in San Diego County, California that has been in operation for 12 consecutive months and a valid business tax certificate. This definition is subsumed within the definition of Small Local Business Enterprise.

Minor Construction Program – A program developed for bidding exclusively among SLBE-ELBE Construction firms.

Principal Place of Business – A location wherein a firm maintains a physical office and through which it obtains no less than 50% of its overall customers or sales dollars.

Protégé – A firm that has been approved, is an active participant in the City's Mentor-Protégé Program, has signed the required program participation agreement and has been assigned a mentor.

Significant Employee Presence – No less than 25% of a firm's total number of employees are domiciled in San Diego County.

C. SUBCONTRACTOR PARTICIPATION. SLBE–ELBE firms will be recognized as participants in the Contract according to the following criteria:

1. For credit to be allowed toward respective participation level, all listed SLBE-ELBE firms shall have been certified by the Bid due date.

2. The Subcontractor shall perform a commercially useful function for credit to be allowed toward subcontractor participation levels. The Subcontractor shall be required by the Contractor to be responsible for execution of a distinct element of the Work and shall carry out its responsibility by actually performing and supervising its own workforce.

3. If the Bidder is seeking the recognition of materials, supplies, or both towards achieving any mandatory subcontracting participation level, the Bidder shall indicate on Form AA40 with the Bid.

    1. If the materials or supplies are obtained from a SLBE-ELBE manufacturer, the Bidder will receive 100% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

    2. If the materials or supplies are obtained from a SLBE-ELBE supplier, the Bidder will receive 60% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation a Supplier is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a supplier, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a supplier in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of suppliers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

3. If the materials or supplies are obtained from a SLBE-ELBE, which is neither a manufacturer nor a supplier, the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, fees or transportation charges for the delivery of materials or supplies required on a job site will be counted toward SLBE-ELBE participation, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services. No portion of the cost of the materials and supplies themselves will be counted toward SLBE-ELBE participation.

4. If the Bidder is seeking the recognition of SLBE-ELBE Trucking towards achieving any mandatory subcontracting participation level, the Bidder shall indicate on Form AA35 with the Bid. The following factors will be evaluated in determining the credit to be allowed toward the respective participation level:

    1. The SLBE-ELBE shall be responsible for the management and supervision of the entire trucking operation for which it is getting credit on a particular contract, and there cannot be a contrived arrangement for the purpose of counting SLBE-ELBE participation.

    2. The SLBE-ELBEE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

    3. The SLBE-ELBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

    4. The SLBE-ELBE may lease trucks from another SLBE-ELBE firm including an owner-operator, who is certified as a SLBE-ELBE. The SLBE-ELBE who leases trucks from another SLBE-ELBE receives credit for the total value of the transportation services the lessee SLBE-ELBE provides on the contract.

    5. The SLBE-ELBE may also lease trucks from a non-SLBE-ELBE firm, including an owner operator. The SLBE-ELBE who leases trucks from a non-SLBE-ELBE is entitled to credit for the total value of transportation services provided by non-SLBE-ELBE lessees not to exceed the value of transportation services provided by SLBE-ELBE owned trucks on the contract. Additional participation by non-SLBE-ELBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement.

    6. A lease shall indicate that the SLBE-ELBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the SLBE-ELBE, so long as the lease gives the SLBE-ELBE absolute priority for use of the leased truck.

D. SLBE-ELBE SUBCONTRACTOR PARTICIPATION PERCENTAGES.

1. Contracts valued at $1,000,000 and above include a mandatory subcontractor participation requirement for SLBE–ELBE firms.

    a) The Bidder shall achieve the mandatory subcontractor participation requirement or demonstrate GFE.

b) The Bidders shall indicate the participation on Forms AA35 and AA40 as applicable regardless of the dollar value.

c) An SLBE-ELBE Bidder may count its own participation toward achieving the mandatory goal as long as the SLBE-ELBE Bidder performs 51% of the Contract Price.

2. Contracts Valued over $500,000 and under $1,000,000 shall include the mandatory subcontractor participation requirements described above and the following:

a) 5% bid discount for SLBE-ELBE firms.

b) Non-certified Contractor will receive 5% bid discount if they achieve the specified mandatory subcontracting participations.

c) Bid discounts shall not apply if the award will result in a total contract cost of $50,000 in excess of the apparent lowest Bid.

d) In the event of a tie bid between a SLBE-ELBE Bidder and a non-SLBE-ELBE Bidder, the SLBE-ELBE Bidder will be awarded the Contract.

e) In the event of a tie bid between a discounted Bid and a non-discounted Bid, the discounted Bid will be awarded the Contract.

3. Minor Public Works Projects - Contracts valued over $250,000 up to $500,000 will be considered Minor Construction Projects and will be awarded through a competitive bid process open only to City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and subject to requirements listed in "Major Public Works Projects" sections above.

4. Contracts valued at $250,000 and below will also be considered Minor Construction Projects and will be awarded through a competitive bid process open only to City certified ELBEs unless there are less than 2 firms available at which it will be awarded through a competitive process open only to the City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and subject to requirements listed in Major Public Works Projects above.

E. JOINT VENTURES.

1. The City may allow for Joint Venture bid discounts on some contracts. Contracts that allow for Joint Venture bid discounts will be designated in Bid documents. A firm that is bidding or competing for City contracts may partner with a certified SLBE or ELBE to compete for contracts as a Joint Venture.

2. A Joint Venture shall be between two entities with the same discipline or license as required by the City. Joint ventures will receive bid discounts depending on the SLBE or ELBE percentage of participation. To be eligible for a discount, a Joint Venture Agreement shall be approved by the City at the time of Bid submittal. The maximum allowable discount shall be 5%. The parties shall agree to enter in the relationship for the life of the projects.

3. Joint Venture shall submit a Joint Venture Management Plan, a Joint Venture Agreement, or both at least 2 weeks prior to the Bid due date. Copies of the Joint Venture applications are available upon request to the Contract Specialist. Each agreement or management plan shall include the following:

    1. Detailed explanation of the financial contribution for each partner;

    2. List of personnel and equipment used by each partner;

    3. Detailed breakdown of the responsibilities of each partner;

    4. Explanation of how the profits and losses will be distributed;

    5. Description of the bonding capacity of each partner; and

    6. Management or incentive fees available for any one of the partners (if any).

4. Commercially Useful Functions Performed by Joint Venture Partners – Each Joint Venture partner shall perform a "commercially useful function" as the term is defined herein. An SLBE or ELBE that relies on the resources and personnel of a non-SLBE or ELBE firm will not be deemed to perform a "commercially useful function".

5. License Requirements – Each Joint Venture partner shall possess licenses appropriate for the discipline for which a proposal is being submitted. If a Joint Venture is bidding on a single trade project, at the time of bid submittal, each Joint Venture partner shall possess the requisite specialty license for that trade bid.

6. Delineation of Work – The SLBE or ELBE partner shall clearly define the portion of the Work to be performed. This work shall be of the similar type of work the SLBE or ELBE partner performs in the normal course of its business. The Joint Venture Participation Form shall specify the Bid items to be performed by each individual Joint Venture partner. Lump sum Joint Venture participation shall not be acceptable.

7. Responsibilities of the SLBE or ELBE Joint Venture Partner:

    1. The SLBE or ELBE partner shall share in the control, management responsibilities, risks and profits of the Joint Venture in proportion with the level of participation in the project.

    2. The SLBE or ELBE partner shall perform work that is commensurate with its experience.

    3. The SLBE or ELBE partner shall use its own employees and equipment to perform its portion of the Work.

    4. The Joint Venture as a whole shall perform Bid items that equal or exceed 50% of the Contract Price, excluding the cost of manufactured items, in order to be eligible for a Joint Venture discount.

F. MAINTAINING PARTICIPATION LEVELS.

1. Credit and preference points are earned based on the level of participation proposed prior to the award of the Contract. Once the Project begins the Contractor shall achieve and maintain the SLBE-ELBE participation levels for which credit and preference points were earned. The Contractor shall maintain the SLBE-ELBE percentages indicated at the Award of Contract and throughout the Contract Time.

2. If the City modifies the original scope of Work, the Contractor shall make reasonable efforts to maintain the SLBE-ELBE participation for which creditor preference points were earned. If participation levels shall be reduced, approval shall be received from the City prior to making changes.

3. The Contractor shall notify and obtain written approval from the City in advance of any reduction in subcontract scope, termination, or substitution for a designated SLBE-ELBE subcontractor. Failure to do so shall constitute a material breach of the Contract.

4. If the Contractor fails to maintain the SLBE-ELBE participation listed at the time the contract is awarded, and has not received prior approval from the City, the City may declare the Contractor in default of its contract with the City.

5. The Contractor shall submit its Final Payment Report including all subcontracting activities to the City within 15 days after the Work has been accepted. Failure to comply may result in assessment of liquidated damages or withholding of retention. The City will review and verify 100% of subcontract participation reported in the Final Payment Reporting prior to approval and release of final retention to the Contractor. In the event such withheld retention includes sums that are due to Subcontractors for successfully completed work, the City may authorize payment by the City of that portion of the withheld retention via a joint check.

G. SUBCONTRACTING EFFORTS REVIEW AND EVALUATION.

1. Documentation of Bidder's subcontracting efforts will be reviewed by EOCP to verify that the Bidder made subcontracting opportunities available to a broad base of qualified subcontractors, negotiated in good faith with interested subcontractors, and did not reject any bid for unlawful discriminatory reasons. The EOCP review is based on the federal "Six Good Faith Efforts" model.

2. The GFE are required methods to ensure that all ELBE and SLBE firms have the opportunity to compete for the City's Public Works procurements. The Six Good Faith Efforts also known as affirmative steps represent GFE to attract and utilize ELBE and SLBE firms:

    1. Ensure ELBE firms are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.

    2. Make information of forthcoming opportunities available to SLBE-ELBE firms and arrange time for contracts and establish delivery schedules, where requirements permit, in a way that encourages and facilitates participation by SLBE-ELBE firms in the competitive process. This includes posting solicitations for bids or proposals for a minimum of 10 Working Days before the Bid or Proposal due date.

    3. Consider in the contracting process whether firms competing for large contracts could subcontract with SLBE-ELBE firms.

    4. Encourage contracting with a consortium of ELBE-SLBE firms when a contract is too large for one of these firms to handle individually.

5. Use the services and assistance of the City's EOC Office and the SLBE-ELBE Directory.

6. If the Contractor awards subcontracts, it shall require the Subcontractors to take the steps in subparagraphs (a)-(e) of this subsection.

H. GOOD FAITH EFFORT DOCUMENTATION.

If the specified SLBE-ELBE subcontractor participation percentages are not met, the Bidder shall submit information necessary to establish adequate GFE were taken to meet the contract subcontractor participation percentages. See the City's document titled "Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL" for the documentation requirements posted on the City's website at the time of Bid.

I. SUBCONTRACTOR SUBSTITUTION. Evidence of fraud or discrimination in substitution of subcontractors will result in sanctions including assessment of penalty fines, termination of contract or debarment. This section does not replace applicable California Public Contract Code.

J. FALSIFICATION OF SUB-AGREEMENT AND FRAUD. Falsification or misrepresentation of a sub-agreement as to company name, contract amount or actual work performed by Subcontractor, or any falsification or fraud on the part of Bidders in the submission of documentation and forms pursuant to this program, will result in sanctions against the Bidder including assessment of penalty fines, termination of the Contract, or debarment. Instances of falsification or fraud which are indicative of an attempt by Bidders to avoid subcontracting with certain categories of subcontractors on the basis of race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability, shall be referred to the Equal Opportunity Contracting Program's Investigative Unit for possible violations of Article 2, Division 35 of the City Administrative Code, §§22.3501 et seq. (Nondiscrimination in Contracting).

K. RESOURCES. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website: http://www.sandiego.gov/eoc/boc/slbe.shtml

4. SUBCONTRACTING PARTICIPATION PERCENTAGES. The Bidders are encouraged to take positive steps to diversify and expand their subcontractor solicitation base and to offer contracting opportunities to all certified Subcontractors including SLBEs, ELBEs, DBEs, MBEs, WBEs, DVBEs and OBEs.

4.1. The City has incorporated **mandatory** SLBE-ELBE subcontractor participation percentages to enhance competition and maximize subcontracting opportunities. For the purpose of achieving the mandatory subcontractor participation percentages, a recommended breakdown of the SLBE and ELBE subcontractor participation percentages based upon certified SLBE and ELBE firms has also been provided to achieve the mandatory subcontractor participation percentages:

1.	SLBE participation	**11.4%**
2.	ELBE participation	**39.3**
3.	Total mandatory participation	**50.7%**

4.2 For the purpose of achieving the mandatory subcontractor participation percentage, the City will not account for the Field Orders, Additive or Deductive, and Allowance Bid Items (when shown by the City as Allowance – Type II in the Bid and Proposal forms) in the calculation. Allowance – Type I Bid Items are part of the Base Bid integral to the SOW.

5. **PRE-BID CONFERENCE.** A Pre-Bid Conference is scheduled for this contract as specified in the Invitation to Bids. The purpose of this meeting is to inform Bidders of the submittal requirements and provisions relative to the SLBE Program. Bidders are strongly encouraged to attend the Pre-Bid Conference to better understand the Good Faith Effort requirements of this contract.

6. **MANDATORY CONDITIONS.** Bid will be declared **non-responsive** if the Bidder fails the following mandatory conditions.

6.1. Bidder's inclusion of SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; **OR**

6.2. Bidder's submission of Good Faith Effort documentation demonstrating the Bidder made a good faith effort to outreach to and include SLBE-ELBE Subcontractors required in this document within 3 Working Days of the Bid opening if the overall mandatory participation percentage is not met.

7. **BID DISCOUNT.** This contract **is not** subject to the Bid Discount program as described in The WHITEBOOK, SLBE-ELBE Program Requirements, Section IV(2).

8. **RESOURCES.** The current list of certified SLBE-ELBE firms can be found on the EOC Department website at **http://www.sandiego.gov/eoc/**

CONSTRUCTION CONTRACT

This contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and **NEW CENTURY CONSTRUCTION, INC.** herein called "Contractor" for construction of **CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION**; Bid No. **K-13-5784-DBB-3**; in the amount of **NINE HUNDRED THIRTY-SIX THOUSAND DOLLARS AND 00/100 ($936,000.00)**, as indicated by the Base bid and Additive Alternates A, D.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

1. The following are incorporated into this contract as though fully set forth herein:

   (a) The attached Faithful Performance and Payment Bonds.
   (b) The attached Proposal included in the Bid documents by the Contractor.
   (c) That certain documents entitled **CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION**, on file in the Public Works Department as Document No. **S-00763 / B-10025,** as well as all matters referenced therein.

2. Contractor shall perform and be bound by all the terms and conditions of this contract and in strict conformity therewith shall perform and complete in a good and workmanlike manner **CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION**, Bid Number **K-13-5784-DBB-3,** San Diego, California.

3. For such performances, the City shall pay to Contractor the amounts set forth at the times and in the manner and with such additions or deductions as are provided for in this contract, and Contractor shall accept such payment in full satisfaction of all claims incident to such performances.

4. No claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.

5. This contract is effective as of the date that the Mayor or designee signs the agreement.

CONTRACT FORMS (continued)
AGREEMENT

IN WITNESS WHEREOF, this agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to **Municipal Code 22.3102(a)(1)**authorizing such execution.

THE CITY OF SAN DIEGO

By Tony Heinrichs

Print Name: _____
Tony Heinrichs, Director of Public Works Department

Date: 9/3/13

APPROVED AS TO FORM AND LEGALITY

Jan I. Goldsmith, City Attorney

By _____

Print Name: Mark M. Morse
Deputy City Attorney

Date: 9/4/13

CONTRACTOR

By Lee P. Shelburg II

Print Name: LEE P. SHELBURG, II

Title: PRESIDENT

Date: 7/23/13

City of San Diego License No.: B19990084 88

State Contractor's License No.: 614517

This Bond was Executed in
Three (3) Identical Counterparts

PREMIUM IS FOR CONTRACT TERM
AND IS SUBJECT TO ADJUSTMENT
BASED ON FINAL CONTRACT PRICE

Bond No. 4391530
Premium: $12,860.00

CONTRACT FORMS (continued)
PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

New Century Construction, Inc., a corporation, as principal, and SureTec Insurance Company, a corporation authorized to do business in the State of California, as Surety, hereby obligate themselves, their successors and assigns, jointly and severally, to The City of San Diego a municipal corporation in the sum of **NINE HUNDRED THIRTY-SIX THOUSAND DOLLARS AND 00/100 ($936,000.00)** for the faithful performance of the annexed contract, and in the sum of **NINE HUNDRED THIRTY-SIX THOUSAND DOLLARS AND 00/100 ($936,000.00)** for the benefit of laborers and materialmen designated below.

Conditions:

If the Principal shall faithfully perform the annexed contract **CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION,** Bid Number **K-13-5784-DBB-3,** San Diego, California then the obligation herein with respect to a faithful performance shall be void; otherwise it shall remain in full force.

If the Principal shall promptly pay all persons, firms and corporations furnishing materials for or performing labor in the execution of this contract, and shall pay all amounts due under the California Unemployment Insurance Act then the obligation herein with respect to laborers and materialmen shall be void; otherwise it shall remain in full force.

The obligation herein with respect to laborers and materialmen shall inure to the benefit of all persons, firms and corporations entitled to file claims under the provisions of Chapter 3 of Division 5 of Title I of the Government Code of the State of California or under the provisions of Section 3082 et seq. of the Civil Code of the State of California.

Changes in the terms of the annexed contract or specifications accompanying same or referred to therein shall not affect the Surety's obligation on this bond, and the Surety hereby waives notice of same.

The Surety shall pay reasonable attorney's fees should suit be brought to enforce the provisions of this bond.

Dated July 18th, 2013

Approved as to Form and Legality

Jan I. Goldsmith, City Attorney

By _____
Deputy City Attorney

Approved:

_____
Tony Heinrichs, Director of Public Works Department

New Century Construction, Inc.
Principal

By _____

LEE P. SHELBERG, II - PRES.
Printed Name of Person Signing for Principal

SureTec Insurance Company
Surety

By _____
Attorney-in-fact Dwight Reilly

3033 5th Avenue, Suite 300
Local Address of Surety

San Diego, CA 92103
Local Address (City, State) of Surety

(800) 288-0351
Local Telephone No. of Surety

Premium $ 12,860.00

Bond No. 4391530

ACKNOWLEDGMENT

State of California
County of Orange)

On July 18, 2013 before me, Karen L. Ritto, Notary Public
(Insert name and title of the officer)

personally appeared *Dwight Reilly,
who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)
Karen L. Ritto

KAREN L. RITTO
COMM. #1965188
Notary Public-California
ORANGE COUNTY
My Comm. Expires Dec 30, 2015

FRS3

POA #: 510023

SureTec Insurance Company

Bond No. 4391530

LIMITED POWER OF ATTORNEY

Know All Men by These Presents, That SURETEC INSURANCE COMPANY (the "Company"), a corporation duly organized and existing under the laws of the State of Texas, and having its principal office in Houston, Harris County, Texas, does by these presents make, constitute and appoint

Arturo Ayala, Daniel Huckabay, Dwight Reilly

its true and lawful Attorney-in-fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include waivers to the conditions of contracts and consents of surety for:

Five Million and 00/100 Dollars ($5,000,000.00)

and to bind the Company thereby as fully and to the same extent as if such bond were signed by the President, sealed with the corporate seal of the Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney-in-Fact may do in the premises. Said appointment shall continue in force until 10/31/2015 and is made under and by authority of the following resolutions of the Board of Directors of the SureTec Insurance Company:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and of behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached. *(Adopted at a meeting held on 20th of April, 1999.)*

In Witness Whereof, SURETEC INSURANCE COMPANY has caused these presents to be signed by its President, and its corporate seal to be hereto affixed this 21st day of March, A.D. 2013.

SURETEC INSURANCE COMPANY

By: _____
John Knox Jr., President

State of Texas ss:
County of Harris

On this 21st day of March, A.D. 2013 before me personally came John Knox Jr., to me known, who, being by me duly sworn, did depose and say, that he resides in Houston, Texas, that he is President of SURETEC INSURANCE COMPANY, the company described in and which executed the above instrument; that he knows the seal of said Company; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Company; and that he signed his name thereto by like order.

JACQUELYN MALDONADO
Notary Public
State of Texas
My Comm. Exp. 5/18/2017

_____
Jacquelyn Maldonado, Notary Public
My commission expires May 18, 2017

I, M. Brent Beaty, Assistant Secretary of SURETEC INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Company, which is still in full force and effect; and furthermore, the resolutions of the Board of Directors, set out in the Power of Attorney are in full force and effect.

Given under my hand and the seal of said Company at Houston, Texas this 18th day of July, 2013, A.D.

_____
M. Brent Beaty, Assistant Secretary

Any instrument issued in excess of the penalty stated above is totally void and without any validity.
For verification of the authority of this power you may call (713) 812-0800 any business day between 8:00 am and 5:00 pm CST.

CONTRACTOR CERTIFICATION

DRUG-FREE WORKPLACE

PROJECT TITLE: CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in INSTRUCTION TO BIDDERS, "Drug-Free Workplace", of the project specifications, and that;

NEW CENTURY CONSTRUCTION, INC.
(Name under which business is conducted)

has in place a drug-free workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of subdivisions a) through c) of the policy as outlined.

Signed Lee P. Shellberg

Printed Name LEE P. SHELLBERG, II

Title PRESIDENT

CONTRACTOR CERTIFICATION

AMERICAN WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

PROJECT TITLE: CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the American With Disabilities Act (ADA) outlined in the INSTRUCTION TO BIDDERS, "American With Disabilities Act", of the project specifications, and that;

NEW CENTURY CONSTRUCTION, INC.
(Name under which business is conducted)

has in place workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of the policy as outlined.

Signed Lee P. Shellberg

Printed Name LEE P. SHELLBERG, II

Title PRESIDENT

CONTRACTOR CERTIFICATION

CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE

PROJECT TITLE: CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

I declare under penalty of perjury that I am authorized to make this certification on behalf of NEW CENTURY CONSTRUCTION, INC., as Contractor, that I am familiar with the requirements of City of San Diego Municipal Code § 22.3224 regarding Contractor Standards as outlined in INSTRUCTION TO BIDDERS ("Contractor Standards"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors whose subcontracts are greater than $50,000 in value has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3224.

Dated this 23 Day of July, 2013.

Signed Lee P. Shelberg II

Printed Name LEE P. SHELBERG II

Title PRESIDENT

CITY OF SAN DIEGO, CALIFORNIA

NOTICE INVITING BIDS

1. **RECEIPT AND OPENING OF BIDS:** Bid(s) will be received at the Public Works Contracting Group at the location, time, and date shown on the cover of these specifications for performing work on the following project:

   CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

2. **DESCRIPTION OF WORK:** The Work involves furnishing all labor, materials, equipment, services, and other incidental works and appurtenances for the construction of the Project as described below:

   Upgrades to the existing Cabrillo Heights Neighborhood Park. Upgrades include: storm water rain gardens, children's playground, shade shelters, picnic tables, drinking fountain, fencing, trees, sidewalk and accessible parking modifications. All improvements shall comply with City, State and Federal accessibility guidelines and standards.

   The Work shall be performed in accordance with:

   - Bid No. **K-13-5784-DBB-3** and Plans numbered **36496-01-D** through **36496-31-D**, and **36497-01-D** through **36497-20-D**, inclusive.

3. **ENGINEER'S ESTIMATE:** The Engineer's estimate of the contract price are **$1,000,000.**

4. **LOCATION OF WORK:** The location of Work is as follows:

   Cabrillo Heights Neighborhood Park,

   8308 Hurlbut Street, San Diego, CA 92123

5. **CONTRACT TIME:** The Contract Time for completion of the Work shall be **180 Working Days.**

6. **CONTRACTOR'S LICENSE CLASSIFICATION:** In accordance with the provisions of California Law, the Contractor shall possess valid appropriate license(s) at the time that the Bid is submitted. Failure to possess the specified license(s) shall render the Bid as **non-responsive** and shall act as a bar to award of the Contract to any Bidder not possessing required license(s) at the time of Bid.

   The City has determined the following licensing classification for this contract:

   - **CLASS A**

7. **PRE-BID CONFERENCE:** There will be a Pre-Bid Conference to discuss the scope of the Project, bidding requirements, and Equal Opportunity Contracting Program requirements and reporting procedures in the **Public Works Contracting Group,** at **1010 Second Avenue, Suite 1400, San Diego, CA 92101** at **10:00 AM,** on **MAY 8th, 2013.**

   All potential bidders are **encouraged** to attend.

To request a copy of the agenda on an alternative format, or to request a sign language or oral interpreter for this meeting, call the Public Works Contracting Group at (619) 533-3450 at least 5 Working Days prior to the Pre-Bid Conference to ensure availability.

8. **REFERENCE STANDARDS:** Except as otherwise noted or specified, the Work shall be completed in accordance with the following standards:

1. STANDARD SPECIFICATIONS

Document No.	Filed	Description
PITS0504091	05-04-09	Standard Specifications for Public Works Construction (The GREENBOOK), 2009 Edition
PITS090110-1	09-01-10	City of San Diego Standard Specifications for Public Works Construction (The WHITEBOOK), 2010 Update *
AEC1231064	12-31-06	California Department of Transportation, Manual of Uniform Traffic Control Devices (MUTCD 2006)
769023	09-11-84	Standard Federal Equal Employment Opportunity Construction Contract Specifications and the Equal Opportunity Clause

NOTE: The City of San Diego Supplement, 2010 Update now consolidates various City Public Works Construction Standard Specifications which in the past were included in the Supplementary Special Provisions. The Bidders' attention is directed to this edition of the City Supplement for a close review to ensure no important information is missed for the preparation of the Bids.

2. STANDARD DRAWINGS

Document No.	Filed	Description
AEC1230163	12-31-06	City of San Diego Standard Drawings*
N/A	Varies	City Standard Drawings - Updates Approved For Use*
AEC0925061	09-25-06	Caltrans 2006 U.S. Customary Unit Standard Plans

NOTE: *Available online under Engineering Documents and References at: http://www.sandiego.gov/publicworks/edocref/index.shtml

9. **WAGE RATES**: Prevailing wages are not applicable to this project.

10. **ADDITIVE/DEDUCTIVE ALTERNATES:** The additive/deductive alternates have been established to allow the City to compare the cost of specific portions of the Work with the Project's budget and enable the City to make decision prior to award. The award will be established as described in the Proposal (or RFP for Design-Build contracts). The City reserves the right to award the Contract for the Base Bid only or the Base Bid plus any combination of Additive and Deductive Alternate(s).

Tony Heinrichs, Director
Public Works Department

INSTRUCTIONS TO BIDDERS

1. **PREQUALIFICATION OF CONTRACTORS:** The contractor(s) who intend to submit Bid or Proposal in response to this invitation to bid, or RFP's for GRC or As-Needed Design-Build Task Orders valued over $50,000, must be pre-qualified for the total amount proposed, inclusive of all alternate bid items or the specified Task Order limits prior to the date of Bid submittal.

   Bids from contractors who have not been pre-qualified as applicable, and Bids that exceed the maximum dollar amount at which contractors are pre-qualified, will be deemed **non-responsive** and ineligible for award or a Task Order authorization. Complete information and prequalification questionnaires are available at:

   http://www.sandiego.gov/cip/bidopps/prequalification.shtml

   The completed questionnaire, financial statement, and bond letter or a copy of the contractor's SLBE-ELBE certification and bond letter, must be submitted no later than 2 weeks prior to the bid opening to the Public Works Department - Engineering & Capital Projects Prequalification Program, 1010 Second Avenue, Suite 1200, San Diego, CA 92101. For additional information or the answer to questions about the prequalification program, please contact David Stucky at 619-533-3474 or dstucky@sandiego.gov.

2. **CONTRACTOR REGISTRATION:** Prospective bidder(s) as well as existing contractors and suppliers are required to register with the City's EOCP. Refer to 2-17, "CONTRACTOR REGISTRATION" for details.

3. **CITY'S RESPONSES AND ADDENDA:** The City at its option, may respond to any or all questions submitted in writing, via letter, or FAX in the form of an addendum. No oral comment shall be of any force or effect with respect to this solicitation. The changes to the Contract Documents through addendum are made effective as though originally issued with the Bid. The Bidders shall acknowledge the receipt of Addenda on the form provided for this purpose in the Bid.

4. **CITY'S RIGHTS RESERVED:** The City reserves the right to cancel the Invitation to Bids at any time, and further reserves the right to reject submitted Bids, without giving any reason for such action, at its sole discretion and without liability. Costs incurred by the Bidder(s) as a result of preparing Bids under the Invitation to Bid shall be the sole responsibility of each bidder. The Invitation to Bid creates or imposes no obligation upon the City to enter a contract.

5. **CONTRACT PRICING FORMAT:** This solicitation is for a Lump Sum contract with Unit Price provisions as set forth in the Bid Proposal Form(s), Volume 2 unless specified otherwise such as as-needed contracts e.g., GRC in the Contract Documents.

6. **SUBMITTAL OF "OR EQUAL" ITEMS:** See 4-1.6, "Trade Names or Equals."

7. **AWARD PROCESS:** The Award of this contract is contingent upon the Contractor's compliance with all conditions precedent to Award, including the submittal of acceptable insurance and surety bonds pursuant to San Diego Municipal Code § 22.3007. If the responsible Bid does not exceed the City's engineering estimate, the City will, in most cases, prepare contract documents for execution within 3 weeks of the date of the Bid opening and award the Contract within 5 Working Days of receipt of properly executed Contract, bond, and insurance documents.

This contract is deemed to be awarded, and effective, only upon the signing of the Contract by the Mayor or designee of the City.

8. **SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 2-3, "SUBCONTRACTS" which requires the Contractor to perform not less than the amount therein stipulated with its own forces. Failure to comply with these requirements may render the Bid **non-responsive** and ineligible for award.

9. **AVAILABILITY OF PLANS AND SPECIFICATIONS:** Contract Documents may be obtained by visiting the City's website: http://www.sandiego.gov/engineering-cip/. Plans and Specifications for this contract are also available for review in the office of the City Clerk or Public Works Contracting Group.

10. **QUESTIONS:** Questions about the meaning or intent of the Contract Documents as related to the scope of Work and of technical nature shall be directed to the Project Manager prior to Bid opening. Interpretations or clarifications considered necessary by the Project Manager in response to such questions will be issued by Addenda, which will be uploaded to eBidboard (or mailed or delivered to all parties recorded by the City as having received the Contract Documents for Minor Construction contracts).

    The Director (or designee), Public Works Department is the officer responsible for opening, examining, and declaring of competitive Bids submitted to the City for the acquisition, construction and completion of any public improvement except when otherwise set forth in these documents. Questions in these areas of responsibility (e.g., i.e. Pre-qualification, SCOPe information, bidding activities, bonds and insurance, etc. as related to this contract shall be addressed to the Contract Administration, Public Works Contracting Group, 1010 Second Avenue, Suite 1400, San Diego, California, 92101, Telephone No. (619) 533-3450.

    Questions received less than 14 days prior to the date for opening of Bids may not be answered. Only questions answered by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. It is the Bidder's responsibility to become informed of any addenda that have been issued and to include all such information in its Bid.

11. **ELIGIBLE BIDDERS:** No person, firm, or corporation shall be allowed to make, file, or be interested in more than 1 Bid for the same work unless alternate Bids are called for. A person, firm or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices on materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders or from submitting a Bid in its own behalf.

12. **SAN DIEGO BUSINESS TAX CERTIFICATE:** All Contractors, including Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, first floor, before the Contract can be executed.

13. **PROPOSAL FORMS:** Bid shall be made only upon the Bidding Documents i.e., Proposal form attached to and forming a part of the specifications. The signature of each person signing shall be in longhand.

    The entire specifications for the bid package do not need to be submitted with the bid. Bidder shall complete and submit, only, all pages in the "Bidding Document" Section (see Volume 2) as their Bid per the schedule given under "Required Documents Schedule," (see Volume 1). Bidder

is requested to retain for their reference other portions of the Contract Documents that are not required to be submitted with the Bid.

The City may require any Bidder to furnish a statement of experience, financial responsibility, technical ability, equipment, and references.

Bids and certain other specified forms and documents shall be enclosed in a sealed envelope and shall bear the title of the work and name of the Bidder and the appropriate State Contractors License designation which the Bidder holds.

Bids may be withdrawn by the Bidder prior to, but not after, the time fixed for opening of Bids.

14. BIDDERS' GUARANTEE OF GOOD FAITH (BID SECURITY): With the exception of the contracts valued $5,000 or less, GRC and Design-Build contracts, and contracts subject to the Small and Local Business Program of $250,000 or less e.g., ELBE contracts, each Bidder shall accompany its Bid with either a cashier's check upon some responsible bank, or a check upon such bank properly certified or an approved corporate surety bond payable to the City of San Diego, for an amount of not less than 10% of the aggregate sum of the Bid, which check or bond, and the monies represented thereby shall be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into such contract and furnish the required final bonds.

The Bidder agrees that in case of Bidder's refusal or failure to execute this contract and give required final bonds, the money represented by a cashier's or certified check shall remain the property of the City, and if the Bidder shall fail to execute this contract, the Surety agrees that it will pay to the City damages which the City may suffer by reason of such failure, not exceeding the sum of 10% of the amount of the Bid.

A Bid received without the specified bid security will be rejected as being **non-responsive**.

15. AWARD OF CONTRACT OR REJECTION OF BIDS: This contract may be awarded to the lowest responsible and reliable Bidder (for Design-Build contracts refer to the RFP for the selection and award information). Bidders shall complete the entire Bid schedule (e.g., schedule of prices). Incomplete price schedules will be rejected as being **non-responsive**.

The City reserves the right to reject any or all Bids, and to waive any informality or technicality in Bids received and any requirements of these specifications as to bidding procedure.

Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City from the Bidder within 3 Working Days, excluding Saturdays, Sundays, and state holidays, after the opening of Bids, of written notice which includes proof of honest, credible, clerical error of material nature, free from fraud or fraudulent intent, and of evidence that reasonable care was observed in the preparation of the Bid.

A non-selected Bidder may protest award of the Contract to the selected Bidder by submitting a written "Notice of Intent to Protest" including supporting documentation which shall be received by Public Works Contracting Group no later than 10 days after the City's announcement of the selected Bidder or no later than 10 days from the date that the City issues notice of designation of a Bidder as non-responsible in accordance with San Diego Municipal Code Chapter 2, § 22.3029, "Protests of Contract Award."

The City of San Diego will not discriminate with regard to race, religious creed, color, national origin, ancestry, physical handicap, marital status, sex or age, in the award of contracts.

Each Bid package properly executed as required by these specifications shall constitute a firm offer, which may be accepted by the City within the time specified in the Invitation to Bids.

The City reserves the right to evaluate all Bids and determine the lowest Bidder (or winner for Design-Build contracts) on the basis of any proposed alternates, additive items or options, at its discretion.

16. **BID RESULTS:** The Bid opening by the City shall constitute the public announcement of the Apparent Low Bidder. In the event that the Apparent Low Bidder is subsequently deemed non-responsive or non-responsible, a public announcement will be posted in the City's web page: http://www.sandiego.gov/cip/index.shtml, with the name of the newly designated Apparent Low Bidder.

    To obtain Bid results, either attend Bid opening, review the results on the City's web site, or provide a self-addressed, stamped envelope, referencing Bid number, and Bid tabulation will be mailed to you upon verification of extensions. Bid results cannot be given over the telephone.

17. **THE CONTRACT:** The Bidder to whom award is made shall execute a written contract with the City of San Diego and furnish good and approved bonds and insurance certificates specified by the City within 10 Working Days after receipt by Bidder of a form of contract for execution unless an extension of time is granted to the Bidder in writing.

    If the Bidder takes longer than 10 Working Days to fulfill these requirements, then the additional time taken shall be added to the Bid guarantee. The Contract shall be made in the form adopted by the City, which includes the provision that no claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.

    If the Bidder to whom the award is made fails to enter into the contract as herein provided, the award may be annulled and the Bidder's Guarantee of Good Faith will be subject to forfeiture. An award may be made to the next lowest responsible and reliable Bidder who shall fulfill every stipulation embraced herein as if it were the party to whom the first award was made.

    For contracts that are not Design-Build, pursuant to the San Diego City Charter section 94, the City may only award a public works contract to the lowest responsible and reliable Bidder. The City will require the Apparent Low Bidder to (i) submit information to determine the Bidder's responsibility and reliability, (ii) execute the Contract in form provided by the City, and (iii) furnish good and approved bonds and insurance certificates specified by the City within 10 Working Days, unless otherwise approved by the City, in writing after the Bidder receives notification from the City, designating the Bidder as the Apparent Low Bidder and formally requesting the above mentioned items.

    The award of the Contract is contingent upon the satisfactory completion of the above mentioned items and becomes effective upon the signing of the Contract by the Mayor or designee. If the Apparent Low Bidder does not execute the Contract or submit required documents and information, the City may award the Contract to the next lowest responsible and reliable Bidder who shall fulfill every condition precedent to award. A corporation designated as the Apparent Low Bidder shall furnish evidence of its corporate existence and evidence that the officer signing

the Contract and bond for the corporation is duly authorized to do so.

18. EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK: The Bidder shall examine carefully the Project Site, the Plans and Specifications, the GRC Unit Price Books if applicable, other materials as described in the Special Provisions, Section 2-7, and the proposal forms (e.g., Bidding Documents) therefore. The submission of a Bid or GRC Task Order Proposal shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of Work, the quantities of materials to be furnished, and as to the requirements of the Bidding Documents Proposal, Plans, and Specifications.

19. DRUG-FREE WORKPLACE:

a) General:

City projects are subject to City of San Diego Resolution No. R-277952 adopted on May 20, 1991. Bidders shall become aware of the provisions of Council Policy 100-17 which was established by Resolution No. R-277952. The policy applies equally to the Contractor and Subcontractors. The elements of the policy are outlined below.

b) Definitions:

"Drug-free workplace" means a site for the performance of work done in connection with a contract let by City of San Diego for the construction, maintenance, or repair of any facility or public work by an entity at which employees of the entity are prohibited from engaging in the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance in accordance with the requirements of this section.

"Employee" means the employee of a contractor directly engaged in the performance of work pursuant to a contract as described in Section 3, "City Contractor Requirements."

"Controlled substance" means a controlled substance in schedules I through V of Section 202 of the Controlled Substances Act (21 U.S.C. Sec. 812).

"Contractor" means the department, division, or other unit of a person or organization responsible to the contractor for the performance of a portion of the work under the contract.

c) City Contractor Requirements:

Every person or organization awarded a contract or grant by the City of San Diego for the provision of services shall certify to the City that it will provide a drug-free workplace by doing all following:

a. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's organization's workplace and specifying the actions that will be taken against employees for violations of the prohibition.

b. Establishing a drug-free awareness program to inform employees about all of the following:

i. The dangers of drug abuse in the workplace.

ii. The person's or organization's policy of maintaining a drug-free workplace.

iii. Any available drug counseling, rehabilitation, and employee assistance programs.

iv. The penalties that may be imposed upon employees for drug abuse violations.

c. Posting the statement required by subdivision (1) in a prominent place at contractor's main office. For projects large enough to necessitate a construction trailer at the job site, the required signage would also be posted at the Site.

The Contractor shall include in each subcontract agreement language which indicates the Subcontractor's agreement to abide by the provisions of subdivisions a) through c) above. The Contractors and Subcontractors shall be individually responsible for their own drug-free workplace programs.

Note: The requirements of a drug-free awareness program can be satisfied by periodic tailgate sessions covering the various aspects of drug-abuse education. Although an in-house employee assistance program is not required, contractors should be able to provide a listing of drug rehabilitation and counseling programs available in the community at large.

Questions about the City's Drug-free Workplace Policy shall be referred to the Contract Specialist, Public Works Contracting Group.

20. AMERICANS WITH DISABILITIES ACT:

a) General: City projects are subject to City of San Diego Resolution No. R-282153 adopted on June 14, 1993. The Bidders shall become aware of the provisions of Council Policy 100-04 which was established by Resolution No. R-282153. The policy applies equally to the Contractor and all Subcontractors. The elements of the policy are outlined below.

b) Definitions:

"Qualified individual with a disability" means an individual with a disability who satisfies the requisite skill, experience, education and other job-related requirements of the employment position such individual holds or desires, and who, with or without reasonable accommodation, can perform the essential functions of such position.

"Employee" means the employee of the Contractor directly engaged in the performance of Work.

c) The City Requirements: Every person or organization entering into a contractual agreement with or receiving a grant from the City of San Diego shall certify to the City of San Diego that it will comply with the ADA by adhering to all of the provisions of the ADA listed below.

i. The Contractor shall not discriminate against qualified persons with disabilities in any aspects of employment, including recruitment, hiring, promotions, conditions and privileges of employment, training, compensation, benefits, discipline, layoffs, and termination of employment.

ii. No qualified individual with a disability may be excluded on the basis of disability, from participation in, or be denied the benefits of services, programs, or activities by the Contractor or Subcontractors providing services for the City.

iii. The Contractor shall post a statement addressing the requirements of the ADA in a prominent place at the worksite. The Contractor shall include in each subcontract agreement, language which indicates the Subcontractor's agreement to abide by the provisions of subdivisions (a) through (c) inclusive of Section 3. The Contractor and Subcontractors shall be individually responsible for their own ADA employment programs. Questions about the City's ADA Policy should be referred to the Contract Administrator.

21. CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE: This contract is subject to City of San Diego Municipal Code §22.3224 as amended 11/24/08 by ordinance O-19808. Bidders shall become aware that the requirements apply to Contractors and Subcontractors for contracts greater than $50,000 in value.

Upon award, amendment, renewal, or extension of this contract, the Contractors shall complete a Pledge of Compliance attesting under penalty of perjury that they complied with the requirements of this section.

The Contractors shall ensure that their Subcontractors whose subcontracts are greater than $50,000 in value complete a Pledge of Compliance attesting under penalty of perjury that they complied with the requirements of this section. Subcontractors may access the Pledge of Compliance at:

http://www.sandiego.gov/purchasing/pdf/contractor_standards_questionnaire.pdf.

The Contractors shall include in each subcontract agreement, language which requires Subcontractors to abide by the provisions of City of San Diego Municipal Code §22.3224. A sample provision is as follows:

"**Compliance with San Diego Municipal Code §22.3224**: Subcontractor acknowledges that it is familiar with the requirements of San Diego Municipal Code §22.3224 ("Contractor Standards"), and agrees to comply with requirements of that section. The Subcontractor further agrees to complete the Pledge of Compliance, incorporated herein by reference."

22. NOTICE OF LABOR COMPLIANCE PROGRAM APPROVAL: The City of San Diego received initial approval as a Labor Compliance Program on August 11, 2003. The Labor Compliance Program Manual is available at:

http://www.sandiego.gov/eoc/laborcompliance/#manual.

The limited exemption from prevailing wages pursuant to Labor Code §1771.5(a) does not apply to contracts under jurisdiction of the Labor Compliance Program. Inquiries, questions, or assistance about the Labor Compliance Program should be directed to: Equal Opportunity Contracting Program, 1010 Second Avenue, Suite 1400, MS 614C, San Diego, CA 92101, Tel. (619) 533-3450.

23. **PAYROLL RECORDS:** The Contractor's attention is directed to the City of San Diego Labor Compliance Program, Section IV, pages 4-7, and the State of California Labor Code §§ 1771.5(b) and 1776 (Stats. 1978, Ch. 1249). These require, in part, that the Contractor and Subcontractors maintain and furnish to the City, at a designated time, a certified copy of each weekly payroll containing a statement of compliance signed under penalty of perjury.

    The Contractor and Subcontractors shall submit weekly certified payrolls online via Prism® i.e., the City's web-based labor compliance program. Instructions on how to use the system will be provided to the Contractor after the award.

    The Contractor shall be responsible for the compliance with these provisions by Subcontractors. The City shall withhold contract payments when payroll records are delinquent or inadequate, or when it is established after investigation that underpayment has occurred.

24. **APPRENTICES ON PUBLIC WORKS:** The Contractor shall abide by the requirements of §§1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.

25. **EQUAL BENEFITS:** This contract is subject to the City's Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of the San Diego Municipal Code (SDMC).

    In accordance with the EBO, Bidders shall certify they will provide and maintain equal benefits as defined in SDMC §22.4302 for the duration of the Contract (SDMC §22.4304(f)). Failure to maintain equal benefits is a material breach of the Contract (SDMC §22.4304(e)). The Contractor shall notify employees of their equal benefits policy at the time of hire and during open enrollment periods and shall post a copy of the following statement in an area frequented by employees:

    > "During the performance of a contract with the City of San Diego, this employer will provide equal benefits to its employees with spouses and its employees with domestic partners."

    The Contractor shall give the City access to documents and records sufficient for the City to verify the contractors are providing equal benefits and otherwise complying with EBO requirements.

    Full text of the EBO and the Rules Implementing the Equal Benefits Ordinance are posted on the City's website at www.sandiego.gov/purchasing/ or can be requested from the Equal Benefits Program at (619) 533-3948.

26. **LIMITED COMPETITION:** When designated as restricted competition on the cover page, this contract may only be bid by the Contractors on the approved SLBE-ELBE Construction Contractors List. For information regarding the SLBE-ELBE Construction Program and registration visit the City's web site: http://www.sandiego.gov.

27. **CITY STANDARD PROVISIONS.** This contract is subject to the following standard provisions. See The WHITEBOOK for details.

    a) The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.

    b) The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.

c) The City of San Diego Municipal Code §22.3004 for Pledge of Compliance.

d) The City of San Diego's Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.

e) Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.

f) The City's Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).

g) The City's Information Security Policy (ISP) as defined in the City's Administrative Regulation 90.63.

28. PRE-AWARD ACTIVITIES:

Pre-award Submittals - The Apparent Low Bidder (or winner in case of Design-Build contracts) shall provide the information required within the time specified in "Required Documents," of this bid package. Failure to provide the information within the time specified may result in the Bid being rejected as **non-responsive**.

If the Bid is rejected as non-responsive, the Apparent Low Bidder (or winner in case of Design-Build contracts) shall forfeit the Bid Security required under Invitation to Bids, of this bid package. The decision that the Apparent Low Bidder (or winner in case of Design-Build contracts) is non-responsive for failure to provide the information required within the time specified shall be at the sole discretion of the City.

AFFIDAVIT OF DISPOSAL

WHEREAS, on the _____ DAY OF _____, 2____, the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION
(Name of Project)

as particularly described in said contract and identified as Bid No. **K-13-5784-DBB-3;** SAP No. (WBS/CC/IO) **S-00763 / B-10025** and **WHEREAS**, the specification of said contract requires the Contractor to affirm that "all brush, trash, debris, and surplus materials resulting from this project have been disposed of in a legal manner"; and **WHEREAS**, said contract has been completed and all surplus materials disposed of:

_____

_____

_____

NOW, THEREFORE, in consideration of the final payment by the City of San Diego to said Contractor under the terms of said contract, the undersigned Contractor, does hereby affirm that all surplus materials as described in said contract have been disposed of at the following location(s):

_____

_____

_____

and that they have been disposed of according to all applicable laws and regulations.

Dated this _____ DAY OF _____, 2_____.

_____Contractor
by

ATTEST:

State of _____
County of _____

On this _____ DAY OF _____, 2_____, before the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, personally appeared _____ known to me to be the _____ Contractor named in the foregoing Release, and whose name is subscribed thereto, and acknowledged to me that said Contractor executed the said Release.

Notary Public in and for said County and State

SUPPLEMENTARY SPECIAL PROVISIONS

THESE SUPPLEMENTARY SPECIAL PROVISIONS CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE GREENBOOK) CURRENTLY ADOPTED BY THE CITY, INCLUDING ITS CURRENT SUPPLEMENT AMENDMENTS (CITY SUPPLEMENTS INCLUDED IN THE WHITEBOOK), EXCEPT FOR THE FOLLOWING:

STYLE OF SPECIFICATIONS

The City is gradually standardizing the style and language of the standard specifications for the public works construction. The new style and language follows the Federal guidelines for "Plain Language" to the extent possible.

The use of this new style does not change the meaning of a specification not yet using this style. Where used in the Contract Documents, statement or command type phrases (i.e., active voice and imperative mood) refer to and are directed at the Bidder or Contractor as applicable. The specifications are written to the Bidder before award and the Contractor after. Before award, interpret sentences written in the imperative mood as starting with "The Bidder must" and interpret "you" as "the Bidder" and "your" as "the Bidder's." After award, interpret sentences written in the imperative mood as starting with "The Contractor must" and interpret "you" as "the Contractor" and "your" as "the Contractor's." Similarly, interpret "we" and "us" as "the City" and "our" as "the City's."

PART 1 – GENERAL PROVISIONS

SECTION 1 – TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

1-2 TERMS AND DEFINITIONS.

Agency – ADD the following:

Regulatory activities handled by the City of San Diego Developmental Services, Fire and Planning Departments, or any other City Department are not subject to the responsibilities of the City under this contract.

Certificate of Compliance – To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

Certificate of Compliance – A written document signed and submitted by a supplier or manufacturer that certifies that the material or assembled material supplied to the Work site complies with the requirements of the Contract Documents.

Contract Documents – To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

The Agreement, Addendum, Invitation to Bid, Instructions to Bidders, special notice page, funding agency provisions, Bid and documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award when attached as an exhibit to the Contract, Bonds, permits from jurisdictional regulatory agencies, Supplementary Special Provisions (SSP), City's EOCP

Requirements, City Supplement, Plans, Standard Plans, Construction Documents, Reference Specifications listed in the Invitation to Bid or the RFP for Design-Build contracts, Request for Qualifications (RFQ), Statement of Qualifications (SOQ), Request for Proposals (RFP), modifications issued after the execution of the Contract e.g., Change Orders, Construction Manager At Risk's Guaranteed Maximum Price including written qualifications, assumptions and conditions thereto and Pre-construction Services Agreement.

ADD: **Limited Notice To Proceed** – A written notice given from the City to the Contractor that authorizes the Contractor to start a limited amount of work that is not Construction Work, such as finalizing subcontract agreements, ordering materials, mobilization, furnishing a field office, and any other preliminary work done prior to performing Construction Work.

Normal Working Hours - To the City Supplement, ADD the following:

The Normal Working Hours shall be 8:30 AM to 3:30 PM.

Notice of Completion (NOC) – ADD the following:

See California Civil Code section 9204.

Samples - Physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be evaluated.

SECTION 2 - SCOPE AND CONTROL OF WORK

2-1.2.2 Joint Venture Contractors. To the City Supplement, last paragraph, DELETE in its entirety and SUBSTITUTE with the following:

The Joint Venture shall designate an on-site representative and an alternate in writing. The on-site representative and the alternate shall have the full authority to bind all Joint Venture partners.

The Joint Venture shall provide a copy of the Joint Venture agreement and the Joint Venture license to the City within 10 Working Days after receipt by the Bidder of Contract forms.

2-3.1.2 Subcontractor List. ADD the following:

For Extra Work, the Contractor shall submit Form CC10, "CONTRACT CHANGE ORDER (CCO)" with each CCO proposal. Form CC10 is available for download from the EOCP site at: http://www.sandiego.gov/eoc/pdf/cc10.pdf

2-3.2 Self Performance. DELETE in its entirety and SUBSTITUTE with the following:

The Contractor shall perform, with its own organization, Contract work amounting to at least **25 percent** of the base bid alone or base bid and any additive or deductive alternate(s) that together when adde0.d or deducted form the basis of determining the Apparent Low Bidder as specified.

2-3.3 Status of Subcontractors. ADD the following:

With every request for payment, the Contractor shall submit to the Engineer a breakdown showing monthly and cumulative amounts of the Work performed under Change Order by the Contractor and the Subcontractors. The reporting format shall be approved by the Engineer.

2-3.4 Subcontract Requirements. To the City Supplement, ADD the following paragraph:

The Contractor shall ensure that all of its Subcontractors are licensed at the time of the execution of their subcontract agreements. In the event a Subcontractor is not properly licensed, the Contractor shall cease payment to Subcontractor for all work performed when the Subcontractor was improperly licensed. Any payment made by the Contractor to a Subcontractor for work performed when the Subcontractor was unlicensed shall be returned to the City.

Where the Contract Documents require that a particular product be installed or applied by an applicator approved by the manufacturer, it is the Contractor's responsibility to ensure the Subcontractor or Supplier employed for such work is approved by the manufacturer.

2-5.2 Precedence of Contract Documents. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

2-5.2 Precedence of Contract Documents. If there is a conflict between any of the Contract Documents, the document highest in the order of precedence shall control. The order of precedence, from highest to lowest, shall be as follows:

1) Permits (i.e., issued by jurisdictional regulatory agencies)
2) Change Orders and Supplemental Agreements; whichever occurs last
3) Contract and Agreement
4) Addenda
5) Bid (e.g., price Proposal for Design-Build contracts)
6) Request for Proposal (RFP)
7) Invitation to Bid
8) Instruction to Bidders
9) Request for Qualifications (RFQ)
10) Special Provisions (i.e., City's EOCP Requirements, City Supplement, and Supplementary Special Provisions (SSP))
11) Plans
12) Construction Documents (for Design-Build contracts)
13) Standard Drawings
14) Reference Specifications (e.g., GREENBOOK)
15) Technical Proposal (for Design-Build contracts)
16) Statement of Qualifications (SOQ)

When additional requirements by the funding sources are physically or by reference incorporated in the Contract Documents, the funding source's requirements shall govern **unless specified otherwise**.

Figured dimensions shall take precedence over scaled dimensions. Detailed drawings shall take precedence over general drawings.

2-5.3.1 General. DELETE in its entirety and SUBSTITUTE with the following:

When required by the Contract Documents or when requested by the Engineer, the Contractor shall provide the submittals as specified in 2-5.3.2, 2-5.3.3, and 2-5.3.4 to the Engineer. Materials shall neither be furnished nor fabricated, nor shall any work for which submittals are required be performed before the required submittals have been reviewed and accepted by the Engineer. The payment for the submittals shall be included in the various Bid items. Neither review nor acceptance of submittals by the Engineer shall relieve the Contractor from responsibility for errors, omissions, or deviations from the Contract Documents, unless such deviations were specifically called to the attention of the Engineer in the letter of transmittal. The Contractor shall be responsible for the correctness of the submittals.

The Contractor shall allow a minimum of 20 working days for review of submittals unless otherwise specified in the Special Provisions. Each submittal shall be accompanied by a letter of transmittal.

2-5.3.2 Working Drawings.

Table 2-5.3.2 (A). MODIFY table to include the following:

Item	Subsection Number	Title	Subject
17	201-1	Portland Cement Concrete	Concrete paving, Concrete footings

2-5.3.2 Shop Drawings.

Table 2-5.3.3 (A). MODIFY table to include the following:

Item	Subsection Number	Title	Subject
8	212-1.14	Steel Shade Structure	Submittals

2-5.3.4 Supporting Information. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

2-5.3.4 Supporting Information. ADD the following:

1. For landscaping and irrigation materials, submit samples and test results to the Engineer within 15 days of the NTP in accordance with 2-5.3, "Submittals."

2. Submit samples of the materials with cut sheets of the products. Organize cut sheets in a binder for review and approval by the Engineer prior to use on the Project. Cut sheets shall include the Project Name, Project Number, Contractor Name, Submittal Number and clearly indicate the specific product to be used. When photos of material are required, they shall be clear in resolution, identifying the specific item for review, indicating name of the item, source and date taken. The material shown in the photo shall be currently available for use on the project.

3. Identify deviation from any of the specified material clearly, including cut sheets and samples of both the specified material and basis for the substitution.

ADD: 2-5.3.5 Samples. Contractor shall provide samples of the following materials in the quantities required for approval by the engineer. Materials shall be delivered 60 days minimum (15 days for shrubs) prior to their incorporation into the work.

1). Concrete paving with broom finish (4-ft. X 4-ft.), expansion joints and scoring lines.

2). Cobble mulch for planter areas.

3). Shrub container plants (3 of each - to be incorporated into the work, if approved).

4). Trees (to be incorporated into the work, if approved).

5). Decomposed Granite

6). Playground Sand

2-6 WORK TO BE DONE. ADD the following:

In accordance with the provisions of California Law, the Contractor shall possess or require the Subcontractor(s) to possess valid appropriate license(s) for the Work being performed.

2-7 SUBSURFACE DATA. ADD the following:

In preparation of the Contract Documents, the designer has relied upon the following reports of explorations and tests of subsurface conditions at the Work Site:

1. Feasibility Study Report for the City of San Diego Low Impact Development (LID) Concept Study Cabrillo Heights Park, San Diego, California dated April 4, 2008 by Allied Geotechnical Engineers, Inc.

The report listed above is included as Appendix "C".

2. Limited Geotechnical Evaluation Cabrillo Neighborhood Park by Nova Engineers and Environmental, dated February 18, 2011.

The report listed above is included as Appendix "E".

2-9.1 Permanent Survey Markers. DELETE in its entirety and SUBSTITUTE with the following:

The Contractor shall notify the Engineer or the owner on a Private Contract, at least 7 days before starting the Work to allow for the preservation of survey monuments, and benchmarks. The Engineer or the owner on a Private Contract through its Registered Land Surveyor or a Registered Civil Engineer, will, at its cost, file a Corner Record or a Record of Survey referencing survey monuments subject to disturbance in the Office of the County Surveyor in accordance with Business and Professions Code 8771.

The Contractor shall not disturb or permanently cover survey monuments or benchmarks without the consent of the Engineer or the owner on a Private Contract. The Contractor shall bear the expense of uncovering and replacing any that may be disturbed or covered without permission. When a change is made in the finished elevation of the pavement of any roadway in which a street survey monument is located, the Contractor shall adjust the monument riser ring to the new grade within 7 days of finished paving unless otherwise specified in the Special Provisions. If a referenced monument is unable to be reset in its original location due to improvements, the Contractor shall establish the reset monument in a location approved by the Engineer.

Replacing and establishing survey references e.g., survey monuments and benchmarks shall be done only under the direction of the Engineer by a Registered Land Surveyor or a Registered Civil Engineer authorized to practice land surveying within the State of California.

2-9.2 Survey Services. DELETE in its entirety and SUBSTITUTE the following:

The Contractor shall be responsible for all surveying services or as may be specified in these special

provisions.

The payment for survey services shall be included in various bid items unless a Bid item for Survey Service has been provided.

2-10 AUTHORITY OF BOARD AND ENGINEER. ADD the following:

Regulating agencies of the City, such as Developmental Services, Fire and Planning Departments, enforce Legal Requirements and standards. These enforcement activities are not subject to the responsibilities of the Engineer under this Agreement.

2-11 INSPECTION. ADD the following:

The City may utilize field inspectors to assist the Engineer during construction in observing performance of the Contractor. The inspector is for the purpose of assisting the Engineer and shall not be confused with an inspector with a City regulatory agency or with a Special Inspector.

Code compliance testing (including all Geotechnical requirements) and inspections required by codes or ordinances, or by a plan approval authority, shall be the responsibility of and shall be paid by the Contractor, unless otherwise provided in the Contract Documents.

The Contractor's quality control testing and inspections shall be the sole responsibility of the Contractor and paid by the Contractor included in the Bid price.

2-16 TECHNICAL STUDIES AND DATA. To the City Supplement, ADD the following:

In preparation of the Contract Documents, the designer has relied upon the following studies, data, reports of explorations, and tests:

1. Drainage Study (100%) for Cabrillo Heights Neighborhood Park dated May 2012 by Burkett & Wong Engineers.

The report listed above is included as Appendix "B".

2. Structural Calculations for pre-fabricated shade structures by Burkett & Wong dated October 24, 2012

The report listed above is included as Appendix "D".

ADD: 2-17 CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:

a) **Prior** to the Award of the Contract or each Task Order, you and your Subcontractors and Suppliers **must** register with Prism®, the City's web-based contract compliance portal at:

https://pro.prismcompliance.com/default.aspx.

b) The City may not award the contract until registration of all subcontractors and suppliers is complete. In the event this requirement is not met within the time frame specified in the Notice of Intent to Award letter, the City reserves the right to rescind the Notice of Award / Intent to Award and to make the award to the next responsive and responsible bidder / proposer.

SECTION 3 – CHANGES IN WORK

3-3.2.2 Basis for Establishing Costs. To the City Supplement, item a) Labor, To the City Supplement, first and second paragraphs, DELETE in their entirety and SUBSTITUTE with the following:

The City reserves the right to request financial records of salaries for an employee, wages, bonuses and deductions to substantiate the actual cost of labor certified by a California licensed Certified Public Accountant. The Contractor shall use the City provided form i.e., "PUBLIC WORKS PAYROLL REPORTING FORM" which is available at http://www.sandiego.gov/eoc/pdf/payrollreport.pdf to list the labor rates of its personnel and Subcontractors who work on this Project. An initial submittal shall be made prior to NTP.

The payment for payroll records shall be included in the various Bid item unless a separate Bid item has been provided.

SECTION 4 - CONTROL OF MATERIALS

4-1.3.1 General. First paragraph, ADD the following:

Other standard items or materials typically accepted by Certificate of Compliance shall not require inspection at the source unless specified in the Special Provisions. For a list of these items or materials, the Contractor may refer to the Contract Documents.

4-1.3.4 Inspection Paid For by the Contractor. To the City Supplement, ADD the following:

The Contractor shall employ and pay for the services of qualified inspection entity to perform specialty inspection services as specified here:

- Independent Playground Safety Inspector

For Additive Alternate A, Special Inspection is required for excavation, rebar placement and concrete for caissons for net barrier fencing as required by the Development Services Department permit.

4-1.5 Certificates of Compliance. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

4-1.5 Certificates of Compliance. DELETE in its entirety and SUBSTITUTE with the following:

Certificates of Compliance shall be furnished to the Engineer prior to the use of any material or assembled material for which these Specifications so require or if so required by the Engineer.

The Engineer may waive the materials testing requirements of the Specifications and accept a Certificate of Compliance. Manufacturing test data may be required by the Engineer to be included with the submittal.

Materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The submission of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Documents, and any material not conforming to the requirements will be subject to rejection whether in place or not.

When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the City shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

4-1.6 Trade Names or Equals. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

Whenever materials or equipment are indicated in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function, and quality required. Unless stated otherwise, materials or equipment of other Suppliers may be accepted if sufficient information is submitted to the Engineer for review to determine whether the material or equipment proposed is equivalent or equal to that named.

a) The Contractor shall submit its list of proposed substitutions for "an equal" ("or equal") item(s) **no less than 15 Working Days prior to Bid due date** and on a City form when provided by the City.

   i. The City will respond to the Contractor's substitution proposal by at least 3 Working Days prior to the Bid due date. If the City fails to respond to the Contractor's substitution proposal within the specified time period, the substitution proposal will be deemed denied.

   ii. The Contractor may bring forward a substitution proposal after Award that was denied based on the City's failure to respond by submitting a "Cost Reduction Proposal" in accordance with 3-1.3.

b) The request for substitution shall include the following information:

   i. Whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents to adopt the design to the proposed substitute.

ii. Whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

iii. All variations of the proposed substitute from the items originally specified will be identified.

iv. Available maintenance, repair, and replacement service requirements. The manufacturer shall have a local service agency within 50 miles of the site which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24 hours.

v. Certification that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, and be similar and of equal substance to that indicated, and be suited to the same use as that specified.

c) There is no guaranteed time frame for the City's review of the substitution requests.

d) The burden of proof as to the type, function, and quality of any such substitute product, material or equipment shall be upon the Contractor. The Engineer may require at the Contractor's expense additional data about the proposed substitute.

e) If the Engineer takes no exceptions to the proposed substitution, it shall not relieve the Contractor from responsibility for the efficiency, sufficiency, quality, and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name.

f) The lack of action(s) on the Engineer's side within the Contractor's requested time shall not constitute acceptance of the substitution.

g) Acceptance by the Engineer of a substitute item shall not relieve the Contractor of the responsibility for full compliance with the Contract Documents.

h) For the substitution review process or to have materials listed on the AML, refer to the AML standard review process.

i) The Bid submittal shall be based on the material and equipment specified by name in the Contract. If the proposal is rejected by the Engineer, the Contractor shall not be entitled to either an extension in Contract Time, increase in the Contract Price, or both.

j) As applicable, no Shop Drawing or Working Drawing submittals shall be made for a substitute item nor shall any substitute item be ordered, installed, or utilized without the Engineer's prior written.

k) The Contractor shall reimburse the City for the charges of the Engineer for evaluating each proposed substitute.

l) For Design-Build contracts, one copy of all designer reviewed submittals shall be provided to the Engineer.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK

6-1.2 Commencement of Work. To the GREENBOOK and the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

Unless specified otherwise, construction shall start within 5 Working Days after NTP and be diligently prosecuted to completion within the Contract Time. The Contractor shall not start any construction activity at the Site until the Pre-construction Meeting is held and the NTP has been issued by the Engineer.

Upon the Contractor's written request, the City may delay the NTP as follows:

a) Up to 5 Working Days from the Pre-construction Meeting, or

b) Up to 40 Working Days from the Limited NTP for the preparation, submittal, obtaining approval for and filing of the PRDs in accordance with 801, "STORM WATER POLLUTION CONTROL," or

c) Up to 60 Working Days from the Limited NTP for the preparation, submittal, and approval of the TCP on "D-sheets" when specified in 7-10.2, "Traffic Control."

The Contractor shall notify SDG&E at least 10 Working Days prior to excavating within 10' of SDG&E Underground High Voltage Transmission Power Lines (i.e., 69 KV and higher).

For areas that do not require engineered TCP on D-sheets, the Contractor may at any time after the Pre-construction Meeting obtain a TCP Permit via Working Drawings or the City's over the counter process and start the Work. If the Contractor decides to commence the construction work before the completion of the D-sheet TCPs, the Contractor shall forfeit the 60 Working Days specified here. The D-sheet TCP shall be done concurrently and no additional time will be granted.

For paving Work, the Contractor shall coordinate the Work to facilitate the installation and protection of the new curb ramps and associated concrete work prior to commencing the asphalt overlay operations. The Work at a specific location shall not commence until all layouts and measurements are agreed upon by both the Contractor and the Engineer.

ADD: 6-1.8 Pre-construction Meeting. Within 20 Working Days from the Limited NTP the Engineer will schedule a mandatory pre-construction meeting (Pre-construction Meeting) with the Contractor. The agenda will include items such as NTP, design services and submittal and review process for Design-Build contracts, critical elements of the work schedule, submittal schedule, cost breakdown of major lump sum items, payment requests and processing, environmental and community concerns, coordination with the involved utility firms, the level of record project documents required and emergency telephone numbers for all representatives involved in the course of construction.

ADD: 6-8.1.3 Site Observation Visits.

Observations herein specified shall be made by the Resident Engineer, Parks and Recreation Representative and Project Manager. The Contractor shall request site observations 48 hours minimum in advance of the time observation is required.

Site observations shall be required for the following parts of the work (completed portions of work shall be combined for single observation visit whenever possible):

1). Review of paving and site furnishing samples.

2). Review and tagging of trees.

3). Review and approval of layout of concrete formwork.

4). Review and approval of all proposed locations of sleeves, conduits, pressure supply line, manual and automatic control valves (manifold locations), automatic controller and sprinkler heads.

5). Review of irrigation controller installation and operation of automatic valves and flow sensor.

6). Review of irrigation mainline, lateral line pressure tests.

7). Review of irrigation swing joint assembly installation.

8). Sprinkler coverage tests (provide automation from controller at time of test).

9). Incorporation of soil conditioner and fertilizer into the soil and upon completion of fine grading prior to planting.

10). Upon delivery of plant materials to the project site.

11). When trees and shrubs are spotted in place for planting, but before planting holes are excavated. Where trees are proposed to be located within existing rotor irrigation zones, they must be spotted by the Landscape Architect according to providing sufficient distance from rotors.

12). When all specified work, except the maintenance period has been completed. Acceptance and written approval of completed work shall establish the beginning of the maintenance and plant establishment period.

13). At the completion of the maintenance and plant establishment period. This final site observation visit shall establish the beginning date for the plant material guarantee period.

ADD: 6-8.1 Completion. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

6-8.1 Completion. The Contractor shall submit a written assertion that the Work has been completed. If, in the Engineer's judgment, the Work has been completed in accordance with the Contract Documents, the Engineer will set forth in writing the date the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect and maintain the Work.

6-8.2 Acceptance. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

6-8.2 Acceptance. Acceptance will occur after all of the requirements contained in the Contract Documents have been fulfilled. If, in the Engineer's judgment, the Contractor has fully performed the Contract, the Engineer will accept the Contractor's performance of the Contract.

6-8.3 Warranty. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

6-8.3 Warranty. Unless specified otherwise, the Work shall be warranted by the Contractor against defective workmanship and materials for a period of 1 year.

a) The warranty period shall start on the date of completion of the Work as determined by the Engineer.

b) The Contractor shall provide an unconditional warranty on all installed fiber optic cable for a minimum period of 2 years.

c) The warranty period for the following items of the Work shall be 3 years:

1. Work under Section 500 (requires Long Term Warranty Contract (LTWC))

2. DWT Construction (requires manufacturer's warranty)

3. LED signal modules (requires manufacturer's warranty)

d) Private sewer pumps including the alarm panel and all other accessories. The Contractor shall provide the City and property owner a copy of the warranty. (requires manufacturer's warranty)

e) The Contractor shall involve the manufacturer in the installation and startup as needed to secure any extended warranty required.

f) The warranty period for specific items covered under manufacturers' or suppliers' warranties shall commence on the date they are placed into service at the direction of or as approved by the Engineer in writing.

g) All warranties, express or implied, from Subcontractors or Suppliers, of any tier, for the work performed and materials furnished shall be assigned, in writing, to the City, and such warranties shall be delivered to the Engineer prior to acceptance of the Contractor's performance of the Contract.

h) The Contractor shall replace or repair defective Work in a manner satisfactory to the Engineer, after notice to do so from the Engineer, and within the time specified in the notice. If the Contractor fails to make such replacement or repairs within the time specified in the notice, the City may perform the replacement or repairs at the Contractor's expense. If the Contractor fails to reimburse the City for the actual costs, the Contractor's Surety shall be liable for the cost thereof.

i) Nothing in this warranty is intended to limit any manufacturer's warranty which provides the City with greater warranty rights than set forth in this section or the Contract Documents.

j) These specifications are not intended to constitute a period of limitations or waiver of any other rights or remedies City may have regarding the Contractor's other obligations under the Contract Documents or federal or state law.

k) The Contractor shall respond and initiate corrective action within 24 hours of notice of nonconforming Work that poses an imminent threat to person or property.

6-9 LIQUIDATED DAMAGES. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

MODIFY to increase the daily value from $250 to $1,000 for contracts with a value of over $100,000.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7-3 LIABILITY INSURANCE. DELETE in its entirety and SUBSTITUTE with the following:

The insurance provisions herein must not be construed to limit your indemnity obligations contained in this contract.

ADD: 7-3.1 Policies and Procedures.

a) You must procure the insurance described below, at your sole cost and expense, to provide coverage against claims for loss including injuries to persons or damage to property, which may arise out of or in connection with the performance of the Work by you, your agents, representatives, officers, employees or subcontractors.

b) Insurance coverage for property damage resulting from your operations is on a replacement cost valuation. The market value will not be accepted.

c) You must maintain this insurance for the duration of this contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this contract. Your liabilities under this contract, e.g., your indemnity obligations, will is not deemed limited to the insurance coverage required by this contract.

d) Payment for insurance is included in the various items of Work as bid by you, and except as specifically agreed to by the City in writing, you are not entitled to any additional payment. Do not begin any work under this contract until you have provided and the City has approved all required insurance.

e) Policies of insurance must provide that the City is entitled to 30 days (10 days for cancellation due to non-payment of premium) prior written notice of cancellation or non-renewal of the policy. Maintenance of specified insurance coverage is a material element of this contract. Your failure to maintain or renew coverage or to provide evidence of renewal during the term of this contract may be treated by the City as a material breach of contract.

ADD: 7-3.2 Types of Insurance.

7-3.2.1 Commercial General Liability Insurance.

a) Commercial General Liability Insurance must be written on the current version of the ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad.

b) The policy must cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).

c) There must be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You must maintain the same or equivalent insurance for at least 10 years following completion of the Work.

d) All costs of defense must be outside the policy limits. Policy coverage must be in liability limits of not less than the following:

General Annual Aggregate Limit	Limits of Liability
Other than Products/Completed Operations	$2,000,000
Products/Completed Operations Aggregate Limit	$2,000,000
Personal Injury Limit	$1,000,000
Each Occurrence	$1,000,000

7-3.2.2 Commercial Automobile Liability Insurance.

a) You must provide a policy or policies of Commercial Automobile Liability Insurance written on the current version of the ISO form CA 00 01 12 90 or later version or equivalent form providing coverage at least as broad in the amount of $1,000,000 combined single limit per accident, covering bodily injury and property damage for owned, non-owned, and hired automobiles ("Any Auto").

b) All costs of defense must be outside the limits of the policy.

ADD: 7-3.3 Rating Requirements. Except for the State Compensation Insurance Fund, all insurance required by this contract as described herein must be carried only by responsible insurance companies with a rating of, or equivalent to, at least "A-, VI" by A.M. Best Company, that are authorized by the California Insurance Commissioner to do business in the State, and that have been approved by the City.

7-3.3.1 Non-Admitted Carriers. The City will accept insurance provided by non-admitted, "surplus lines" carriers only if the carrier is authorized to do business in the State and is included on the List of Eligible Surplus Lines Insurers (LESLI list).

All policies of insurance carried by non-admitted carriers must be subject to all of the requirements for policies of insurance provided by admitted carriers described herein.

ADD: 7-3.4 Evidence of Insurance. Furnish to the City documents e.g., certificates of insurance and endorsements evidencing the insurance required herein, and furnish renewal documentation prior to expiration of this insurance. Each required document must be signed by the insurer or a person authorized by the insurer to bind coverage on its behalf. We reserve the right to require complete, certified copies of all insurance policies required herein.

ADD: 7-3.5 Policy Endorsements.

7-3.5.1 Commercial General Liability Insurance

7-3.5.1.1 Additional Insured.

a) You must provide at your expense policy endorsement written on the current version of the ISO Occurrence form CG 20 10 11 85 or an equivalent form providing coverage at least as broad.

b) To the fullest extent allowed by law e.g., California Insurance Code §11580.04, the policy must be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured.

1. The additional insured coverage for projects for which the Engineer's Estimate is $1,000,000 or more must include liability arising out of: (a) Ongoing operations performed by you or on your behalf, (b) Your products, (c) Your work, e.g., your completed operations performed by you or on your behalf, or (d) premises owned, leased, controlled, or used by you.

2. The additional insured coverage for projects for which the Engineer's Estimate is less than $1,000,000 must include liability arising out of: (a) Ongoing operations performed by you or on your behalf, (b) Your products, or (c) premises owned, leased, controlled, or used by you.

7-3.5.1.2 Primary and Non-Contributory Coverage. The policy must be endorsed to provide that the coverage with respect to operations, including the completed operations, if appropriate, of the Named Insured is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives. Further, it must provide that any insurance maintained by the City and its elected officials, officers, employees, agents and representatives must be in excess of the Contractor's insurance and must not contribute to it.

7-3.5.1.3 Project General Aggregate Limit. The policy or policies must be endorsed to provide a Designated Construction Project General Aggregate Limit that will apply only to the Work. Only claims payments which arise from the Work must reduce the Designated Construction Project General Aggregate Limit. The Designated Construction Project General Aggregate Limit must be in addition to the aggregate limit provided for the products-completed operations hazard.

7-3.5.2 Commercial Automobile Liability Insurance.

7-3.5.2.1 Additional Insured. Unless the policy or policies of Commercial Auto Liability Insurance are written on an ISO form CA 00 01 12 90 or a later version of this form or equivalent form providing coverage at least as broad, the policy must be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured, with respect to liability arising out of automobiles owned, leased, hired or borrowed by you or on your behalf. This endorsement is limited to the obligations permitted by California Insurance Code §11580.04.

ADD: 7-3.6 Deductibles and Self-Insured Retentions. You are responsible for the payment of all deductibles and self-insured retentions. Disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided.

ADD: 7-3.7 Reservation of Rights. We reserve the right, from time to time, to review your insurance coverage, limits, deductibles and self-insured retentions to determine if they are acceptable to the City. We will reimburse you, without overhead, profit, or any other markup, for the cost of additional premium for any coverage requested by the Engineer but not required by this contract.

ADD: 7-3.8 Notice of Changes to Insurance. You must notify the City 30 days prior to any material change to the policies of insurance provided under this contract.

ADD: 7-3.9 Excess Insurance. Policies providing excess coverage must follow the form of the primary policy or policies e.g., all endorsements.

7-4 WORKERS' COMPENSATION INSURANCE. DELETE in its entirety and SUBSTITUTE with the following:

7-4.1 Workers' Compensation Insurance and Employers Liability Insurance.

a) In accordance with the provisions of §3700 of the California Labor Code, you must provide at its expense Workers' Compensation Insurance and Employers Liability Insurance to protect you against all claims under applicable state workers compensation laws. The City, its elected officials, and employees will not be responsible for any claims in law or equity occasioned by your failure to comply with the requirements of this section.

b) Limits for this insurance must be not less than the following:

Workers' Compensation	Statutory Employers Liability
Bodily Injury by Accident	$1,000,000 each accident
Bodily Injury by Disease	$1,000,000 each employee
Bodily Injury by Disease	$1,000,000 policy limit

c) By signing and returning this contract you certify that you are aware of the provisions of §3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code and you will comply with such provisions before commencing the Work as required by § 1861 of the California Labor Code.

7-4.1.1 Waiver of Subrogation. The policy or policies must be endorsed to provide that the insurer will waive all rights of subrogation against the City, and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from work performed by the Named Insured for the City.

7-5 PERMITS, FEES, AND NOTICES. To the City Supplement, DELETE item e) in its entirety.

Contractor shall obtain approvals and pay for all permits required by the City of San Diego, Development Services Department (DSD) for shade structures. Contractor shall provide engineering calculations stamped/signed by a California Registered Engineer. See 36496-15-D, Additive Alternates C, D and E.

Contractor shall pay for permits required by DSD for the net barrier fence. Approvals for this permit will be obtained by the City of San Diego. See 36496-15-D, Additive Alternate A.

Fees paid by the Contractor will be reimbursed by the city, with no markup. Reimbursement will be paid from Field Order Allowance.

Contractor shall be required to request inspections from DSD for work permitted by DSD.

7-8.6 Water Pollution Control. ADD the following:

a) The Project is subject to the Storm Water Pollution control requirements listed on the Plans or as specified in these specifications.

b) For contracts subject to Construction General Permit (CGP), the Contractor's QSD shall verify the City's assessment prior to submittal through SMARTS.

c) The Contractor's attention is directed to Section 801, "WATER POLLUTION CONTROL" of these specifications for more information.

Based on a preliminary assessment by the City, this contract is subject to WPCP.

7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS. ADD the following:

5. The Contractor is responsible for provide visual warning and control around the perimeter of the work. Provide plastic mesh fencing supported by steel posts driven into ground. The height of the fence shall be safety orange and 36 inches high. If no bid item is provided the cost shall be included in the various items of Work.

7-15 INDEMNIFICATION AND HOLD HARMLESS AGREEMENT. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

ADD: 7-15 INDEMNIFICATION AND HOLD HARMLESS AGREEMENT.

1. You must defend, indemnify, protect, and hold harmless the City, the City's agents, officers, and employees, from and against all claims asserted, or liability established for damages or injuries to any person or property resulting from your action or failure to take the necessary measures to prevent such damages and injuries.

2. You are responsible for payment of any fines resulting from citations issued to the City by either the federal, state, or local environmental and safety enforcement agencies due to your failure to abide by applicable safety, health, and environmental standards.

3. You agree to defend, indemnify, protect and hold the City, the City's agents, officers and employees, harmless from and against any dispute between you and the Subcontractor if the City are made a party to any judicial or administrative proceeding and all claims asserted, or liability established for damages or injuries to any person or property including to your employees, agents or officers, or judgments arising directly or indirectly out of obligations, work or services herein undertaken, which arise from, are connected with, are caused or claimed to be caused by your acts or omissions, your agents', officers' and employees'.

4. The obligation to indemnify must be effective even if the City, the City's agents, officers or employees established passive negligence contributes to the loss or claim. You agree that the City may elect to conduct its own defense or participate in its own defense of any claim related to this project. Your duty to indemnify and hold harmless does not include any claims or liability arising from the established active or sole negligence, or willful misconduct of the City, its officers, or employees.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

8-2 FIELD OFFICE FACILITIES. To the City Supplement, DELETE in its entirety.

PART 2 - CONSTRUCTION MATERIALS

SECTION 200 – ROCK MATERIALS

200-2.7 Disintegrated Granite.

200-2.7.1 General. ADD the following:

Disintegrated granite shall be 4" depth stabilized 'Coyote Gold' by KRC Rock, or approved equal. Soil stabilizer shall be TechniSoil by KRC Rock, or approved equal.

SECTION 203-BITUMINOUS MATERIALS

203-5.4 Mix Design. Second Paragraph, second Sentence, DELETE "2 days" and SUBSTITUTE "4 Working Days."

ADD the following:

The completed slurry shall have a minimum skid resistance of 40 when tested per the Caltrans's California Test 342.

SECTION 206 - MISCELLANEOUS METAL ITEMS

206-1 Structural Steel, Rivets, Bolts, Pins and Anchor Bolts.

206-1.4 Bolts. ADD the following:

All bolts, nuts and washers used for construction of structures shall be hot-dipped galvanized steel and shall conform to the requirements of ASTM F738 and F836. All bolts shall not protrude more than two threads beyond nut on all fences, etc.

SECTION 210 – PAINT AND PROTECTIVE COATINGS

ADD: 210-6 Anti-graffiti Coating. Anti-graffiti coating shall be as manufactured by Monopole, Inc. (or approved equal).

Materials shall be applied as specified below:

a) 1st Coat: Aquaseal ME12 (Item 5200)

b) 2nd Coat: Permashield Base (Item 6100)

c) 3rd Coat: Permashield Premium (Item 5600 for matte finish or Item 5650 for gloss finish)

d) 4th Coat: Permashield Premium (Item 5600 for matte finish or Item 5650 for gloss finish)

SECTION 212 – LANDSCAPE AND IRRIGATION MATERIALS

212-1.1.2 Class "A" Topsoil. To the GREENBOOK and City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

212-1.1.2 Class "A" Topsoil. Class "A" topsoil shall be from a source outside the limits of the project selected by the Contractor and in compliance with the requirements specified herein. The Engineer may make such inspections and perform such tests as deemed necessary to determine that the material meets the requirements.

The Contractor shall submit the source, location of soil, a physical sample and accompanying current test results by a third party independent agronomic laboratory reflecting compliance with Contract Documents to the Engineer within 14 days of the NTP.

A second series of independent third party agronomic soil tests shall be required 15 days before soil placement to verify conformance with these specifications.

A third series of tests by a third party independent agronomic laboratory will be required after soil placement to verify conformance with this section.

No planting shall begin until test results confirm the agricultural suitability of the topsoil. Third party independent agronomic laboratory tests shall be paid for by the Contractor. The Contractor shall submit a written request for approval which shall be accompanied by written analysis results from a testing agency registered by the State for agricultural soil evaluation which indicates compliance with these specifications.

Class "A" topsoil shall have the same relative composition and structure, a friable sandy loam character, and be free of roots, clods and , pockets of coarse sand, noxious weeds, sticks, brush, and other litter. It shall not be infested with nematodes or other undesirable insects and plant disease organisms. All imported Class "A" topsoil shall pass the 4.75 mm (No. 4) sieve. In place soil, being corrected to meet Class "A" Topsoil shall be free of stones larger than ½" in their greatest dimension.

Class "A" topsoil shall meet the following additional requirements:

1) **Gradation Limits.** Sand, 50 to 80 percent; clay 20 percent maximum; and silt, 30 percent maximum. The sand, clay, and silt gradation limits shall be as defined in ASTM D 422.

2) **Permeability Rate.** Not less than 0.5 inch (13 mm) per hour nor more than 2 inches (50 mm) per hour when tested in accordance with ASTM D 2434, California Test 220, or other approved methods.

3) **Agricultural Suitability.** The topsoil shall be suitable to sustain the growth of the plants specified.

   a) pH - 6.0 minimum to 7.5 maximum

   b) EC (electrical conductivity) – 3.0 maximum

   c) Organic Content (20-25% by Volume)

   The test results shall show the following information:

   a) Date of Testing

b) Project Name

c) The Contractor's Name

d) Source of Materials and Supplier's Name

e) Estimate of Quantity Needed

f) Soil Gradation

g) Soil Permeability

h) Toxic Elements

i) pH

j) EC

k) Organic Content

l) Recommendations for adding amendments, chemical corrections, or both.

Topsoil which requires amending to comply with these specifications shall be uniformly blended. Once blended, the Contractor shall provide the Engineer with documentation showing the stockpile location and the quantity prepared of the amended topsoil reserved for the Project. Third party independent agronomic laboratory test results reflecting compliance with above requirements shall be provided to the Engineer prior to the release of the topsoil.

212-1.2 Soil Fertilizing and Conditioning Materials.

212-1.2.3 Commercial Fertilizer. ADD the following:

Soil conditioner/fertilizer shall have 5-3-1 NPK analysis with 50% humus, 15% humic acids, soil strain bacteria, micronutrients, and 1% soil penetrant. 'Gro-Power Plus' or equal.

Planting tablets shall be tightly compressed commercial grade fertilizer tablets that consist of the following percents by weight: 12% nitrogen, 8% phosphoric acid, 8% potash, 20% humus, 4% humic acids.

The planting tablets shall be delivered to the site in the original unopened containers, bearing the manufacturer's guaranteed analysis. Any damaged tablets will not be acceptable.

ADD: 212-1.2.3.1 Pre-Plant Fertilizer for Planted Areas. Pre-plant fertilizer shall be a fast-release, 6-20-20 commercial, dust-free, homogeneous pellet fertilizer having the following guaranteed analysis:

Nitrogen	6%
Phosphorus	20%
Potassium	20%

ADD: 212-1.2.3.2 Post-Plant Fertilizer. Post-plant fertilizer shall have 5-3-1 NPK analysis with 50% humus, 15% humic acids, soil strain bacteria, micronutrients, and 1% soil penetrant. 'Gro-Power Plus' or equal.

212-1.2.4 Organic Soil Amendment. ADD the following:

Type 4 organic soil amendment shall be a blended, commercially-processed soil conditioner consisting of an organic-based conditioner, prepared by mixing a light, friable, siliceous material with nitrogen-fortified, finely ground bark, wood chips and/or saw dust. The material shall contain a long-lasting form of iron and shall have the following analysis:

Total nitrogen	0.5%	
Ph	4.6 to 6.8	
Salinity (Ece)	less than 2.0	
Organic matter (dry weight basis)	85.0% min.	
Particle size: percent passing	9.50 mm screen	100%
	6.35 mm	100%
	2.38 mm	83%
	.50 mm	31%

And shall be treated with a non-ionic wetting agent 'Sarvon' or approved equal.

Material shall be equal to or better than "Loamex" or 'BFI Organics' "Organo-Life" soil amendment.

212-1.2.5 Mulch. ADD the following:

(e) Type 5 mulch (fir or redwood bark chips), shall be used and shall be fir or redwood "walk-on" bark, available from Sequoia Forest Products (209) 591-2000, or equal.

(h) Type 8 mulch (rock or gravel), shall be used and shall be tan cobble streambed kit by KRC Rock, or equal.

212-1.4 Plants.

212-1.4.1 General. Revise the following:

Second paragraph, delete second sentence.

Third paragraph, to read as follows:

No pruning shall be done prior to inspection at the nursery.

ADD the following:

1). Nomenclature. The scientific and common names of plants herein specified conform to the approved names given in "A Checklist of Woody Ornamental Plants in California," published by the University of California, Division of Agricultural Sciences, Manual 32, (1963). (See list of plant materials on drawings).

2). Labeling. Each group of plant materials delivered on site shall be clearly labeled as to species and variety. However, determination of plant species or variety will be made by the City and the decision will be final. All patented plants (cultivars) required by the plant list shall be delivered with a proper plant patent attached.

3). Quality and size. Plants shall be in accordance with the California State Department of Agriculture's regulations for nursery inspections, rules and grading.

The Resident Engineer is the sole judge as to acceptability for each plant. Vigorous, healthy, well-proportioned plants are the intent of this specification. Plants which are even moderately "overgrown," or are showing any signs of decline or lack of vigor are subject to rejection.

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. Plants larger in size than specified may be used with the approval of the Resident Engineer, but the use of larger plants will make no change in contract price. If the use of larger plants is approved, the ball of earth and spread of roots for each plant shall be increased proportionately.

4). Rejection or substitution. 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 by the Contractor, at his expense.

5). Right to changes. The City reserves the right to change the species, variety, and/or sizes of plant material to be furnished, provided that the cost of such plant changes does not exceed the cost of plants in the original bid, and with the provision that the Contractor shall be notified, in writing, at least thirty (30) days before commencement of planting operations.

6). Pruning. At no time shall the 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 in the presence of the Resident Engineer.

7). Handling and protection. All plants at all times shall be handled and stored so that they are adequately protected from drying out, from wind burn, or from any other injury. Any plant determined by the Resident Engineer to be wilted shall be rejected at any time during this project, whether in the ground or not. All plants shall be handled solely by their containers. Any plant that has been handled by its stem or trunk shall be rejected. The Contractor's on-site plant storage area shall be approved by the Resident Engineer prior to the delivery of any plant material.

8). Guarantees. All trees shall be guaranteed for one (1) year from final acceptance of project (at the completion of the plant establishment and maintenance period). All other plant material shall be guaranteed for six (6) months from final acceptance.

212-1.5 Headers, Stakes and Ties.

212-1.5.3 Tree Stakes. REVISE the first paragraph to read as follows:

Tree stakes shall be of lodgepole pine and shall be straight shafts, shaved and cut clean and bare of branches and stubs, of uniform thickness with a minimum diameter of 2 inches, and free of loose knots, splits or bends. Stakes shall be ten (10) feet in length.

Tree ties shall be self-cinching vinyl plastic commercial ties, black in color, and twenty (20) inches minimum long. V.I.T. cinch-tie, wonder tree tie, or equal.

ADD: 212-1.10 Filter Fabric. Filter fabric shall be non-woven type, fully stabilized UV-resistant and shall prevent soil particles from clogging, entering or blocking subsurface perforated pipe drains.

ADD: 212-1.11 Weed Barrier Fabric. Weed barrier fabric shall be 2.8 oz. polyproplene, UV-treated fabric.

ADD: 212-1.12 Decorative Boulders. Boulders shall meet the height, length, and width requirements specifications found on the plans.

ADD: 212-1.13 Interpretive Signage. Graphic display panels shall be provided for the purpose of outdoor exhibits at the rain gardens. Panels shall be 24" x 36" x 1/8" thick exterior grade, digital high pressure laminate panel with a matte finish. Durareader by Envirosigns, 1-800-492-5377, or approved equal.

Exhibit base shall be extruded aluminum with a two 3" square posts with plates and full metal backing frame at a 45 degree angle. Base shall be in ground mount. Base including frame and posts shall be powder coated black. Images shall be accurate compared to the original proofs, in color, text sharpness, gray scale reproduction, and quality of mass tones. Duraframe, by Envirosigns, 1-800-492-5377, or approved equal.

ADD: 212-1.14 Steel Shade Structures. Shade structures shall be SQ20M-P6 and as SQ30M-P6 manufactured by ICON Shelter Systems, or approved equal. ICON Shelter Systems, Inc., 1455 Lincoln Ave, Holland, MI 49423, Telephone 1-800-748-0985 or email info@iconshelters.com. Contact the regional representative for pricing: Chad Barry, Coast Recreation.

Shelters shall be Pre-engineered, prefabricated all-steel framed shelters; column, rafter, and purlin structure, with steel roof panels or T&G roof deck or Sandwich Panel roof deck, all flashing, trim, accessories, and fasteners required for a complete installation.

Structural framing (Columns, rafters, tie-beams, purlins, etc.) shall be Hollow Structural Sections (HSS) meeting ASTM A500 grade B. "I" beams, tapered columns, open "C" channels, cold-formed box sections or wood products shall not be accepted.

Compression rings shall be made of structural channel sections or welded plate sections that meet ASTM A36 grade steel.

Structural connections shall be made with A325 high-strength bolts and A563 structural nuts, ASTM F1554 grade 36 anchor bolts, self-drilling screws and pop-rivets.

Metal Roof Panel: 24-gauge galvalume roof panel with a Kynar 500 paint finish. The ribs shall be 1-3/16" high and 12" on center. Roof panel coverage shall be 36" wide; all angles shall be factory cut. The ribs shall run with the slope of the building for proper drainage.

Metal Roof Trim: Roof trim shall match the color of the roof and shall be formed from 26-gauge painted galvalume steel as follows: 1. Metal ridge caps shall be pre-formed with a single central bend to match the roof slope. The trim shall be hemmed on both sides. 2. Roof peak cap shall be supplied on all buildings that do not include a framed cupola. 3. Edge of the roof deck shall have a preformed "J" channel eave trim, the channel shall be applied along all the leaves to trim and straighten the eave.

The "J" shall have weep holes at 6" on center for roof drainage. 4. Highside trim shall be in a "J" shape and shall supplied for all tiered buildings.

System Description:

Standard Design Loads: 2010 California Building Code, 20 P.S.F. (Live Load), 90 M.P.H., Exposure C, Seismic Design Category D.

Column to footing connection to be in compliance with OSHA Steel Erection Standard CFR 1926.750 Part R, which requires a minimum of four (4) anchor bolts per column. No single anchor bolt column base connection allowed.

Design Method shall be per applicable local building code requirements. Manufacturer's design shall utilize a three-dimensional structural analysis to determine all member loads and forces. Design and detailing shall be in compliance with AISC 341, Part I or III.

Supplier Qualifications:

The product shall be designed and fabricated at a facility operated and directly supervised by the supplier.

The supplier shall have at least 8 years of experience in the design and fabrication of pre-engineered steel shelters.

Membership in American Institute of Steel Construction.

Membership in American Welding Society.

Full time on-staff licensed Professional Engineer.

Full time on-staff quality control manager.

The pre-engineered package shall be shipped as a pre-cut (except for standing seam roof panels) and pre-fabricated package that shall include the structural framing members, roof panels, fasteners, and trim as well as the installation instructions. The structure shall be shipped un-assembled for minimum shipping charges.

Field labor shall be only for the assembly of the pre-fabricated parts. No onsite welding shall be required or permitted. Tube frame connection bolts and fasteners shall be concealed, within the tubing or hidden, except at the baseplate. All rafter tails shall be factory welded into place as well as all compression ring/tube covers. On multi-tiered buildings the rafter risers shall be welded to the lower rafters for ease of installation. No openings near the base of the column with screwed on cover plates. No through bolting shall be allowed for any connections due to the possibility of the deformation of the tube steel parts.

Submittals:

Submit a minimum of 4 sets of shop drawings and 2 sets of structural calculations signed and sealed by a Professional Engineer in the state of California.

Manufacturer shall provide site specific foundation design signed and sealed by a Professional Engineer in the state of California. Generic or "typical" foundation details and design shall not be acceptable.

Structural calculations shall show the conformance to the local building code information:

2010 California Building Code,20 P.S.F. (Live Load)

90 M.P.H., Exposure C

Seismic Design Category D

ADD: 212-1.15 Metal Pipe Bollards. Fabricate pipe bollards from 4-inch (102 mm) standard steel pipe, Schedule 40. Cap bollards with 1/4 inch (6.4 mm) minimum thickness steel base plate, or as otherwise indicated.

All metal shall be galvanized by apply zinc-coating by the hot-dip process in compliance with the following requirements:

1. ASTM A123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forced shapes, plates, bars, and strip 0.0299 inch (0.7595 mm) thick and heavier.

2. ASTM A153 for galvanizing iron and steel hardware.

212-2 IRRIGATION SYSTEM MATERIALS.

212-2.1 Pipe and Fittings.

212-2.1.3 Plastic Pipe for Use with Solvent Weld Socket or Threaded Fittings. ADD the following:

Polyvinyl chloride Schedule 80 risers and nipples. Type 1, Grade 1, Schedule 80, high impact molded, manufactured from virgin compounds as specified for piping. Threaded ends shall be molded threads only. Machined threads are not acceptable. PVC Schedule 80 nipples and risers shall conform to ASTM D-2464.

Polyvinyl chloride swing joint assemblies. All swing joint assemblies for sprinklers shall be as specified in the Regional Standard Drawings.

ADD: 212-2.1.6 Brass Pipe. Brass pipe shall be IPS Class 1, 85% red brass, conforming to Federal Specification WW-P351.

ADD: 212-2.1.7 Brass Pipe Fittings and Connections. Brass pipe fittings and connections shall be Class 1, pressure rating, 85% red brass, threaded, conforming to Federal Specification WW-P460.

ADD: 212-2.1.8 Thread Lubricant. Thread lubricant shall be 3/4-inch wide Teflon ribbon-type, suitable for threaded installations per manufacturer's written recommendations.

ADD: 212-2.5 Extra Equipment. Prior to final acceptance of the project the Contractor shall provide the following extra equipment:

1). Extra sprinkler heads and bubblers with nozzling packages and screens equal in number to 15% of the total of each type used on this project (four minimum).

2). One (1) manual globe valve key 30" in length.

3). One (1) valve box key.

212-3 Electrical Materials.

212-3.2 Conduit and Conductors.

212-3.2.2 Conductors.

212-3.2.2.1 Underground Low Voltage Wire Connections. ADD the following:

All underground low voltage wire connections shall be waterproof type, direct burial, of approved type.

212-4 BIORETENTION SOIL MEDIA.

212-4.1 General. Bioretention soil media shall arrive at the site fully mixed and placed in loose lifts no greater than 6 inches at a time. Soil shall be lightly tamped by hand at each lift to ensure proper compaction. All soil media should be analyzed for background levels of nutrients.

212-4.1.1 Bioretention Soil Media consists of 70 percent washed course sand and 30 percent stable compost on a volume basis. The washed course sand shall meet the ASTM C33 specifications and the gradation as shown in Table 212-4.1.1. Sand should be thoroughly washed prior to delivery to remove fines, dust, and deleterious materials.

Table 212-4.1.1 Washed Course Sand (70%)

Sieve Size	Percent Passing
3/8 inch	100
No. 4	60 - 100
No.10	40 - 100
No. 40	15 - 50
No. 200	0 - 5

Coefficient of Uniformity (Cu = D60/D10) equal to or greater than 4

212-4.1.2 Stable Compost. Stable compost shall make up no more than 30% of the bioretention soil media. Organic matter should consist of recycled leafy greens, such as clean yard trimmings, and shall comply with the following requirements:

Less than 1% inert material

OM shall be 30% to 40% by dry weight

pH shall be between 6.0 and 8.0

Maturity (seed emergence and seedling vigor): greater than 80%

Stability (Carbon Dioxide evolution rate): greater than 80%

Moisture: 30%-60% wet weight basis

Finished compost should be screened through a ½ inch mesh.

212-4.2 Alternative Mixes. The mix specified in 212-4.1 is anticipated to achieve a minimum infiltration rate of 5 in/hr. Alternative mixes will be considered that meet the minimum infiltration rate with a maximum of 5 percent organic matter on a volume basis and that meet the requirements of the chemical analysis outlined in section 212-4.3. The infiltration rate shall be determined using ASTM D2334 at 85 percent modified proctor compaction using ASTM D1557.

212-4.3 Samples and Submittals. At least 30 days prior to ordering materials, the Contractor shall submit to the Engineers certificates, manufacturer's literature and certified tests for materials specified below. No materials shall be ordered until the required certificates; manufacturer's literature and test results have been reviewed and approved by the Engineer. All tests must have been performed within 120 day of delivery. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The engineer reserves the right to reject, on or after delivery, any material that does not meet these specifications.

Submit soil test analysis reports for each sample of soil media from an approved soil-testing laboratory. The test results shall report the following:

1. Submit a bulk density of the sample and particle size analysis in accordance with ASTM D422.

2. Submit a chemical analysis, performed in accordance with current Association of Official Agricultural Chemists Standards, including the following:

   pH and Buffer pH.

   Percent organic matter as determined by the loss of ignition of oven dried samples. Test samples shall be oven dried to a constant weight at a temperature of 230 degrees F, plus or minus 9 degrees.

   Analysis for nutrient levels by parts per million including nitrogen, total phosphorus, potassium, copper, lead, and zinc. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil as calculated by the amount of material to be added per volume of soil for the type of plants to be grown in the soil.

   a. Total Phosphorus must be less than 15 ppm
   b. Copper $\leq$ 750 ppm (mg/kg dry weight)
   c. Lead $\leq$ 150 ppm (mg/kg dry weight)
   d. Zinc $\leq$ 1400 ppm (mg/kg dry weight)

   Analysis for Salinity, Chloride, Electrical Conductivity, Cation Exchange Capacity, and the Sodium Adsorption Rate:

   a. Salinity must be less than 3 mho/cm
   b. Chloride must be less than 150 ppm
   c. ECE must be less than 4

d. CEC must be greater than 5 meq/100 grams of dry soil

e. SAR must be less than 4

212-4.4 Delivery, Storage and Handling. Do not deliver or place soils in frozen, wet, or muddy conditions.

Protect soils and mixes from absorbing excess water and from erosion at all times. Do not store materials unprotected from large rainfall events. Do not allow excess water to enter site prior to compaction. If water is introduced into the material after grading, allow material to drain or aerate to optimum compaction moisture content.

212-4.5 Media Placement. Bioretention Soil Media shall be thorough mixed prior to delivery using mechanical mixing. Soil shall be lightly tamped by hand at each lift to ensure proper compaction. All soil media should be analyzed for background levels of nutrients. A conveyor or spray system should be used for media placement in large facilities. Machinery shall not be used in the bioretention facility to place the bioretention soil media. The use of light machinery, such as a low ground pressure rubber tracked bobcat, may be permissible with the approval of the engineer.

ADD: 212-5 Sand for Trench Backfill. Sand encasement for pressure supply pipes and low voltage control wires: for all irrigation pipe, direct burial control wire and electrical conduit shall be clean, washed plaster or mortar sand, as per Section 200 of the Greenbook, with a minimum sand equivalent of 50.

SECTION 216 – DETECTABLE WARNING TILES

216-1.2 Materials. To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

Materials for DWT specified herein shall be per the City's Approved Materials List (AML). The tiles shall have the manufacturer's logo stamped permanently on the product with identifying information such as model number and type.

a) The Stainless Steel Cast in Place DWT shall be of 16 gauge Type 304L with an integral micro-texture non-slip surface stamped into the stainless steel plate on the top of the domes and in the field surface between the domes. It shall have an ultra violet stabilized coating.

b) Vitrified Polymer Composite (VPC) Cast in Place DWT shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. VPC Product shall be provided with a 5-year manufacturer written warranty form materials and installation.

c) For others materials and a complete listing of material physical property requirements refer to the City's AML.

PART 3 – CONSTRUCTION METHODS

SECTION 300 - EARTHWORK

300-11.2 Placing Stone. ADD the following:

When noted on the Plans, rock slope protection shall be placed in accordance as follows:

A footing trench shall be excavated along the toe of the slope as shown on the Plans.

Rocks shall be so placed as to provide a minimum of voids and the larger rocks shall be placed in the toe course and on the outside surface of the slope protection. The rock may be placed by dumping and may be spread in layers by bulldozers or other suitable equipment.

Local surface irregularities of the slope protection shall not vary from the planned slopes by more than one foot measured at right angle to the slope. At the completion of slope protection work, the footing trench shall be filled with excavated material and compaction will not be required.

SECTION 301- TREATED SOIL, SUBGRADE PREPERATION AND PLACEMENT OF BASE MATERIALS

301-1.3 Relative Compaction. Last paragraph, REVISE to read:

If no provision for manhole adjustment or reconstruction is made, payment for such work will be deemed to be included in the other items of work and no additional payment will be made.

SECTION 302- ROADWAY SURFACING

ADD: 302-0 General. Prior to roadway resurfacing or the application of slurry, the Contractor shall complete all necessary preparation and repair work to the road segment e.g., tree trimming, weed spray, weed abatement, crack sealing, asphalt repair, hump removal, miscellaneous asphalt patching, removal of raised pavement markers, removal of pavement markings, etc. and as specified in the Special Provisions. No preparatory asphalt work shall be done when the atmospheric temperature is below 50 °F or during unsuitable weather.

302-6.8 Measurement and Payment. ADD the following:

The Bid item for Concrete Pavement Replacement shall include but not be limited to removal and disposal of existing pavement, subgrade preparation, saw-cutting existing edges, form work, placement and curing of concrete, placing class "F" asphalt, all labor, material, equipment and incidentals as required to construct concrete paving in accordance with the Plans and Specifications.

Payment for other disturbed pavement within the work area shall be considered included in the payment for the Work items causing the disturbance. This includes any pavement disturbed by a lack of adequate shoring in accordance with 306-1.1.7, "Shoring."

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-5 Concrete Curbs, Walks, Gutters, Cross Gutters, Alley Intersections, and Access Ramps.

303-5.1 Requirements. ADD the following:

Unless otherwise approved by the Resident Engineer, all concrete paving shall be constructed after the area has been brought to finish grade.

ADD: 303-5.4.4 Score Lines. Score lines shall be accomplished with a jointer tool having a depth of 1/2 inch and a radius of 1/8 inch. The finished joint opening shall not be wider than 1/8 inch.

303-5.5 Finishing.

303-5.5.1 General. ADD the following:

All concrete surfaces shall be given a broom finish.

SECTION 306 – UNDERGROUND CONDUIT CONSTRUCTION

ADD: 306-1.4.8 Televising Sewer Mains and Storm Drains.

306-1.4.8.1 General.

The Contractor in coordination with the Engineer shall televise new sewer mains and storm drains, and existing sewer mains when performing parallel replacement to locate existing laterals. The Contractor shall provide the video records (with compressed audio) in digital file format on digital video discs (DVD's).

The Contractor shall provide an initial submittal at the start of televising work demonstrating the typical video and audio quality to be provided for acceptance by the Engineer. This submittal shall note any proposed changes to the specification listed below regarding video format, data processing, compression or other conditions.

The Engineer shall be notified a minimum of 2 Working Days in advance of televising. The entire televised inspection process shall be done in the presence of the Engineer.

When televising existing mains, the Contractor shall provide the televising DVD(s) and a red-lined set of Plans showing the location of the existing laterals to the Engineer before constructing the new sewer mains.

New sewer mains shall be inspected by CCTV and recorded on DVD not less than 22 working days after completion of permanent trench restoration and/or finished grading, but prior to final resurfacing.

Ten Working Days shall be allowed for the Engineer to review each individual DVD of each main documented on that particular DVD. In the event that any deficiencies or sags are discovered by the Engineer, either by the Contractor's televising or the City's re-televising, 5 Working Days shall be allowed for the Engineer to decide if the deficiencies or sags are repairable, in place. The Contractor shall not be entitled to Contract Time extension due to delays resulting from correcting deficiencies or sags as determined by televised inspections.

The City reserves the right to re-televise any new sewer main after the placement of permanent trench restoration and before final acceptance to determine the existence and extent of any foreign material or obstructions such as cement grout, wood, rocks, sand, concrete, or pipe fragments, and any

structural deficiencies, or sags precipitated by the permanent trench restoration operations or other items of Work.

Televising shall be done in one direction for the entire length between manholes. Each section shall be isolated from the remainder of the sewer line or storm drain as required. Sufficient water shall be supplied to the isolated section to cause drainage reaching the downstream manhole prior to televising.

In the event that the existing flow is interfering with the video operation, a bypass shall be performed by the Contractor to lower the flow volume sufficiently to allow for a clear video picture.

The Contractor shall clean the sewer mains prior to televising as necessary to adequately perform the video operations.

The Contractor shall review the DVD for any discrepancies or deficiencies in the installation of the pipe.

306-1.4.8.2 Video Operator Qualifications. The video operator shall have at least 1 year of experience with a project of a similar nature within the last 3 years.

306-1.4.8.3 Equipment for Televising. Camera and lighting quality shall be suitable to provide a clear, continuously in-focus picture of the entire inside periphery of the sewer pipe or storm drain for all conditions encountered during the work. The remote reading footage counter shall be accurate to within 0.5% over measured distance of the particular section being inspected and shall be displayed on the television monitor. The equipment shall be capable of televising the entire length from manhole to manhole in one direction. When televising storm drains or sewer mains the camera shall be capable of scanning the joints for 360°.

306-1.4.8.4 Televising Procedures. The camera shall be moved through the line at a uniform rate, stopping when necessary to ensure proper documentation of the condition of the sewer line but in no case shall the television camera be pulled at a speed greater than 30' (9 meter) per minute. The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a measuring device. Footages shown on the DVD(s) shall coincide with horizontal lengths from stationing as shown on the plans. Footage measurements shall begin at the centerline of the upstream manhole or storm drain access point, unless permission is given by the Engineer to do otherwise.

306-1.4.8.5 DVD Requirements.

DVD recordings shall be in color and in MPEG2 format. The minimum video bit rate shall be 4.7 Mega bits per second (Mbps) and minimum audio bit rate shall be 128 Kilo bits per second (Kbps). Out-of-focus video recording or low quality and blurred pictures due to steam or smudged camera lens, or portions thereof, shall be cause for rejection of the video recording.

The camera source image capture shall provide image with a minimum of 640 x 480 pixels capture. The video shall be at least 30 frames per second.

Audio and written documentation shall accompany all DVD(s) submitted to the Engineer. One file shall be provided for each manhole to manhole pipe segment.

Each DVD submittal shall include the following:

- Visuals
- Adequate view of the upstream and downstream manholes or storm drain access points.
- A pause at and zoom in on the lateral connections sufficient for identification of the condition of the connection.
- A pause at and zoom in on the indentified defects sufficient for identification of the type of problem.
- Each pipe section shall be identified by end manhole numbers, station numbers, sheet number and the street name. If shown on the Plans, Facility Sequence Numbers (FSN) can be used in lieu of manhole and sheet numbers.
- A continuous read-out of the camera distance from the starting manhole to the end point at all times.
- Audio
- Date of CCTV inspection.
- Confirmation of each section to be CCTV inspected (narrative of manholes, storm access points or station numbers, or FSN's) and direction (upstream/downstream).
- Description of pipe size, material and pipe joint length.
- Description and location of each defect.
- Description and location of each service connection.
- Include brief but informative comments on data of significance, including, but not limited to, the locations of unusual conditions, type and size of connection, collapsed section, the presence of scale and corrosion, and other discernible features.
- Written Documentation
- Date of CCTV inspection.
- Printed labels on DVD number, location information, date of inspection, and other descriptive information.
- Location, size, material, and length of pipe.
- Direction of flow and measurement ("From" manhole or storm drain access point or station number "To" manhole or storm drain access point or station number or FSN).
- File numbers itemizing individual segments.
- Sketch showing the street and cross streets where the CCTV inspection was made.
- Description and location of each defect or deficiency and a list of all proposed repairs.
- Description and location of each connection.
- A menu which lists files for each pipe section to be inspected and the date of the inspection.

306-1.4.8.6 Tolerances. For underground sewer or storm drain conduit installations, the maximum operational tolerance for sag shall be 1/2". When televised inspection is used to check for sag, a

calibrated 1/4" diameter steel bar, mounted in front of the camera, shall be used to measure the depth of sag.

306-1.4.8.7 Payment for Televising Sewer Mains and Storm Drains. The payment for cleaning and televising sewer mains and storm drains shall be included in the unit price Bid items for televising sewer mains and storm drains. If a Bid item has not been provided, the payment shall be included in the payment for pipe installed.

306-13 EXISTING UTILITIES.

ADD: 306-13.3 Utility Crossings. If 1' vertical separation cannot be maintained between proposed and existing utilities, 6" – 11" sand cushion per 200-1.5, "Sand" and 1" neoprene pad shall be installed as shown on Plans. The neoprene pad shall be 1" thick and wide enough to extend a minimum of 6" horizontally beyond the outside pipe wall. Neoprene pads shall have hardness between 50-70 durometers, as manufactured by Hoffmeyer Company, Industrial Rubber Supply, or approved equal. The neoprene pad shall be installed right below or on top of the existing utility. The sand cushion shall be placed between the neoprene pad and the proposed pipe. Payment for installation of sand cushion and neoprene pad shall be included in the unit price Bid item for new pipe installation.

SECTION 308 - LANDSCAPE AND IRRIGATION INSTALLATION

308-2 Earthwork and Topsoil Placement.

308-2.3 Topsoil Preparation and Conditioning.

308-2.3.1 General. First paragraph, first sentence, REVISE to read:

The type and thickness of topsoil shall be Class A, 12" thick, and placed in turf areas only.

Third paragraph, Revise to read:

The soil below subgrade for Class A topsoil shall be deep ripped in a cross pattern to a depth of 8" (200 mm). Rocks 6" (150 mm) or greater in length shall be removed from the deep ripped areas. The area shall be smooth and uniform before topsoil is placed.

Last paragraph; change the word "scarified" to "deep ripped".

ADD the following:

Prior to planting, the Contractor shall apply pre-emergent, translocative, systemic herbicide ("round-up", or equal) to kill all broadleaf weeds and grasses present in planting areas according to manufacturer's directions.

308-2.3.2 Fertilizing and Conditioning Procedures. Second paragraph, first sentence, REVISE to read as follows:

Soil amendment materials shall be uniformly spread at the prescribed rate.

ADD the following:

Soil amendment and gypsum shall be evenly and mechanically spread at a rate of 100 lbs. Gypsum per 1000 square feet and 4 yards soil amendment per 1000 square feet. After spreading, materials shall be thoroughly incorporated into the upper six (6) inches of soil in two directions at right angles to one another, using rototilling equipment. Cultivated area shall be thoroughly leached after cultivation with six to eight inches of water using intermittent ponding. In slope areas at 2:1 or greater, apply gypsum only (no soil amendment) and work into top surface of soil.

Upon completion of soil amending, soil samples (six locations minimum) shall be taken by the Contractor and analyzed by an Owner-approved soil laboratory. The soil test reports shall analyze ph; electrical conductivity of soluble salts; nitrate, phosphorus, boron and potassium levels; and permeability characteristics of each soil sample.

The results of these tests are to be reviewed by the Resident Engineer for any required modifications to soil conditioning and fertilizing. Costs for soil tests shall be paid by the Contractor.

After leaching, evenly spread pre-plant fertilizer over planting areas at a rate of 20 lbs. Per 1000 square feet for 12/12/12 pre-plant fertilizer and 35 lbs. Per 1000 square feet for 6/20/20 Pre-Plant fertilizer, and rototill into the top six (6) inches of soil. Apply two to four inches of water to entire area using intermittent ponding. No trenching or digging will be permitted once amendments have been incorporated into the soil. In slope areas of 2:1 or greater, carefully work fertilizer into top layer of soil and apply water so as to not create surface erosion.

308-2.4 Finish Grading. First paragraph, revise to read as follows:

Contours and finish grade shall provide for drainage to sheet and shall not channel drainage in a manner where volume and velocity of water will create surface erosion.

Fourth paragraph, first sentence, and revise to read: after blending soil amendments and fertilizers into soil, soil shall be watered and allowed to settle to provide a stable base.

ADD the following:

Finish grade shall insure positive drainage from the site. Surface drainage shall be away from all building foundations. The Engineer shall approve the final grades and elevations before planting operations may begin.

ADD the following:

The finish grade shall be defined as the surface of soil following all grading, soil preparation, water settlement and repair and shall be smooth, uniform, and free of abrupt grade changes and depressions to ensure surface drainage.

The Contractor shall take every precaution to protect and avoid damage to sprinkler heads, irrigation lines, and other underground utilities during his grading and conditioning operations.

All depressions where water will stand, all voids, erosion, settled trenches and excavations, and all ridges and rises which affect the maintenance and mowing of the lawns with a gang-mower or which visually are evident shall be filled with conditioned topsoil and/or removed by Contractor, leaving a smooth, even finish grade.

All stones one half inch (1/2") and larger generated by the finish grading shall be removed off site.

308-4 Planting.

308-4.1 General.

ADD the following at the end of the sentence in the fourth paragraph:

"and finish grading."

ADD the following:

Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted horticultural practice. No planting shall be done in any area until the area concerned has been satisfactorily prepared in accordance with these specifications.

Soil moisture level prior to planting shall be no less than 75% of field capacity. The determination of adequate soil moisture for planting shall be the sole judgment of the Resident Engineer. The Contractor shall obtain approval of planting pits before planting operations shall begin. If the soil moisture level is found to be insufficient for planting, all planting pits shall be filled with water and allowed to drain before starting planting operations.

No more plants shall be distributed in the planting area on any day than can be planted and watered on that day. All plants shall be planted and watered as herein specified immediately after the removal of the containers. Containers shall not be cut prior to placing the plants in the planting area.

Prior to any excavation, the exact positioning and location of trees to be planted in existing lawn areas shall be done on site with Landscape Architect. Contractor shall flag all existing rotor sprinkler locations in the proximity of the proposed tree locations on the plans prior to meeting with the Landscape Architect. Trees shall not be placed closer than 20 feet from any rotor, unless otherwise directed by Landscape Architect/Owner's representative.

308-4.2 Protection and Storage. ADD the following:

The Contractor's on-site plant storage area shall be approved by the Resident Engineer prior to the delivery of any plant materials. Any plant determined by the Resident Engineer to be wilted or otherwise damaged shall be rejected at any time during the project, whether in the ground or not. All plants that have been handled by trunk or stem shall be rejected.

308-4.5 Tree and Shrub Planting.

Number 5, REVISE to read as follows:

A circular watering basin four inches (4") high shall be constructed around the plant in the following diameters:

Two foot (2') diameter for 1 gallon plant

Three foot (3') diameter for 5 gallon plant

Four foot (4') diameter for 15 gallon plant

The bottom of basin shall be at approximate finish grade or slightly lower.

ADD the following:

Fertilizer planting tablets (7 gram size) shall be placed with each plant at the following rates:

Three (3) tablets per 1 gallon container

Eight (8) tablets per 5 gallon container

Fifteen (15) tablets per 15 gallon container

Sixteen (16) tablets per 24" box size

Four (4) tablets for each 1/2" caliper at 14" above grade

Planting backfill shall be a thoroughly blended mixture of excavated soil from the planting pits and soil amendments with the following amounts per cubic yard of backfill:

Soil Amendment	40%
On-Site Soil	60%
Gypsum	4 lbs.
Soil Conditioner (Gro-Power Plus)	15 lbs.

308-4.6 Plant Staking and Guying.

308-4.6.2 Method "B" Tree Staking. First and second sentences, revise to read as follows:

The tree shall be staked with the type and length of the stake specified on the plans or in the special provisions. One stake shall be placed 18" (450 mm) from each side of the tree trunk.

All trees 36" box and smaller shall be staked with two wood stakes, driven into the ground perpendicular to the prevailing wind direction. The stakes shall be driven in plumb and secure. Special care shall be taken that the driving in of the stake does not damage the tree roots or root ball. Tree ties shall be fastened to each tree and stake by looping figure 8's with the inside diameter of the tie at 2 or 3 times the diameter of the tree and by tacking the back of the tie to the stake.

ADD: 308-4.10 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-tenth the branching structure. Pruning may be done only with the approval of, and in the presence of, the Resident Engineer. Cuts over three-quarters of an inch (3/4") shall be painted with an approved tree wound paint.

ADD: 308-4.11 Bark Mulching. All areas to receive shrubs and ground covers shall be mulched by covering the entire surface of the planting area with a two inch (2") deep minimum layer of Type 5 bark mulch.

308-5 IRRIGATION SYSTEM INSTALLATION.

308-5.1 General. Fourth paragraph, ADD the following:

Unless otherwise specified no PVC irrigation pressure pipeline shall be installed within one (1) foot of and parallel to utility line (such as gas, electric, etc).

308-5.2 Irrigation Pipeline Installation.

308-5.2.3 Plastic Pipeline. ADD the following:

All PVC pressure pipe 4" and smaller, polyvinyl chloride or asbestos cement, shall have the correct-sized concrete thrust block installed at every abrupt change of alignment; at globe or gate valves, at tees, elbows and crosses, and at ends of pipe runs; or wherever the Resident Engineer deems one to be necessary. Thrust blocks are to be installed as per San Diego Regional Standard Drawings W-17, W-18, W-19 and SDW-100, sized as for 4" pipe.

All pressure pipe shall have a continuous blue colored trench marker metallic tape placed nine inches (9") below finished grade directly above the buried pipe.

Irrigation pressure line and lateral line is shown diagrammatically. Unless otherwise directed, install lines in locations as stated on plans.

ADD: 308-5.2.5 Brass Pipe Fittings. Brass threaded joints shall be made with a non-toxic non-hardening joint compound or Teflon tape applied to the male threads only.

ADD: 308-5.2.6 Sleeves and Conduits. Sleeves and conduits shall extend 12" beyond each side of pavement. There shall be one pipe or bundle of wires per sleeve/conduit. The letters "E" for electrical conduit or "W" for water shall be stamped, saw cut or chiseled in 2" high letters on the pavement directly above the sleeve.

SECTION 308 – LANDSCAPE AND IRRIGATION INSTALLATION

308-6 Maintenance and Plant Establishment. ADD the following:

All planted areas must be protected with 4' barrier fencing during establishment period.

PART 4 - CONTROL OF MATERIALS

SECTION 400 – ALTERNATE ROCK PRODUCTS, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND UNTREATED BASE MATERIAL

REVISE sentence in parenthesis to read as follows:

This Subsection shall apply unless Section 200, "Rock Materials" is specified.

ADD: PART 8 – ENVIRONMENTAL WORKS

SECTION 801 – WATER POLLUTION CONTROL

801-2.9 Post-Construction Requirements. To the City Supplement second paragraph, ADD the following:

The decal-disc inlet markers shall be "das Duracast Curb Marker®" or approved equal.

END OF SUPPLEMENTARY SPECIAL PROVISIONS (SSP)

TECHNICAL SPECIFICATIONS

SECTION	TITLE
32 18 16.13	Playground Protective Surfacing
11 68 13	Playground Equipment
10 73 00	Protective Covers

SECTION 32 18 16.13
PLAYGROUND PROTECTIVE SURFACING

TotTurf® Supreme

TotTurf® Supreme Poured in Place Product Specifications

TOTTURF® a PLAYCORE company April 2011

TotTurf® Supreme

PART 1 – General

1.01 POURED IN PLACE PLAYGROUND SURFACING

TotTurf® Supreme poured in place playground surfacing consists of a polyurethane binder mixed with 100% recycled, shredded tire buffings which will make up the Cushion Layer. The Cushion Layer is capped with TPV (Thermal Plastic Vulcanized) granules mixed with an Aliphatic binder creating the Wear Course. TotTurf® surfaces comply with ADA and CPSC guidelines as well as ASTM Standards. TotTurf® is also certified by IPEMA, a third party testing organization for playground surfaces and equipment.

1.02 PERFORMANCE REQUIREMENTS

A. Area Safety: TotTurf® Supreme poured in place surfacing within the playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F 1292-09. The surface must yield both a peak deceleration of no more than 200 G-max and a Head Injury Criteria (HIC) value of no more than 1,000 for a head-first fall from the highest accessible portion of play equipment being installed as shown on drawings. *IPEMA certification is required.*(ASTM F1292 section 4.3.3: *The laboratory test used to determine critical fall height shall have been conducted on surfacing material samples identical in design, materials, components, thickness and manufactured as the installed playground surface)*

B. Accessibility: NOTE: Children's outdoor play areas shall be in compliance with the Uniform Federal Accessibility Standards (UFAS) FED-STD-795 and the Architectural and Engineer Instructions (9AEI) Design Criteria. The requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) 28 CFR Part 36 that provide equal or greater accessibility than the requirements of UFAS must also be met in children's outdoor play areas.

C. TotTurf® Supreme poured in place surfaces intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable and slip resistant, and shall meet the requirements of ASTM F 1951- 09 and ASTM F 1292-09.

D. **APPLICABLE STANDARDS**

ASTM International:

• ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull Meter Method – This standard replaces ASTM D2047

• ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers- Tension

• ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

• ASTM D2859 Standard Test Method for Flammability of Finished Textile Floor Covering Materials

• ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester

• ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment

• ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

E. TPV material shall be angular granules with a (Shore A) hardness of 65°A ±5 and particle size between .5-1.5mm. Binder shall be not less than 15 percent of the total weight of TPV material used in the wear surface, and shall provide 100 percent coating of the particles. No other granule sizes are acceptable.

F. Third party test results of tensile strength equal to or greater than 170psi and elongation yield equal to or greater than 180%

G. TotTurf® Supreme poured in place surfaces shall be manufactured and installed by trained, experienced company employees or certified installers who have successfully completed the

"Certified Installers Training Program" required by TotTurf®. Aliphatic urethane only used in wear course.

H. Delivery, Storage and Handling: Materials and equipment shall be delivered and stored in accordance with the manufacturer's recommendations.

I. Project Site Conditions: TotTurf® Supreme poured in Place surfacing must be installed on a dry sub-surface, with no prospect of rain within the initial drying period, and within the recommended temperature range of the manufacturer. Installation in weather condition of extreme heat, less than 55 degrees (F), and/or high humidity may affect cure time, and the structural integrity of the final product. Immediate surroundings of the site must be reasonably free of dust conditions as this could affect the final surface appearance. The manufacturer's Service Center Manager reserves the right to control the installation based on such factors without penalty to the company.

J. Sequencing and Scheduling: TotTurf® Supreme poured in place surfacing shall be installed after all playground equipment, shade structures, signs and any other items within the surfacing area. Surface installation will be coordinated by a TotTurf® representative.

K. Warranty: TotTurf® Supreme poured in place surface shall maintain required impact attenuation characteristics and be guaranteed against defects in workmanship and material for a limited Seven (7) year period or as specified and agreed upon per alternate contract. Warranty will be specific to maintenance requirements and performance standards of completed product

L. Submittals: The following shall be submitted:

1. One original hard copy of the submittal package will be provided. Additional hard copies available by request, please contact your local sales representative for specifications, details, colors and testing data.
2. Products submitted as equal must include hard copies of manufactures written specifications and warranty.
3. Manufacturer's descriptive data and installation instructions.
4. Manufacturer's details showing depth of the system, sub-base materials, and edge details.
5. Mandatory listing of at least 3 installations where products similar to that being proposed (.5-1.5mm) for use have been installed and in service for a minimum of 2 years. List shall include: Owner or purchaser, address of installation, date of installation, contact person and phone number.

6. A signed statement by an authorized official certifying that the surfacing system meets the requirements of ASTM-F1292-09 for a head-first fall from the highest accessible portion of the specified playground equipment. *IPEMA certification is required*.
7. A signed statement from the manufacturer of the poured in place surfacing attesting that all materials under this section shall be installed only by the Manufacturer's Trained Installers.
8. A certificate of Insurance shall be provided by TotTurf® for poured in place surfacing for use as playground safety surfacing, covering general and product liability of not less than $1,000,000 for each occurrence, $2,000,000 general aggregate, with an excess/ umbrella liability of $25,000,000. The issuing underwrite shall be AA rated. Manufacturers submitting as equal must provide a certificate of insurance equal to or greater than TotTurf®.
9. State specific contractor's license under manufacturers name doing business in the specific state for a minimum of 5yrs or more. (License under other contractors name unacceptable)
10. Third party test results of tensile strength equal to or greater than 170psi and elongation yied equal to or greater than 180%.
11. Mandatory samples of the proposed material for this project.

PART 2 – PRODUCTS

Safety surfacing shall consist of both recycled and synthetic materials meeting the requirements of this specification. The type of safety surfacing shall be TotTurf® Supreme, manufactured and installed by TotTurf®, or it's Certified Installers. Telephone: 800-858-0519.

Contact: _____

2.01 Product Scope

A. Poured in Place Surface: The TotTurf® Supreme poured in place surface shall consist of 100 percent recycled shredded tire material mixed with a polyurethane binder and capped with a TPV granule mixed with an aliphatic binder.

B. It shall consist of a uniform material manufactured in such a way that the wear course meets the requirements specified herein for wear surface

C. The type of safety surfacing shall be a poured-in-place system and shall be indicated on the drawings.

2.02 Cushion Layer Section

A. Impact Attenuating Cushion Layer: Cushion Layer consists of shredded styrene butadiene rubber (SBR) adhered with a 100 percent solids polyurethane binder to form a resilient porous material.

B. Strands of SBR may vary from 0.5 mm – 2.0 mm in thickness by 3.0 mm – 20 mm in length. Cushion material may have 10% SBR Ambient Crumb Rubber (5-9 Mesh) using sieve analysis ASTM D 5644 and a fiber content of .1% or less mixed in.

C. Foam or standard rubber granules are not to be permitted in Cushion Layer

D. Binder shall be between 10-14 percent of the total weight of the material, and shall provide 100 percent coating of the particles.

E. The Cushion Layer shall be compatible with the Wear Course and must meet requirements herein for impact attenuation.

2.03 Wear Course

A. The following are new TotTurf® Custom Colors now available: Cancun, Arizona Gold, Sherwood Forest, Blue Moon and California Dream'n. (See Totturf.com)

B. Wear Course shall consist of Thermal Plastic Vulcanized (TPV) granules with Aliphatic binder formulated to produce a uniform, seamless surface up to 2000 square feet. (Contact sales representative for seamless pads over 2000 square feet)

C. TPV material shall be angular granules with a (Shore A) hardness of 65°A ±5 and particle size between .5-1.5mm. Binder shall be not less than 15 percent of the total weight of TPV material used in the wear surface, and shall provide 100 percent coating of the particles. No other granule sizes are acceptable.

D. Thickness of the Wear Course shall be ½" – 5/8" (minimum ½ inch 12.7 mm).

E. The Wear Course shall be porous.

2.04 BINDER

A. No Toluene Diphenel Isocyanate (TDI) shall be used.

B. No filler materials shall be used in urethane such as plasticizers and the catalyzing agent shall contain no heavy metals.

C. Weight of polyurethane shall be no less than 8.5 lbs/gal (1.02 Kg/1) and no more than 9.5 lbs/gal (1.14 Kg/1)

D. Manufacturer is permitted to modify the type of urethane required to match extreme weather conditions. Substitutions must be equal to or exceed Aliphatic quality.

MATERIALS

A. **Wear Course- TotTurf Supreme TPV Granules:**
Manufacturer: Rosehill Polymers
As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

B. **Cushion Layer – TotTurf Shredded SBR Mixture**
As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

C. **Binder – VORAMER MR Products**
Manufacturer: Dow Chemical
As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

D. **Binder- Ryvec BFLV Products**
Manufacturer: Ryvec Inc.
As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

E. **Binder- Stockmeier Products**
Manufacturer: Stockmeier Urethanes

As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

F. **Binder- Aliphatic**
Manufacturer: Marchem Pacific, Inc.
As distributed by: TotTurf® - (800) 858-0519
Location Used: Playground Area

PART 3 – EXECUTION

3.01 SITE PREPARATION (OWNER OR OWNERS REPRESENTATIVE SHALL)

A. Finished Grade/Slope: Verify that finished elevations of adjacent areas are as indicated on the architectural or site plans, that the appropriate sub-grade elevation has been established for the particular safety surface to be installed, and that the subsurface has been installed per architectural, site or equipment plans while meeting accessibility and use zones requirements.

B. Sub base: Tolerance of concrete or bituminous sub base shall be within 1/8 inch (3.0 mm) in 10 feet (3050 mm). Tolerance of aggregate sub base shall be within 3/8 inch (10mm) in 10 ft (3050 mm). Verify that aggregate sub base has been fully compacted in 2" watered lifts to 95 percent or greater.

C. Curing of Asphalt and Concrete: If poured in place surfacing is installed, verify that concrete Sub base has cured (All areas appear white in color usually between 3-7 days) and that all concrete curing compounds and other deleterious substances that might adversely affect adhesion have been removed. Surface shall be clean and dry.

D. Asphalt cure time requires fourteen (14) days. Once the new asphalt has cured, it must be pressured washed prior to the surfacing being installed. The contractor shall be responsible for flooding the pad to insure proper slope and tolerance. Any areas holding enough water to cover a flat nickel shall be patched prior to arrival of our installation crews.

E. Drainage: Verify that sub-surfacing drainage, if required, has been installed to provide positive drainage per architectural plans.

3.02 INSTALLATION

A. TotTurf® Supreme poured in Place Surfacing: Components of the poured in place surfacing shall be mixed on site in a rotating tumbler to ensure components are thoroughly mixed and are in accordance with manufactures recommendations. Installation of surfacing shall be seamless up to *2,000 square feet* per day and completely bonded to a concrete sub base (If sub base is concrete). Material shall cover all foundations and fill around all elements penetrating the surface.

B. Cushion Layer: Whenever practical, cushion layer of the surfacing material shall be installed in one continuous pour on the same day of up to 2,000 square feet. When a second pour is required, step the seam (see detail) and fully coat the step of the previous work with polyurethane binder to ensure 100 percent bond with new work. Apply adhesive in small quantities so that new cushion layer can be placed before the adhesive dries.

C. Wear Course: Wear Course must be TPV granules. Wear surface shall be bonded to Cushion Layer. If necessary, additional primer will be used between the cushion layer and Wear Course. Apply adhesive to Cushion Layer in small quantities allowing the Wear Course to be applied before adhesive dries. Surface shall be hand trowelled to a smooth, even finish. Except where the Wear Course is composed of differing color patterns, pour shall be continuous and seamless up to *2,000 square feet per day*. (Contact sales representative for seamless installations in excess of 2000 square feet) Where seams are required due to color change, size or adverse weather, a step configuration will be constructed to maintain Wear Course integrity. The edge of initial pour shall be coated with adhesive and wear course surface mixture shall be immediately applied. Pads with multiple seams are encouraged to include a top coat of urethane before being placed into use. Butt joint seams are not acceptable except for repairs, and when new material is placed against original before the original dries. Under special conditions and with owners written approval seams may be permitted in a solid color pad. Consult with manufacturer for specific applications.

D. Perimeter: For installations over existing concrete, the perimeter must be saw cut to provide a keyway 1” deep x 1” wide, or formed during the pour, with surfacing rolled down inside void. Primer adhesive must be applied to all sides of the void. When connecting to a concrete curb or boarder the inside vertical edge shall be primed with adhesive and the final 2” of the cushion layer shall be tapered to allow the wear surface material to be 1.5”- 2” thick where it joins the concrete edge.

E. When installing over new or existing asphalt, a curb or other type of border must be installed by the GC or site owner around the entire pad. Primer adhesive must be applied to the inside vertical edge of the border before the PIP surface installation. In certain situations a “Turndown” or “Bull Nose” termination may be used in conjunction with a saw cut keyway when installing over asphalt.

F. Thickness: Construction methods, such as the use of measured screeds or guides shall be employed to ensure that the full depth of specified surfacing material is installed. Surfacing system thickness throughout the playground equipment use zone shall be as necessary to meet the impact attenuation requirements specified herein.

G. Clean Up: Manufacturer’s installers shall work to minimize excessive adhesive on adjacent surfaces or play equipment. Spills of excess adhesive shall be promptly cleaned.

H. Protection: The TotTurf® Supreme safety surface shall be allowed to fully cure in accordance with Manufacturer’s instructions. The surface shall be protected by the owner from all traffic during the curing period of 48 hours or as instructed by the manufacturer.

I. Manufacturer’s Services: For TotTurf® Supreme poured in place safety surfacing, a manufacturer’s representative who is experienced in the installation of playground safety surfacing shall be provided. The representative shall supervise the installation to ensure that the system meets the impact attenuation requirements as specified herein.

All specifications/details/testing data can be found at: www.totturf.com

SECTION 11 68 13
PLAYGROUND EQUIPMENT

Play Equipment / Material Specifications – Cabrillo Heights Neighborhood Park, San Diego Coast Recreation/LSI Project Number: 40131-1-4

12/18/2012

General Specifications:

Material: All materials shall be structurally sound and suitable for safe play. Durability shall be ensured on all steel parts by the use of time-tested coatings such as zinc plating, galvanizing, ProShield finish, TenderTuff coating, etc. Colors shall be specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F879 unless otherwise indicated (see specific product installation/specifications). All primary fasteners shall include a locking patch-type material that will meet the minimum torque requirements of IFI-125. Manufacturer to provide special tools for pinned tamperproof fasteners.

TenderTuff Coating: Metal components to be TenderTuff-coated shall be thoroughly cleaned in a hot phosphatizing pressure washer, then primed with a water-based thermosetting solution. Primed parts shall be preheated prior to dipping in UV-stabilized, liquid polyvinyl chloride (PVC), then salt cured at approximately 400 degrees. The finished coating shall be approximately .080" thick at an 85 durometer with a minimum tensile strength of 1700 PSI and a minimum tear strength of 250 pounds/inch. Four standard colors are available all with a matte finish. (Brown only for HealthBeat). Not applicable for Evos.

ProShield Finish: All metal components with ProShield finish shall be thoroughly cleaned and phosphatized through a five-stage power washer. Parts are then thoroughly dried, preheated and processed through a set of automatic powder spray guns where a minimum .002" of epoxy primer is applied. A minimum .004” of architectural-grade Super-Durable polyester TGIC powder is applied. The average ProShield film thickness is .006".

ProShield is formulated and tested per the following ASTM standards. Each color must meet or exceed the ratings listed below:

Hardness (D3363) rating 2H

Flexibility (D522) pass 1/8" mandrel

Impact (D2794) rating minimum 80 inch-pounds

Salt Fog Resistance (B117 and D1654) 4,000 hours and rating 6 or greater

UV Exposure (G154, 340 bulb) 3,000 hours, rating delta E of 2, and 90 percent gloss retention

Adhesion (D3359, Method B) rating 5B

The Paint Line shall employ a "checkered" adhesion test daily.

Eighteen standard colors are available.

Decks: All Tenderdecks shall be of modular design and have 5/16" diameter holes on the standing surface. There shall be a minimum of (4) slots in each face to accommodate face mounting of components. Tenderdecks shall be manufactured from a single piece of low carbon 12 GA (.105") sheet steel conforming to ASTM specification A-1011. The sheet shall be perforated with a return flange on the perimeter to provide the reinforcement to ensure structural integrity. There shall be no unsupported area larger than 3.5 square feet. The unit shall then be TenderTuff-coated brown only. Tenderdecks shall be designed so that all sides are flush with the outside edge of the supporting posts. Not applicable for Evos, Weevos or HealthBeat.

Rotationally Molded Polyethylene Parts: These parts shall be molded using prime compounded linear low-density polyethylene with a tensile strength of 2500 psi per ASTM D638 and with color and UV-stabilizing additives. Wall thickness varies by product from .187" (3/16") to .312" (5/16"). Five standard colors are available (Black only for HealthBeat).

Permalene Parts: These parts shall be manufactured from 3/4" high-density polyethylene that has been specially formulated for optimum UV stability and color retention. Products shall meet or exceed density of .960 G/cc per ASTM D1505, tensile strength of 2400 PSI per ASTM D638. Five standard solid colors are available. Some Permalene parts are available in a two-color product with (2) .100" thick exterior layers over a .550" interior core of a contrasting color. Eight standard two-color options are available. Not applicable for Evos or HealthBeat.

Recycled Permalene® Parts: These parts shall be manufactured from 3/4" high-density polyethylene that has been specially formulated for optimum UV stability and color retention. Products shall meet or exceed density of .960 G/cc per ASTM D1505, tensile strength of 2400 PSI per ASTM D638. Available in a three-layer product with (2) .100" thick colored exterior layers over a .550" thick 100% recycled Black interior core. Five standard color options are available (Blue/Black, Yellow/Black, Red/Black, Green/Black and Tan/Black). Not applicable for Evos or HealthBeat.

Footings: Unless otherwise specified, the bury on all footings shall be 34" below Finished Grade (FG) on all in-ground play events/posts. Other types of anchoring are available upon request.

Hardware Packages: All shipments shall include individual component-specific hardware packages. Each hardware package shall be labeled with the part number, description, a component diagram showing the appropriate component, package weight, a bar code linking the hardware package to the job number, assembler's name, date and time the package was assembled, work center number, and work order number.

Installation Documentation: All shipments shall include a notebook or packet of order-specific, step-by-step instructions for assembly of each component, including equipment assembly diagrams, estimated hours for assembly, footing dimensions, concrete quantity for direct bury components, fall height information, area required information and detailed material specifications.

Packing List: All shipments shall include a packing list for each skid/container, specifying the part numbers and quantities on each skid or within each container.

Packaging: PlayBooster posts shall be individually packaged in sturdy, water-resistant, mar-resistant cardboard boxes. Other components shall be individually wrapped or bulk wrapped to provide

protection during shipment. Small parts and hardware packages will be placed in crates for shipment. The components and crates are then shrink-wrapped to skids (pallets) to ensure secure shipping.

Maintenance Kit: An order-specific maintenance kit shall be provided for each structure order. The kit will include a notebook or packet with a second set of installation documents and order-specific maintenance documentation with recommendations on how often to inspect, what to look for and what to do to keep the equipment in like-new condition. The kit also includes touch-up primer, appropriate color touch-up paint, sandpaper, appropriate color touch-up PVC, graffiti remover and additional installation tools for the tamperproof fasteners.

(PB) PlayBooster General Specifications:

Posts: Post length shall vary depending upon the intended use and shall be a minimum of 42" above the deck height. All posts shall be ProShield finished to specified color. All posts shall have a "finished grade marker" positioned on the post identifying the 34" bury line required for correct installation and the top of the loose fill protective surfacing. Top caps for posts shall be aluminum die cast from 369.1 alloy and ProShield finished to match the post color. All caps shall be factory installed and secured in place with (3) self sealing rivets. A molded low-density polyethylene cap, with drain holes, shall be pressed onto the bottom end of the post to increase the footing area.

Steel Posts: All steel PlayBooster posts are manufactured from 5" O.D. tubing with a wall thickness of .120" and shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.

Steel Post Mechanical Properties:

Yield Strength (min): 50,000 PSI

Tensile Strength (min): 55,000 PSI

% Elongation in 2 inches: 25

Modulus of Elasticity: 29.5 x 1,000,000 PSI

Aluminum Posts: All aluminum PlayBooster posts are manufactured from 6005-T5 extruded tubing conforming to ASTM B-221. Posts shall have a 5" outside diameter with a .125" wall thickness.

Aluminum Post Mechanical Properties:

Yield Strength (min): 35,000 PSI

Tensile Strength (min): 38,000 PSI

% Elongation in 2 inches: 10

Modulus of Elasticity: 10 x 1,000,000 PSI

Clamps: All clamps are ProShield finished and, unless otherwise noted, shall be die cast using a 369.1 aluminum alloy and have the following mechanical properties:

Ultimate Tensile: 47,000 PSI

Yield Strength: 28,000 PSI

Elongation: 7% in 2 inches

Shear Strength: 29,000 PSI

Endurance Limit: 20,000 PSI

Each functional clamp assembly shall have an appropriate number of half clamps and shall be fastened to mating parts with (2) 3/8" x 1 1/8" pinned button head cap screws (SST) and (2) stainless steel (SST) recessed "T" nuts. A 1/4" aluminum drive rivet w/stainless steel pin is used to ensure a secure fit to the post.

PlayBooster clamps have three functional applications and shall be named as follows:

1.) Offset hanger clamp assembly.

2.) Deck hanger clamp assembly.

3.) Hanger clamp assembly.

Material Specifications:

130390A
Double Swoosh Slide 72"Dk DB
Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Offset Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Rail: Extruded from 1.125" (28,58 mm) O.D. x .312" (7,92 mm) wall. 6005-T5 aluminum. Finish: ProShield, color specified.

Hood: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Rail Spacer: Fabricated from 1.312" (33,32 mm) O.D. x 16 GA (.065") (1,65 mm) steel tubing. Finish: ProShield, color specified.

Slide: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Support: Weldment comprised of 2.375" (60,33 mm) O.D. RS-20 (.095" - .105") (2,41 mm-2,66 mm) galvanized steel tubing and 1/4" x 3" (6,35 mm x 76 mm) mounting plate. Finish: ProShield, color specified.

123336A
Double Wave Poly Slide 56"Dk DB

Exit Support: Weldment comprised of 2.375" (60,33 mm) O.D. RS-20 (.095" - .105") (2,41 mm x 2,66 mm) galvanized steel tubing and 1/4" x 3" (6,35 mm x 76 mm) mounting plate. Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Offset Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Rail: Extruded from 1.125" ((28,58 mm) O.D. x .312" (7,92 mm) wall. 6005-T5 aluminum. Finish: ProShield, color specified.

Hood: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Rail Spacer: Fabricated from 1.312" (33,32 mm) O.D. x 16 GA (.065") (1,65 mm) steel tubing. Finish: ProShield, color specified.

Mid-Support: Weldment comprised of 1.660" (42,16 mm) O.D. RS-20 (.085" - .095") (2,16 mm-2,41 mm) galvanized steel tubing and 1/4" x 3" (6,35 mm x 76 mm) zinc plated flat steel. Finish: ProShield, color specified.

Slide: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Spacer: Solid color Permalene, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,23 mm) O.D. x 1 11/16" (42,85 mm). Finish: ProShield, color specified.

152907B
Deck Link w/Barriers 2 Steps

Clamps: Cast aluminum

Finish: ProShield, color specified.

Barrier: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 Ga. (.120") (3,04 mm) wall steel tubing, 5/8" (15,88 mm) O.D. steel bar with 203 or 303 stainless steel 3/8" (9,53 mm)threaded inserts. Finish: TenderTuff, color specified.

Step Section: Formed from 12 GA (.105") (2,66 mm) sheet steel comforming to ASTM A1011. Standing surface is 24 1/4" (615,95 mm) wide x 14" (356 mm) deep and is perforated with 5/16" (7,94 mm) diameter holes. Finish: TenderTuff, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,23 mm) O.D. x 1 11/16" (42,85 mm). Finish: ProShield, color specified.

SteelX Panels: Zinc plated 7 GA (.179") (4,55 mm) HR flat steel. Finish: ProShield, color specified.

165445A
Ring Tangle w/Handloop 8"Dk Diff

Clamps: Cast aluminum.

Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Handloop: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,05 mm) steel tubing with 203 or 303 stainless steel inserts, with 5/8" (15,88 mm) internal thread. Finish: TenderTuff, color specified.

RingTangle Climber: Weldment comprised of 1.900" (48,26 mm) O.D. RS40 (.120"-.130") (3,04 mm-3,30 mm) wall galvanized steel tubing, 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tubing and 3/16" (4,75 mm) HRPO flat steel. Finish: ProShield, color specified.

179018A
Logo Climber w/Vibe Handholds 64"Dk DB
Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Logo Climber: Weldment comprised of 2.375" (60,33 mm) O.D. RS40 (.130"-.140") (3,30 mm-3,56 mm) wall galvanized steel tube, 1.029" (26,13 mm) O.D. RS20 (.070"-.080") (1,78 mm-2,03 mm) wall galvanized steel tube, and 1/4" (6,35 mm) HRPO steel sheet. Finish: ProShield, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,23 mm) O.D. x 1 11/16" (42,85 mm). Finish: ProShield, color specified.

Infill Panel: Made from 7GA. (.179") (4,55 mm) thick HRPO steel sheet zinc plated. Finish: ProShield, color specified.

Roto Handhold: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

179019A
Lollipop Climber w/Vibe Handholds 56"Dk DB

Clamps: Cast aluminum.

Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Lollipop Climber: Weldment comprised of 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tube, 2.375" (60,33 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tube, 1/4" (6,35 mm) HRPO steel sheet and 10 GA. (.135") (3,43 mm) HRPO steel. Finish: ProShield, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,23 mm) O.D. x 1 11/16" (42,85 mm). Finish: ProShield, color specified.

Infill Panel: Made from 7GA. (.179") (4,55 mm) thick HRPO steel sheet zinc plated. Finish: ProShield, color specified.

Roto Handhold: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

176081A
Canyon Climber

Canyon Climber: Weldment comprised of 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tube, 1.900" (48,26 mm) O.D. RS40 (.120"-.130") (3,04 mm-3,30 mm) wall galvanized steel tube, and 3/8" (9,53 mm) HRPO steel sheet. Finish: ProShield, color specified.

End Bracket: Weldment comprised of 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tube, 1/4" (6,35 mm) HRPO steel sheet, and 3/16" (4,75 mm) HRPO steel sheet. Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

146812A
Sky Rail Climber 72"Dk DB

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Sky Rail: Weldment comprised of 1.900" (48,26 mm) O.D. RS-20 (.090" - .100") (2,28 mm-2,54 mm) galvanized steel tubing per ASTM A500, 1.315" (33,40 mm) O.D. RS-20 (.080" - .090") (2,03 mm-2,28 mm) galvanized steel tubing per ASTM A500, 1.029" (26,13 mm) O.D. RS-20 (.070" - .080") (1,78 mm-2,03 mm) galvanized steel tubing per ASTM A500, 3/16" x 1 1/4" x 2" (4,75 mm x 31,75 mm x 51 mm) angle and 1/4" x 2 1/2" (6,35 mm x 63,5 mm) HR flat steel. Finish: ProShield, color specified.

Footer: Fabricated from 1.900" (48,26 mm) O.D. RS-20 (.090" - .100") (2,28 mm-2,54 mm) galvanized steel tubing. Finish: ProShield, color specified.

No Material Spec for 141886A

130873A
Ring Pull

Chain Assembly: 5/16" (7,92 mm) Low carbon steel straight link galvanized chain, with bolt link made from grade 316 stainless steel. Finish: TenderTuff-coated, brown in color.

Double Clevis: Stainless Steel

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

D Ring: Cast from A356 aluminum alloy with a cast in place 841 bronze alloy bushing. Finish: TenderTuff, brown in color.

Half Clamp: Cast aluminum. Finish: ProShield, color specified.

Ring Pull Beam: Weldment comprised of 1.660" (42,16 mm) O.D. RS-20 (.085" - .095") (2,16 mm-2,41 mm) galvanized steel tubing and 1/4" x 1 3/4" (6,35 mm x 44,45 mm) HRS clamps. Housings for double clevis are 1 1/4" O.D. x .312" (31,75 mm O.D. x 7,92 mm) wall steel tubing. SAE 841 dry bronze bushings are pressed into housings at factory. Finish: ProShield, color specified.

119805A
Single Beam Loop Horiz Lad 84"Connected Between Decks

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Ladder: Weldment comprised of 2.375" (60,33 mm) O.D. RS-40 (.130" - .140") (3,30 mm-3,56 mm) galvanized steel tubing, 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) zinc plated steel and 1/4" (6,35 mm) HRPO flat steel. Finish: ProShield, color specified.

Half Clamp: Cast aluminum. Finish: ProShield, color specified.

111345A
Bridge/Ramp Transition Bracket

Transition Bracket: Fabricated and formed from 11 GA (.120") (3,04 mm) HRPO low carbon sheet steel. Finish: TenderTuff, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

116244A
Pipe Barrier Above Deck

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Offset Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Pipe Barrier: Weldment comprised of 5/8" (15,88 mm) solid steel vertical rails, 1 1/8" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" (15,88 mm) internal threads, 1 1/2" x 1 1/2" x 29 1/2" (38,1 mm x 38,1 mm x 749,3 mm) angle iron. Barrier measures 33 7/8" (860,43 mm) wide x 39 13/16" (1011,22 mm) high. Finish: TenderTuff, color specified.

90o Bracket: Formed from 1/4" x 1 1/4" (6,35 mm x 31,75 mm) HRPO flat steel. Finish: ProShield, color specified.

166809A
E-Pod Seat

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

E-Pod Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod Casting: Fabricated from sand cast alloy 356 in accordance with ASTM B26. Finish: ProShield, color specified.

120818A
Playstructure Seat

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Seat: Flange formed from 11 GA (.120") (3,04 mm) sheet steel. Seating surface is perforated with 1/4" (6,35 mm)diameter holes. Finish: TenderTuff, color specified.

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

111276A
Rail Assembly

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Offset Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Rail: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel 5/8" (15,88 mm) threaded inserts. Finish: TenderTuff, color specified.

153165A
Stationary Cycler Accessible

Clamps: Cast aluminum.

Finish: ProShield, color specified.

Handhold: Handhold fabricated from high density polyethylene, black in color.

Shaft: .625" (15,88 mm) O.D. stainless steel.

Stub: Weldment comprised of 5.000" (127 mm) O.D. x 11 Ga. (.120") (3,04 mm) wall steel tube, 1/4" x 6" (6,35 mm x 152 mm) HRPO flat steel and 1.063" (27 mm) O.D. 1018 steel shaft housing. Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Handhold Crank: Weldment comprised of 3/4" (19,05 mm) O.D. stainless steel shaft and forged carbon steel.

166081A
CoolToppers Wave Roof

Clamps: Cast aluminum.

Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Net Clamp: Weldment comprised of 1/4" x 1 3/4" (6,35 mm x 44,45 mm) HRPO flat steel and .375" (9,53 mm) HRPO flat steel sheet. Finish: ProShield, color specified.

Wave Roof: High-density polyethylene with ultra violet additives. Live loads 20 psf (0,96 kilopascals). Wind design speed withstands up to 90 mph. Uplift 19 psf (0,91 kilopascals). Snow loads 5 psf (0,24 kilopascals). Tear strength warp 221 lb. (100,24 kilograms) and weft 463 lb. (210,01 kilograms). Burst strength 38 PSIA (262 kilopascals). Cable: Made from 1/4" (6,35 mm) 7-19 galvanized steel cable and fastened with galvanized steel cable clamp.

152911A
Curved Transfer Module Left 32"Dk DB

Clamps: Cast aluminum.

Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Panels: Permalene, color specified.

Railings: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA. (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel 3/8" (9,53 mm) threaded inserts. Finish: TenderTuff, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,23 mm) O.D. x 1 11/16" (42,85 mm). Finish: ProShield, color specified.

Step Support: Weldment comprised of 1.660" (42,16 mm) O.D. RS-20 (.080" - .095") (2,03 mm-2,41 mm) galvanized steel tubing and 1 3/4" x 1 3/4" x 1/8" (44,45 mm x 44,45 mm x 3,17 mm) HR angle. Finish: ProShield, color specified.

Step Sections/Top Step Section: Formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is 24 3/8" (619,13 mm) wide x 14" (355,6 mm) deep and is perforated with 5/16" (7,92 mm) diameter holes. Finish: TenderTuff, color specified.

Deck Support: Weldment comprised of 3 1/2" (88,9 mm) O.D. RS-20 (.125") (3,17 mm) galvanized steel tubing and 3/8" (9,53 mm) O.D. x 5" (127 mm) long CRS rod. Finish: ProShield, color specified.

Deck: Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" (7,92 mm) diameter holes and measures 29" (737 mm) per (2) sides. Finish: TenderTuff, color specified.

121948A
Kick Plate 8"Rise

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Kick Plate: Fabricated from 11 GA (.120") (3,04 mm) HR flat steel. Finish: TenderTuff, color specified.

111228A
Square Tenderdeck

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Square Deck: Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" (7,92 mm) diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures 2 5/8" x 47" x 47" (66,68 mm x 1194 mm x 1194 mm). Finish: TenderTuff, color specified.

111231A
Triangular Tenderdeck

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Triangular Deck: Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" (7,92 mm) diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures 2 5/8" x 37 3/4" (66,68 mm x 958,85 mm). Finish: TenderTuff, color specified.

111404H
92"Alum Post DB

Post: See PlayBooster (PB) General Specifications.

111404F

108"Alum Post DB

Post: See PlayBooster (PB) General Specifications.

111404E
116"Alum Post DB

Post: See PlayBooster (PB) General Specifications.

111404A
148"Alum Post DB

Post: See PlayBooster (PB) General Specifications.

173880B
190" CoolToppers Wave Post DB Only Steel Only

Alignment Tube: Fabricated from 1.029" (26,13 mm) O.D. RS20 (.070" - .080") (1,77 mm - 2,03 mm) galvanized steel tubing.

Post: See PlayBooster (PB) General Specifications.

5" (127 mm) Post Cap: Die cast 369.1 aluminum alloy. Finish: ProShield, color specified.

173880A
214" CoolToppers Wave Post DB Only Steel Only

Alignment Tube: Fabricated from 1.029" (26,13 mm) O.D. RS20 (.070" - .080") (1,77 mm - 2,03 mm) galvanized steel tubing.

Post: See PlayBooster (PB) General Specifications.

5" (127 mm) Post Cap: Die cast 369.1 aluminum alloy. Finish: ProShield, color specified.

158108B
Noodle Pod DB Only 16" Pod Height

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Noodle Post: Fabricated from 5.000" (127 mm) O.D. x 1/8" (3,17 mm) wall aluminum tube. Finish: ProShield, color specified.

E-Pod Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod Casting: Fabricated from sand cast alloy 356 in accordance with ASTM B26. Finish: ProShield, color specified.

158108C
Noodle Pod DB Only 24" Pod Height

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Noodle Post: Fabricated from 5.000" (127 mm) O.D. x 1/8" (3,17 mm) wall aluminum tube. Finish: ProShield, color specified.

E-Pod Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.

Pod Casting: Fabricated from sand cast alloy 356 in accordance with ASTM B26. Finish: ProShield, color specified.

No Material Spec for 182503C

Warranty:

100-YEAR LIMITED WARRANTY

On all PlayBooster®, PlayShaper® and PlaySense® aluminum posts, stainless steel fasteners, clamps, beams and caps, against structural failure due to corrosion/natural deterioration or manufacturing defects, and on PlayBooster, Evos™ and Weevos™ steel posts and arches against structural failure due to material or manufacturing defects.

15-YEAR LIMITED WARRANTY

On all plastic components (including TuffTimbers™ edging), all steel components (except 100-year steel posts), Mobius® climbers, decks and TenderTuff™ coatings (except Wiggle Ladders, Chain Ladders and Swing Chain) against structural failure due to material or manufacturing defects. TuffTurf® tiles against material or manufacturing defects.

10-YEAR LIMITED WARRANTY

On concrete products against structural failure due to natural deterioration or manufacturing defects. Does not cover minor chips, hairline cracks or efflorescence.

8-YEAR LIMITED WARRANTY

On Aeronet™ climbers and climbing cables against defects in materials or manufacturing defects. On CoolToppers® fabric against failure from significant fading, deterioration, breakdown, mildew, outdoor heat, cold or discoloration. This warranty is limited to the design loads as stated in the specifications found in the technical information.

3-YEAR LIMITED WARRANTY

On all other parts, i.e.: CableCore® products, swing seats and hangers, grills, Mobius climber handholds, Wiggle Ladders, Chain Ladders and Swing Chain, Track Ride trolleys and bumpers, all rocking equipment including Sway Fun® gliders, PVC belting material, HealthBeat™ hydraulic cylinders, Seesaws, Wiggle Ring Bridge, etc., against failure due to corrosion/natural deterioration or manufacturing defects.

This warranty does not include any cosmetic issues or wear and tear from normal use. It is valid only if the playstructures and/or equipment are erected to conform with Landscape Structures' installation instructions and maintained according to the maintenance procedures furnished by Landscape Structures Inc. For a full text of the warranty, contact your playground consultant.

Play Equipment			Component Color
QTY	**NO.**	**DESCRIPTION**	
		SLIDES	
1	130390A	Double Swoosh Slide 72"Dk DB	Limon
1	123336A	Double Wave Poly Slide 56"Dk DB	Limon
		CLIMBERS W/PERMALENE HANDHOLDS	
1	152907B	Deck Link w/Barriers 2 Steps	Grey
1	165445A	Ring Tangle w/Handloop 8"Dk Diff	Denim
		CLIMBERS W/VIBE HANDHOLDS	
1	179018A	Logo Climber w/Vibe Handholds 64"Dk DB	Denim
1	179019A	Lollipop Climber w/Vibe Handholds 56"Dk DB	Denim
		CLIMBERS OTHER	
1	176081A	Canyon Climber	Denim
1	146812A	Sky Rail Climber 72"Dk DB	Denim
		OVERHEAD EVENTS	
2	141886A	Access/Landing Assembly Rails Barrier Left 24"Dk	Grey
1	130873A	Ring Pull	Denim
1	119805A	Single Beam Loop Horiz Lad 84"Connected Between Decks	Denim

Play Equipment			Component Color
QTY	NO.	DESCRIPTION	
		BRIDGES & RAMPS	
1	111345A	Bridge/Ramp Transition Bracket	Grey
		ENCLOSURES	
1	116244A	Pipe Barrier Above Deck	Grey
		MORE FUN	
1	166809A	E-Pod Seat	Limon
1	120818A	Playstructure Seat	Grey
2	111276A	Rail Assembly	Grey
1	153165A	Stationary Cycler Accessible	Metallic Silver
		ROOFS	
1	166081A	CoolToppers Wave Roof	Navy
		DECKS	
1	152911A	Curved Transfer Module Left 32"Dk DB	All Metallic Silver
2	121948A	Kick Plate 8"Rise	
2	111228A	Square Tenderdeck	
2	111231A	Triangular Tenderdeck	
		POSTS	
3	111404H	92"Alum Post DB	All Denim
2	111404F	108"Alum Post DB	
6	111404E	116"Alum Post DB	
3	111404A	148"Alum Post DB	
2	173880B	190" CoolToppers Wave Post DB Only Steel Only	
2	173880A	214" CoolToppers Wave Post DB Only Steel Only	
		CLIMBERS	
1	158108B	Noodle Pod DB Only 16" Pod Height	Metallic Silver w/Limon Pods
1	158108C	Noodle Pod DB Only 24" Pod Height	
		SIGNS	
1	182503C	Welcome Sign (LSI Provided) Ages 5-12 years Direct Bury	Metallic Silver

SECTION 10 73 00
PROTECTIVE COVERS

1. GENERAL

2. SECTION INCLUDES

Manufactured steel shelters, as specified on the plans.

3. RELATED SECTIONS

Section 03 30 00 - Cast-In-Place Concrete: Concrete placed for foundations.

Section 31 63 29 - Drilled Concrete Piers: Augured piles/footings for support of structures.

Section 31 68 00 – Foundation Anchors: Anchor assemblies to fasten to foundations.

4. REFERENCES

ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2008.

ASTM A 325 - Standard Specification for Structural Steel Bolts, Heat Treated, 120/105 KSI Minimum Tensile Strength; 2010.

ASTM F 1554 - Standard Specification for Anchor Bolts, Steel, 36, 50 and 105 KSI Yield Strength; 2007a

ASTM A 563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a.

ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a.

ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process; 2011.

ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process; 2010.

American Institute of Steel Construction (AISC) (Latest Edition).

American Iron and Steel Institute (AISI) Specifications for Cold Formed Members.

American Society of Testing Material (ASTM).

American Welding Society (AWS).

OSHA Steel Erection Standard 29 CFR 1926.750 Part R.

SSPC-SP 2 –Hand Tool Cleaning; Society for Protective Coatings; 2004.

SSPC-SP 10 -Near-White Blast Cleaning; Society for Protective Coatings; 2007. ICC Evaluation Service, ESR-2233, Structural Insulated Panels.

5. SYSTEM DESCRIPTION

Standard Design Loads: 2010 California Building Code, 20 P.S.F. (Live Load), 90 M.P.H., Exposure C, Seismic Design Category D.

Column to footing connection to be in compliance with OSHA Steel Erection Standard CFR 1926.750 Part R, which requires a minimum of four (4) anchor bolts per column. No single anchor bolt column base connection allowed.

Design Method shall be per applicable local building code requirements. Manufacturer's design shall utilize a three-dimensional structural analysis to determine all member loads and forces. Design and detailing shall be in compliance with AISC 341, Part I or III.

The pre-engineered package shall be shipped as a pre-cut (except for standing seam roof panels) and pre-fabricated package that shall include the structural framing members, roof panels, fasteners, and trim as well as the installation instructions. The structure shall be shipped un-assembled for minimum shipping charges.

Field labor shall be only for the assembly of the pre-fabricated parts. No onsite welding shall be required or permitted. Tube frame connection bolts and fasteners shall be concealed, within the tubing or hidden, except at the baseplate. All rafter tails shall be factory welded into place as well as all compression ring/tube covers. On multi-tiered buildings the rafter risers shall be welded to the lower rafters for ease of installation. No openings near the base of the column with screwed on cover plates. No through bolting shall be allowed for any connections due to the possibility of the deformation of the tube steel parts.

6. SUBMITTALS

Submit a minimum of 4 sets of shop drawings and 2 sets of structural calculations signed and sealed by a Professional Engineer in the state of California.

Manufacturer shall provide site specific foundation design signed and sealed by a Professional Engineer in the state of California. Generic or "typical" foundation details and design shall not be acceptable.

Structural calculations shall show the conformance to the local building code information:

2010 California Building Code,
20 P.S.F. (Live Load)
90 M.P.H., Exposure C
Seismic Design Category D

7. QUALITY ASSURANCE

Supplier Qualifications:
The product shall be designed and fabricated at a facility operated and directly supervised by the supplier.

The supplier shall have at least 8 years of experience in the design and fabrication of pre-engineered steel shelters.
Membership in American Institute of Steel Construction.
Membership in American Welding Society.
Full time on-staff licensed Professional Engineer.
Full time on-staff quality control manager.

8. DELIVERY, STORAGE, AND HANDLING

Coordinate delivery requirements with Owner and other installers.

Store products in manner to prevent damage prior to installation. Where products need to be stored outdoors, store off the ground and place so that water will drain

Inspect parts within 48 hours of delivery, compare with manufacturer's bill of materials and report any missing or non-conforming parts to the manufacturer within this time frame.

9. WARRANTY

Provide manufacturer's standard 10 year warranty.

10. PRODUCTS

A. MODEL
B. SQ20M-P6 as manufactured by ICON Shelter Systems.
C. SQ30M-P6 as manufactured by ICON Shelter Systems.

11. ACCEPTABLE MANUFACTURER

ICON Shelter Systems, Inc., 1455 Lincoln Ave, Holland, MI 49423
Telephone 1-800-748-0985, fax 616-369-0944 or email info@iconshelters.com.

Contact the regional representative for pricing: Chad Barry

Coast Recreation

Alternate suppliers shall meet the requirements shown in Section 1.6. Alternate suppliers must provide proof of: equivalency of the shot blast, e-coat and powder-coat process and finish. Structural design shall include all loads to the foundation and shall not exceed the loads specified in the chart on the installation drawings. Designs using wood, light gauge metal framing or sheet metal other than roof/wall panels and related trim and flashing shall not be approved.

12. APPLICATIONS

Shelters: Pre-engineered, prefabricated all-steel framed shelters; column, rafter, and purlin structure, with steel roof panels or T&G roof deck or Sandwich Panel roof deck, all flashing, trim, accessories, and fasteners required for a complete installation.

Structural framing (Columns, rafters, tie-beams, purlins, etc.) shall be Hollow Structural Sections (HSS) meeting ASTM A500 grade B. “I” beams, tapered columns, open “C” channels, cold-formed box sections or wood products shall not be accepted.

Compression rings shall be made of structural channel sections or welded plate sections that meet ASTM A36 grade steel.

Structural connections shall be made with A325 high-strength bolts and A563 structural nuts, ASTM F1554 grade 36 anchor bolts, self-drilling screws and pop-rivets.

Metal Roof Panel: 24-gauge galvalume roof panel with a Kynar 500 paint finish. The ribs shall be 1-3/16" high and 12" on center. Roof panel coverage shall be 36" wide; all angles shall be factory cut. The ribs shall run with the slope of the building for proper drainage

Metal Roof Trim: Roof trim shall match the color of the roof and shall be formed from 26-gauge painted galvalume steel as follows: 1. Metal ridge caps shall be pre-formed with a single central bend to match the roof slope. The trim shall be hemmed on both sides. 2. Roof peak cap shall be supplied on all buildings that do not include a framed cupola. 3. Edge of the roof deck shall have a preformed "J" channel eave trim, the channel shall be applied along all the eaves to trim and straighten the eave. The "J" shall have weep holes at 6" on center for roof drainage. 4. Highside trim shall be in a "J" shape and shall supplied for all tiered buildings.

13. ACCESSORIES

Electrical Access
Access holes to be placed in the connections plates to allow electrical wiring into the column base.

14. FABRICATION

All columns, rafters, tie-beams, purlins, compression rings shall be factory welded assemblies with provisions for bolted connections in the field. There will be no field welding required for any connections. All base plates, stiffener plates, rafter clips and end plates shall be factory welded in place.

Factory welded connections shall be made by certified welders in accordance with the latest edition of AWS D1.1 and D1.3 Specifications. All welders shall be AWS certified.

Factory Frame Finish: Powder coated per the following procedure; the steel shall be shot-blasted to the specification of SSPC-SP10 (shot-blasted to near white condition), this will remove all oil residue, mil scale, weld spatter and slag. The second step the steel is washed and zinc phosphated in an eight stage electro deposition pretreatment process. Then it is immersed in a liquid epoxy and coated to uniform 0.7-0.9 mils, this E-coat process totally encapsulates the part preventing rusting, no welding shall be allowed after the E-coating has been applied. Then a double coat of TGIC polyester powder is applied, one coat of color and one clear coating for a final finish that is 8-12 mils thick. All materials shall be inspected to meet 100% coating, proper cure, film thickness and impact resistance. Color to be selected form the manufacturer's standard color chart. No wet-coat powder-coat alternatives shall be accepted.

15. EXECUTION

When unloading, pad the forks and use other precautions to protect the powder-coated finish. Do not use chains to move materials. Handle all materials carefully in the field to avoid scratching the powder-coat finish. Before installing the roof, clean the steel and touch up any scratches and chips in the powder-coat finish using touch up paint from the manufacturer.

The shelter shall be set on prepared footings or concrete slab (provided by others). Footing details shall be designed by an engineer (retained by other than the manufacturer), based on load information as provided on the manufacturer's supplied drawings. Foundation shall be constructed to all local building code requirements and per good construction practices for the specific site conditions.

In accordance with OSHA Steel Erection Standard 29 CFR 1926.750 Part R, anchor bolts shall be installed for proper column stability and shall have a minimum of four (4) anchor bolts per column. No single anchor bolt column base connection allowed.

Install all parts and pieces per the manufacturer's supplied installation instructions and these specifications. The underside of the tongue and groove decking or sandwich panel roof deck shall be sealed before installation as specified and approved by the landscape architect or owner.

END OF SECTION

APPENDIX A

RAIN GARDEN
INTERPRETIVE SIGN

think BLUE
SAN DIEGO

RAIN GARDENS

A NATURAL POLLUTION SOLUTION

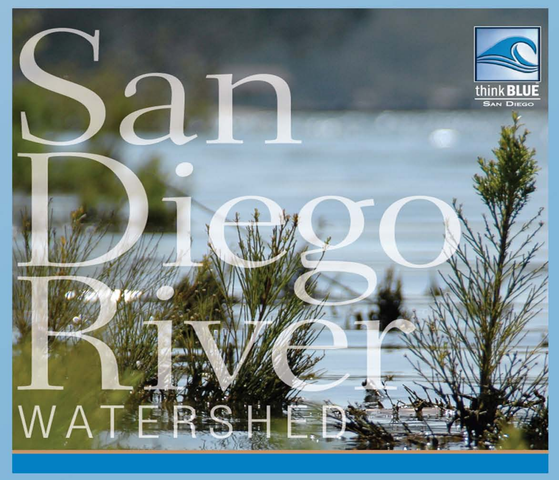
As rainwater flows from rooftops and urban runoff goes across hard surfaces like roads, sidewalks and parking lots, they can collect pollutants and carry them into our local waterways through storm drains. Rain gardens capture and clean this water by filtering it through the soil.

HABITAT & GROUNDWATER RECHARGE

Rain gardens feature a variety of native plants that attract birds and beneficial insects to your yard. Soils offering good drainage, such as sand and gravel, allow rain and runoff to slowly replenish local groundwater supplies.

BUILD YOUR OWN

Locate the low point in your yard where water naturally drains and dig a small basin. Layer the bottom of the basin with gravel or river rock followed by a middle layer of sand. Cover the filled basin with planting soil to support native plants that can tolerate San Diego's wet winters and dry summers, such as Scarlet Monkey Flower, Wild Lilac or California Fescue.



APPENDIX B

DRAINAGE STUDY
BY
BURKETT & WONG DATED MAY 2012

DRAINAGE STUDY (100% Design)

FOR

Cabrillo Heights Neighborhood Park

City of San Diego, CA

Prepared By:

3434 4th Avenue
San Diego CA, 92103
B&W Job #: 10915U

May 2012

TABLE OF CONTENTS

Appendices

1. Purpose

The purpose of this Study is to analyze the existing and proposed hydrology for the proposed rain gardens at Cabrillo Heights Neighborhood Park in San Diego, CA. This report analyzes the peak flow rates for the 5-year storm event for purposes of rainwater treatment and sizing of the rain gardens and the 100-year storm event for flood control purposes.

The subject property is bounded on the east by Angier Elementary School, to the west by Kearny Villa Road, to the north by a mixture of condominiums and commercial buildings and to the south by Hurlbut Street. (see Appendix A-Vicinity Map and Imagery for details). The project is geographically located at 32°48'21.18"N, 117° 8'50.60"W.

The drainage study performed in this report corresponds to the current 100% design level grading & site plan as of May 2012.

The hydrologic calculations in this study are based on the San Diego County Hydrology Manual.

2. Existing Conditions

The subject property where the site is located is currently developed as a 13-acre neighborhood park with baseball/soccer playing fields, concession area, turf area, tot lot and associated parking. The site is split in two levels that are generally flat (less than 5% slope) with concrete walkways providing access throughout the site. The playing fields and concession area are located on the lower level of the site. The tot lot and turf area are located on the upper level of the site. The site, generally, is set lower than the surrounding areas and does receive some run-on surface flow from the neighboring school that is conveyed via an asphalt swale to a catch basin near the eastern side of the site. A 60" RCP storm drain passes through the northern portion of the site from east to west and serves much of the neighboring area.

The site can generally be analyzed by 5 major drainage basins which are described below.

Basin A consists of the westerly parking area of the site that is located adjacent to Kearny Villa Road. Runoff from this drainage area is conveyed as sheet flow easterly to a concrete curb and gutter where it is then directed northerly to an existing catch basin. The existing catch basin connects to the existing 60" RCP via an 8" PVC storm drain. This basin is approximately 0.5-acres in size.

Basin B consists of playing fields and concrete walkways. This basin is located just east of Basin A. Runoff from this basin is conveyed via sheet flow northerly through the playing fields towards an existing drainage inlet. The drainage inlet connects to

the existing 60" RCP via a smaller storm drain pipe. This basin is approximately 3.3-acres in size.

Basin C consists of playing fields and the concession area as well as much of the turf area on the upper level of the project site. This basin is located approximately in the middle of the project site. Runoff from this basin is conveyed via sheet flow to various catch basins and a concrete head wall northerly to the existing 60" RCP. This basin is approximately 5.0-acres in size.

Basin D consists of playing fields, turf area and the tot lot. This basin is located just east of Basin C. Runoff from this basin is conveyed north via overland flow through the playing fields to an existing drainage inlet that is connected to the existing 60" RCP via a smaller storm drain pipe. This basin is approximately 3.5-acres in size.

Basin E is the easterly portion of the site adjacent to Angier Elementary School and consists of a parking area, playing fields, concrete walkways and an area of native grasses. Runoff from this basin is conveyed northerly and westerly to an existing drainage inlet that connects to the existing 60" RCP via a smaller storm drian pipe. This basin receives run-on flow from the elementary school that is conveyed by asphalt swales to an existing drainage inlet. The existing drainage inlet then discharges to the 60" RCP. This basin is approximately 2.3-acres in size.

See Appendix B, The Existing Conditions Hydrology Map for delineations of sub-basins. Basins B, C and D are included for reference only and are not analyzed by this report as they are not affected by the proposed rain garden improvements.

3. Proposed Improvements

The proposed improvements include the construction of two rain gardens for treatment of storm water flows and do not increase impervious area on the project site; therefore peak drainage flows are not increased. Each rain garden will be landscaped to enhance rainwater treatment and to function as bio-retention facilities that treat the 5-year event design storm. Drainage facilities will also be included to ensure the 100-year event design storm will be conveyed through the system. It should be noted that the maximum water depth allowed in the rain garden is two feet.

Rain Garden 1 is located within Basin A in the western portion of the site. This rain garden will be used to treat the parking area within Basin A. This rain garden will treat water from the location of the existing catch basin at the northerly end of the parking lot. It is proposed to replace the existing catch basin with a type G catch basin per the Regional San Diego Standards. Captured storm water is conveyed south to the rain garden where it will infiltrate to the substrate and then is conveyed into the storm drain system. Storm events greater than the 5-year event will overflow into a Type F catch basin located within the rain garden. The treatment area for this rain garden is approximately 0.6 acres.

The rain garden is comprised of 18" of a sandy loam material with a sustained percolation rate of 5 inches per hour on top of 12" of class 2 permeable drain rock. A 6" perforated PVC pipe, connected to a type 'F' catch basin, will collect water from the drain rock. Water is then conveyed to the existing 66" RCP via a 12" RCP storm drain with a minimum 1% slope. The rain garden is approximately 4' deep and has approximately 4,970 cubic feet of storage capacity with at least 1' of available freeboard.

Rain Garden 2 is located within Basin E in the eastern portion of the site. This rain garden will be used to treat the northeast parking area within Basin E and the run-on flow from Angier Elementary School. The rain garden will be located east of the most easterly playing field. The treatment area for this rain garden is approximately 2.3 acres.

The existing catch basin that captures runoff from the existing AC swale will be modified and a new storm drain pipe will convey the storm water to the rain garden. Storm water from the northeast parking area will be conveyed via a 12" RCP pipe to the rain garden. The rain garden is comprised of 18" of a sandy loam material with a sustained percolation rate of 5 inches per hour on top of 12" of class 2 permeable drain rock. A 6" perforated PVC pipe, connected to a type 'F' catch basin, will collect water from the drain rock. Water is then conveyed to the existing 60" RCP via a 24" RCP storm drain. The rain garden is approximately 6' deep and has approximately 25,400 cubic feet of storage capacity with 1' of available freeboard.

See Appendix C, Proposed Conditions Hydrology Map for rain garden locations and delineation of the drainage basins.

Energy dissipation structures will be placed at drainage outlet locations to reduce the outflow velocity and to protect the rain gardens from excessive erosion.

Outlet structures will be designed such that the peak flow rates are able to flow through the system to the existing storm drain for storm events above the 5-year design storm event.

4. Points of Flow Analysis & Comparison:

As discussed above there are two rain gardens to be used for storm water treatment. The rain gardens only affect two drainage basins (Basins A and E) of the project site and are thus the only two points of analysis. In the existing and proposed conditions, the runoff generated from these watersheds will confluence to these analysis points. Pre and post development runoff analysis is made based on the peak flows and volumes that would occur at these confluence points during the design storm event. The drainage sub-basins for these points of analysis are grouped as follows,

Analysis Point 1 (westerly confluence point): Basin A

Analysis Point 2 (easterly confluence point): Basin E

It should be noted that since the proposed improvements do not increase impervious area and will also increase the time of concentration to the existing storm drain system, the existing condition analysis is done for reference only and has no bearing on the size or the function of the proposed rain gardens. The rain gardens will be sized for the 5-year design event storm and pass higher event storms through.

See Hydrology Exhibits in Appendices B & C for drainage basin delineations.

5. Soil Characteristics

The site is underlain by artificial fill consisting of silty to clayey sand with trace cobbles up to depths of 3 feet. The Mission Valley formation was also encountered below the fill material. Groundwater was not encountered during the geotechnical exploration. Percolation testing at the proposed rain garden locations indicated percolations rates of 42 minutes per inch (0.7 in.hr) for Rain Garden 1 and 27 minutes per inch (0.5 in/hr) for Rain Garden 2. The percolation rates indicated are generally acceptable for use in bio-retention systems (min 0.5 in/hr). Refer to the "Limited Geotechnical Evaluation, Improvements and Rain Gardens, Cabrillo Heights Neighborhood Park, San Diego, CA." prepared by NOVA Engineering and Environmental for additional geotechnical information.

The conservative assumption that the project site consists of Hydrologic Soil Type D was made for this site to perform the analysis and compare pre and post development flows.

6. Methodology

Rational Method:

A rational method analysis was utilized to perform hydrologic calculations in this study. This is the simplest and most widely used method to determine peak discharge from the drainage basin runoff.

Rational Equation: $Q = C * I * A$

Where;
Q = Peak discharge, cfs
C = Rational method runoff coefficient
I = Rainfall intensity, inch/hour
A = Drainage area, acre

Runoff Coefficient:

The existing and proposed conditions runoff coefficients "C" factors for the drainage sub-basins are estimated by following the Table 3-1 of the County of San Diego Hydrology Design Manual. (for details refer Table 3-1, in appendix E).

Hydrologic Soil Group: Soil group D was assumed throughout the project area.

Precipitation: 6 and 24 hour precipitation data for 5 & 100 year storm events are obtained from the rainfall isopluvial maps provided in San Diego County Hydrology Manual and are summarized below.

	Rainfall Depth (in.)	
Year	6-hr	24-hr
5	1.4	2.0
100	2.0	3.5

Hydrologic analysis is carried out for the 5 and 100 year storm events. The onsite drainage system is designed for the 100 year storm event. The detail hydraulic analysis/pipe sizing will be fine tuned in the final engineering.

Manning's roughness coefficients: Manning's "n" of 0.011 (for PVC) and 0.013 (for RCP) are used for the hydraulic analysis/routing of flow through storm drain pipes.

Rain Garden Analysis: The reservoir routing method is utilized for this purpose. The main objective of reservoir routing is to attenuate the peak flow rates to a predetermined level (in this case the ability of the rain garden to percolate captured storm water). The rain gardens are analyzed with the help of both hydrologic as well

as hydraulic information. Inflow hydrograph, target discharge, basin geometry and the hydraulic performance of the outlet structure are utilized as input for the computer model. Hydraflow Hydrographs Extension for AutoCad Civil 3D computer model is used to determine the necessary size of the rain gardens. For the purpose of sizing the rain gardens outflow structures were made inactive in order to determine the volume required to hold the 5-year design storm. The only outflow allowed was the "exfiltration" (percolation) of 5 inches per hour.

$I - O = ds/dt,$

Where,
I = Inflow
O = Outflow
ds/dt = change in storage volume

7. Calculations/Results

Rain Garden 1

The required size of Rain Garden 1 to treat the 5-year design storm is 1,026 cubic feet of storage. Since the rain garden has an approximate capacity of 1,710 cubic feet at the 2 foot maximum, and an approximate overall capacity of 4,970 cubic feet, the requirement is met. The water surface elevation was determined to be 387.73 feet for the 5–year event storm. A 6" concrete curb will be proposed along the eastern side of the basin to ensure the basin has 1' of freeboard above the water surface elevation. Outflow structures to convey larger storm events will be designed to begin conveying flow slightly above the water surface elevation.

Rain Garden 2

The required size of Rain Garden 2 to treat the 5-year design storm is 4,234 cubic feet of storage. Since the rain garden has an approximate capacity of 4,480 cubic feet at the 2 foot maximum, and an approximate overall capacity of 25,400 cubic feet, the requirement is met. The water surface elevation was determined to be 385.81 feet for the 5-year storm event. Outflow structures to convey larger storm events will be designed to begin conveying flow slightly above the water surface elevation.

Water Quality Volume & Control

The purpose of the rain gardens is to achieve the Best Management Practice (BMP) standards in regards to water quality treatment objectives. It is estimated that the rain gardens are capable of removing at least 90% of the average annual post-development total suspended solids (TSS) prior to discharging offsite.

The rain gardens are designed to treat the water quality volumes. Outlet structures are designed such that the water quality volume will be captured and stored for

infiltration below the bottom of the rain garden. The numeric sizing of the rain gardens are provided in Appendix D.

Storm Drain Pipe Analysis: The onsite Storm drain pipes are sized to convey the storm runoff generated from the 100 year storm event. See Appendix D for pipe sizing calculations.

8. Conclusion

The proposed rain gardens for Cabrillo Heights Neighborhood Park will improve water quality within the existing storm drain system. The existing drainage pattern will not be altered significantly and no additional impervious area is created. The new rain gardens will also be landscaped to provide enhanced aesthetics for the users and possibly increase wildlife diversity.

The onsite storm drain pipes are sized to convey storm runoff generated from the 100 year storm event. The rain gardens are sized to mitigate/maintain the peak flow rates for the 5 year, 6-hr storm event. All hydrologic calculations are performed by following the methodology presented in the San Diego County Hydrology Manual.

References

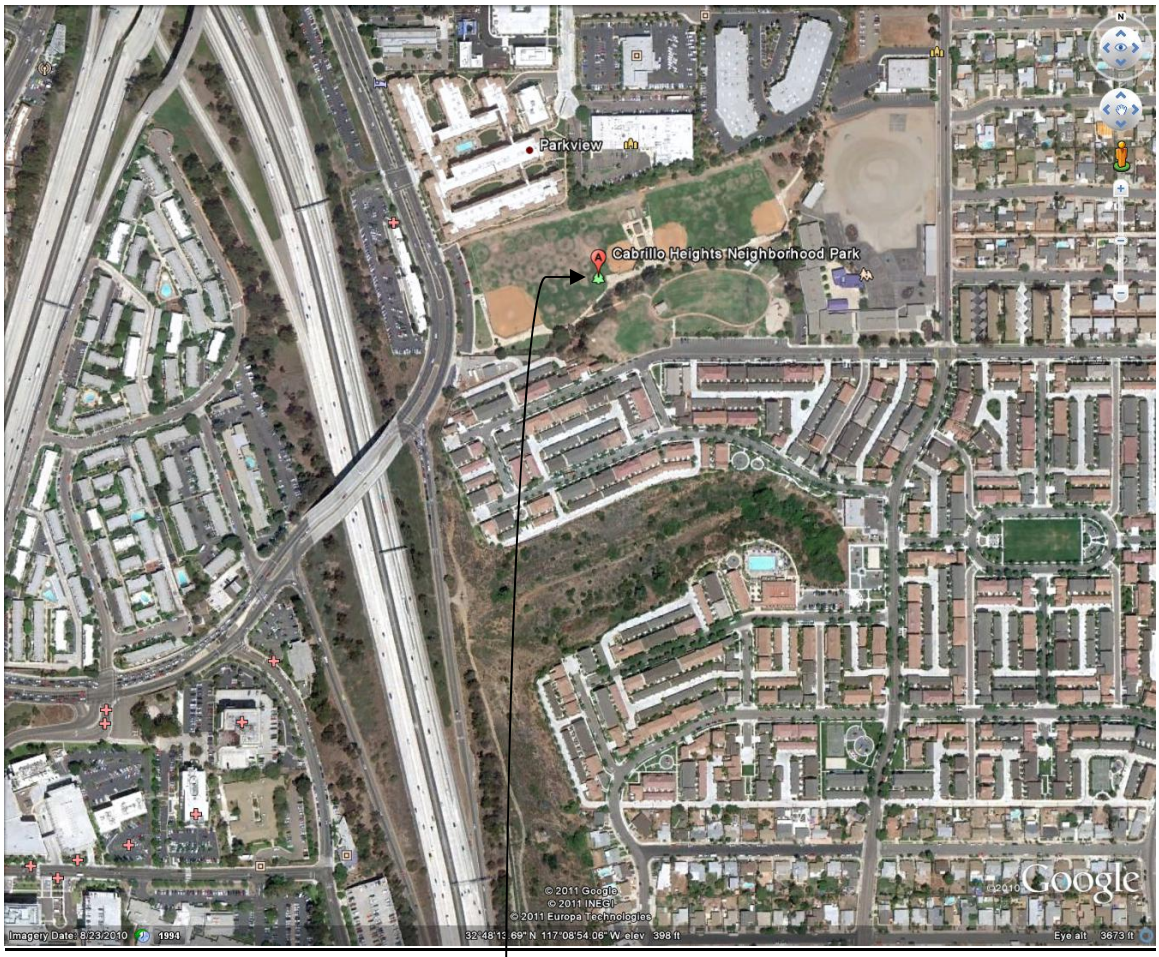
San Diego County Flood Control District. *San Diego County Hydrology Manual*. June, 2003.

County of San Diego Department of Public Works, Flood Control District, *San Diego County Drainage Design Manual*, July 2005

California Stormwater Quality Association (CASQA), California Stormwater BMP Handbook for New Development and Redevelopment, January 2003.

Appendix A

Site Vicinity Map/Imagery



PROJECT LOCATION

Appendix B:

Existing Condition Hydrology Calculations and Exhibit

BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
3434 Fourth Ave, San Diego CA.
92103-5704 * (619) 299-5550

SYM	DESCRIPTION	DATE	APPR

ISSUE DATE:	
DRAWN BY:	CMF
CHECKED BY:	
B&W JOB NUMBER:	10655U
CLIENT JOB NUMBER:	

PROJECT

CABRILLO HEIGHTS PARK

SHEET TITLE

EXISTING CONDITIONS

SHEET OF

A

PLOT: M:\PROJECTS\10500\10655U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\EXHIBITS\10655-EX-HYDRO.DWG Carl Fonce 4/30/2012 1:38 PM

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 04/30/12
--------------------------------------------------------------------------
CABRILLO NEIGHBORHOOD PARK
100-YEAR STORM EVENT
WEST RAIN GARDEN
```

EXISTING CONDITIONS

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  2.000
24 hour precipitation(inches) =  3.500
P6/P24 =    57.1%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =   55.000(Ft.)
Highest elevation =  393.400(Ft.)
Lowest elevation =  392.200(Ft.)
Elevation difference =    1.200(Ft.) Slope =  2.182 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   2.18 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.37 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   2.182^(1/3)]=   3.37
Calculated TC of    3.365 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
Rainfall intensity (I) =      5.269(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
```

```
Subarea runoff =      0.130(CFS)
Total initial stream area =        0.030(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   392.200(Ft.)
End of street segment elevation =   389.740(Ft.)
Length of street segment  =   350.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   1.500(Ft.)
Gutter hike from flowline =  1.330(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.044(CFS)
Depth of flow =   0.236(Ft.), Average velocity =   1.578(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.755(Ft.)
Flow velocity =   1.58(Ft/s)
Travel time =    3.70 min.     TC =    7.06  min.
 Adding area flow to street
Rainfall intensity (I) =      4.217(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.730 given for subarea
Rainfall intensity =      4.217(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.734  CA =      0.484
Subarea runoff =      1.914(CFS) for      0.630(Ac.)
Total runoff =      2.043(CFS)      Total area =       0.660(Ac.)
Street flow at end of street =      2.043(CFS)
Half street flow at end of street =      2.043(CFS)
Depth of flow =   0.285(Ft.), Average velocity =   1.850(Ft/s)
Flow width (from curb towards crown)=  10.217(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   387.000(Ft.)
Downstream point/station elevation =   386.300(Ft.)
Pipe length  =    67.41(Ft.) Slope =   0.0104  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.043(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     2.043(CFS)
Normal flow depth in pipe =    6.44(In.)
Flow top width inside pipe =   11.97(In.)
Critical Depth =    7.32(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =     7.30 min.
```

```
End of computations, total study area =          0.660 (Ac.)
```

```
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Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 04/30/12
--------------------------------------------------------------------------
CABRILLO NEIGHBORHOOD PARK
100-YEAR STORM EVENT
EAST RAIN GARDEN
```

EXISTING CONDITIONS

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  2.000
24 hour precipitation(inches) =  3.500
P6/P24 =    57.1%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
--------------------------------------------------------------------------
User specified 'C' value of 0.870 given for subarea
Rainfall intensity (I) =      5.269(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   5.00 min.  Rain intensity =       5.27(In/Hr)
Total area =        0.100(Ac.)  Total runoff =     0.300(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
--------------------------------------------------------------------------
Upstream point/station elevation =   396.500(Ft.)
Downstream point/station elevation =   394.400(Ft.)
Pipe length  =   210.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.300(CFS)
Given pipe size =      4.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.392(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      5.217(Ft.)
 Minor friction loss =      0.275(Ft.)    K-factor =   1.50
Pipe flow velocity =      3.44(Ft/s)
Travel time through pipe =    1.02 min.
Time of concentration (TC) =     6.02 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      502.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Rainfall intensity (I) =      4.676(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.870 given for subarea
Time of concentration =     6.02 min.
Rainfall intensity =      4.676(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.870  CA =      0.174
Subarea runoff =      0.514(CFS) for      0.100(Ac.)
Total runoff =      0.814(CFS)      Total area =       0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   394.400(Ft.)
Downstream point/station elevation =   393.600(Ft.)
Pipe length  =    80.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.814(CFS)
Given pipe size =      6.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.281(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.681(Ft.)
 Minor friction loss =      0.400(Ft.)    K-factor =   1.50
Pipe flow velocity =      4.14(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     6.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      503.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Rainfall intensity (I) =      4.521(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.720 given for subarea
Time of concentration =     6.34 min.
Rainfall intensity =      4.521(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.770  CA =      0.462
Subarea runoff =      1.275(CFS) for      0.400(Ac.)
Total runoff =      2.089(CFS)      Total area =       0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =   393.600(Ft.)
Downstream point elevation =   390.100(Ft.)
Channel length thru subarea  =   150.000(Ft.)
Channel base width      =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.200
Slope or 'Z' of right channel bank =   2.200
Estimated mean flow rate at midpoint of channel =      2.683(CFS)
```

```
Manning's 'N'    = 0.020
Maximum depth of channel  =    0.670(Ft.)
Flow(q) thru subarea =      2.683(CFS)
Depth of flow =   0.212(Ft.), Average velocity =   3.652(Ft/s)
Channel flow top width =    3.933(Ft.)
Flow Velocity =    3.65(Ft/s)
Travel time  =    0.68 min.
Time of concentration =    7.02 min.
Critical depth =      0.273(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.232(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.740 given for subarea
Rainfall intensity =      4.232(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.758  CA =      0.758
Subarea runoff =      1.119(CFS) for      0.400(Ac.)
Total runoff =      3.208(CFS)      Total area =       1.000(Ac.)
Depth of flow =   0.235(Ft.), Average velocity =   3.880(Ft/s)
Critical depth =      0.305(Ft.)
End of computations, total study area =           1.000 (Ac.)
```

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 04/30/12
--------------------------------------------------------------------------
CABRILLO NEIGHBORHOOD PARK
100-YEAR STORM EVENT
EAST RAIN GARDEN
NODES 506 - 508
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  2.000
24 hour precipitation(inches) =  3.500
P6/P24 =    57.1%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =  230.000(Ft.)
Highest elevation =  399.600(Ft.)
Lowest elevation =  395.800(Ft.)
Elevation difference =    3.800(Ft.) Slope =  1.652 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   1.65 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.69 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   1.652^(1/3)]=   3.69
The initial area total distance of  230.00 (Ft.) entered leaves a
remaining distance of  155.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   1.84 minutes
for a distance of 155.00 (Ft.) and a slope of  1.65 %
```

EXISTING CONDITIONS

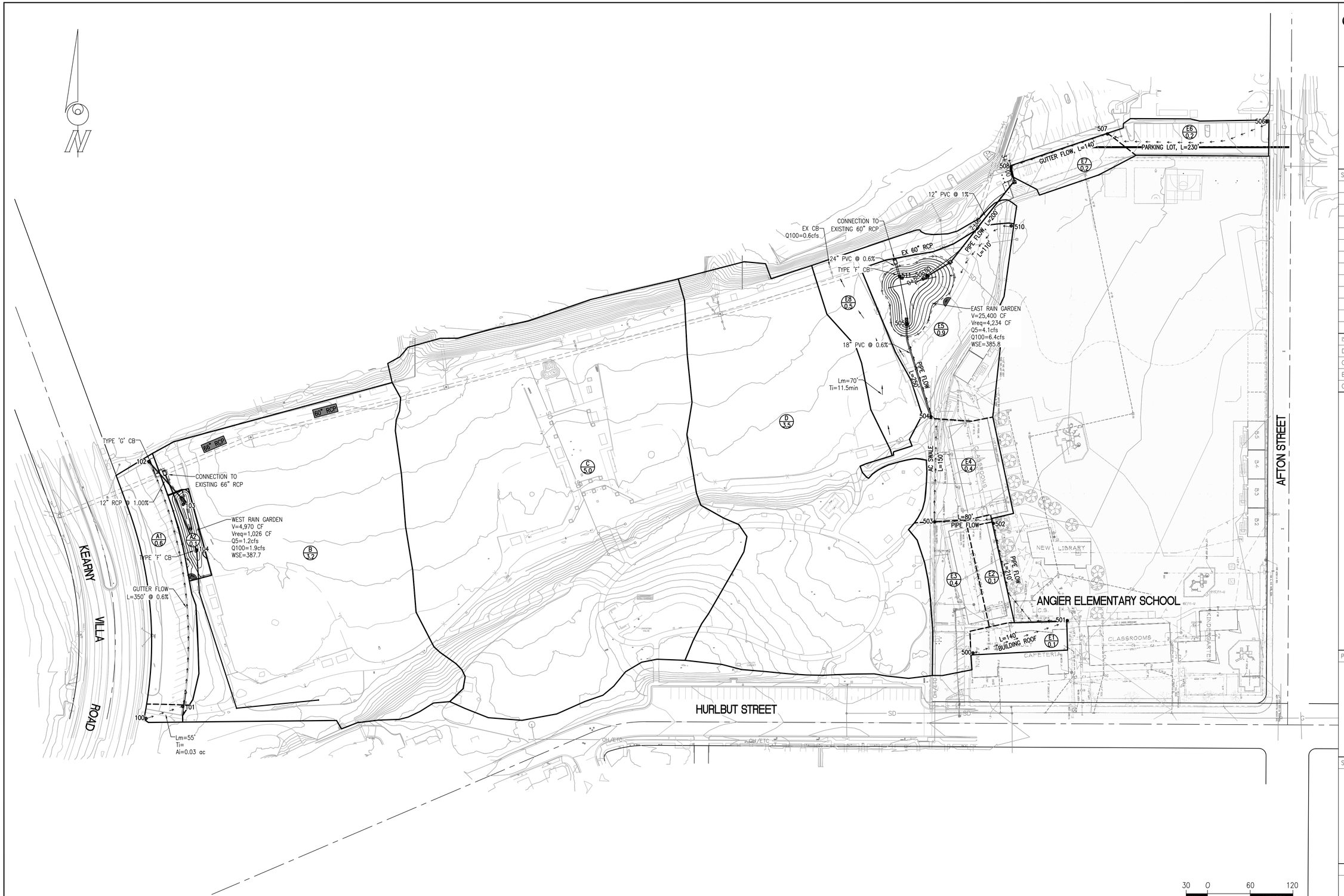
```
with an elevation difference of   2.56(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    1.842 Minutes
Tt=[(11.9*0.0294^3)/(  2.56)]^.385=  1.84
Total initial area Ti =   3.69 minutes from Figure 3-3 formula plus
  1.84 minutes from the Figure 3-4 formula =   5.53 minutes
Rainfall intensity (I) =      4.936(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
Subarea runoff =      0.809(CFS)
Total initial stream area =       0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.172(CFS)
Depth of flow =   0.222(Ft.), Average velocity =   2.568(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1             0.00              0.33
      2            10.00              0.13
      3            11.33              0.00
      4            11.50              0.50
Manning's 'N' friction factor =   0.015
------------------------------------------------------------------
Sub-Channel flow  =      1.172(CFS)
  '     '    flow top width =      6.261(Ft.)
  '     '    velocity=    2.568(Ft/s)
  '     '    area =      0.456(Sq.Ft)
  '     '    Froude number =     1.676

Upstream point elevation =   395.800(Ft.)
Downstream point elevation =   392.600(Ft.)
Flow length =   140.000(Ft.)
Travel time  =    0.91 min.
Time of concentration =    6.44 min.
Depth of flow =   0.222(Ft.)
Average velocity =   2.568(Ft/s)
Total irregular channel flow =     1.172(CFS)
Irregular channel normal depth above invert elev. =   0.222(Ft.)
Average velocity of channel(s) =   2.568(Ft/s)
 Adding area flow to channel
Rainfall intensity (I) =      4.475(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.800 given for subarea
Rainfall intensity =      4.475(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.810  CA =      0.324
Subarea runoff =      0.640(CFS) for      0.200(Ac.)
Total runoff =      1.450(CFS)      Total area =       0.400(Ac.)
Depth of flow =   0.235(Ft.), Average velocity =   2.693(Ft/s)
End of computations, total study area =           0.400 (Ac.)
```

Appendix C:

Proposed Condition Hydrology Calculations and Exhibit



BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

SYM	DESCRIPTION	DATE	APPR

ISSUE DATE:	
DRAWN BY:	
CHECKED BY:	
B&W JOB NUMBER:	
CLIENT JOB NUMBER:	

PROJECT

CABRILLO HEIGHTS PARK

SHEET TITLE

PROPOSED CONDITIONS

SHEET OF

B

PLOT: M:\PROJECTS\10500\10655U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\EXHIBITS\10655-PR-HYDRO.DWG Carl Fonica 4/30/2012 1:23 PM

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 10/12/11
--------------------------------------------------------------------------
CABRILLO HEIGHTS NEIBORHOOD PARK
5-YEAR STORM EVENT
WEST RAIN GARDEN
```

Proposed Conditions

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is     5.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  1.400
24 hour precipitation(inches) =  2.000
P6/P24 =    70.0%
Adjusted 6 hour precipitation (inches) =  1.300
Adjusted P6/P24 =    65.0%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =   55.000(Ft.)
Highest elevation =  393.400(Ft.)
Lowest elevation =  392.200(Ft.)
Elevation difference =    1.200(Ft.) Slope =  2.182 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   2.18 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.37 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   2.182^(1/3)]=   3.37
Calculated TC of    3.365 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
```

```
Rainfall intensity (I) =      3.425(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
Subarea runoff =      0.084(CFS)
Total initial stream area =        0.030(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   392.200(Ft.)
End of street segment elevation =   390.300(Ft.)
Length of street segment  =   280.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   1.500(Ft.)
Gutter hike from flowline =  1.330(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.450(CFS)
Depth of flow =   0.188(Ft.), Average velocity =   1.288(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.370(Ft.)
Flow velocity =   1.29(Ft/s)
Travel time =    3.62 min.     TC =    6.99  min.
 Adding area flow to street
Rainfall intensity (I) =      2.760(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.730 given for subarea
Rainfall intensity =      2.760(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.736  CA =      0.317
Subarea runoff =      0.790(CFS) for      0.400(Ac.)
Total runoff =      0.874(CFS)    Total area =       0.430(Ac.)
Street flow at end of street =      0.874(CFS)
Half street flow at end of street =      0.874(CFS)
Depth of flow =   0.226(Ft.), Average velocity =   1.494(Ft/s)
Flow width (from curb towards crown)=   7.242(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
Rainfall intensity (I) =      2.760(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.820 given for subarea
Time of concentration =     6.99 min.
Rainfall intensity =      2.760(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.752  CA =      0.399
Subarea runoff =      0.226(CFS) for      0.100(Ac.)
Total runoff =      1.100(CFS)    Total area =       0.530(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   387.300(Ft.)
Downstream point/station elevation =   386.300(Ft.)
Pipe length  =    17.00(Ft.) Slope =   0.0588  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.100(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     1.100(CFS)
Normal flow depth in pipe =    2.66(In.)
Flow top width inside pipe =    9.97(In.)
Critical Depth =    5.30(In.)
Pipe flow velocity =      8.50(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.100 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Rainfall intensity (I) =      2.752(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.410 given for subarea
Time of concentration =     7.02 min.
Rainfall intensity =      2.752(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.698  CA =      0.440
Subarea runoff =      0.109(CFS) for      0.100(Ac.)
Total runoff =      1.210(CFS)    Total area =       0.630(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.100 to Point/Station      103.000
**** 6 HOUR HYDROGRAPH ****
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   7.02
Basin Area =     0.63 Acres
6 Hour Rainfall =  1.300 Inches
Runoff Coefficient =  0.698
Peak Discharge =     1.21 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       7               0.034
       14               0.035
       21               0.036
       28               0.036
       35               0.037
       42               0.038
       49               0.039
       56               0.040
       63               0.041
       70               0.042
       77               0.043
       84               0.044
       91               0.046
```

98	0.046
105	0.048
112	0.050
119	0.052
126	0.053
133	0.056
140	0.058
147	0.061
154	0.063
161	0.068
168	0.071
175	0.077
182	0.080
189	0.089
196	0.094
203	0.108
210	0.117
217	0.143
224	0.163
231	0.240
238	0.338
245	1.210
252	0.192
259	0.129
266	0.101
273	0.084
280	0.073
287	0.066
294	0.059
301	0.055
308	0.051
315	0.047
322	0.045
329	0.042
336	0.040
343	0.038
350	0.037
357	0.035
364	0.034

++

6 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 1 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	0.3	0.6	0.9	1.2
0+ 0	0.0000	0.00	Q	|	|	|	|
0+ 1	0.0000	0.00	Q	|	|	|	|
0+ 2	0.0000	0.01	Q	|	|	|	|
0+ 3	0.0000	0.01	Q	|	|	|	|
0+ 4	0.0001	0.02	Q	|	|	|	|
0+ 5	0.0001	0.02	Q	|	|	|	|
0+ 6	0.0001	0.03	Q	|	|	|	|
0+ 7	0.0002	0.03	VQ	|	|	|	|
0+ 8	0.0002	0.03	VQ	|	|	|	|
0+ 9	0.0003	0.03	VQ	|	|	|	|
0+10	0.0003	0.03	VQ	|	|	|	|
0+11	0.0004	0.03	VQ	|	|	|	|

```
0+12       0.0004      0.03  VQ        |          |          |          |
0+13       0.0005      0.03  VQ        |          |          |          |
0+14       0.0005      0.03  VQ        |          |          |          |
0+15       0.0006      0.03  VQ        |          |          |          |
0+16       0.0006      0.03  VQ        |          |          |          |
0+17       0.0007      0.04  VQ        |          |          |          |
0+18       0.0007      0.04  VQ        |          |          |          |
0+19       0.0008      0.04  VQ        |          |          |          |
0+20       0.0008      0.04  VQ        |          |          |          |
0+21       0.0009      0.04  VQ        |          |          |          |
0+22       0.0009      0.04  VQ        |          |          |          |
0+23       0.0010      0.04  VQ        |          |          |          |
0+24       0.0010      0.04  VQ        |          |          |          |
0+25       0.0011      0.04  VQ        |          |          |          |
0+26       0.0011      0.04  VQ        |          |          |          |
0+27       0.0012      0.04  VQ        |          |          |          |
0+28       0.0012      0.04  |Q        |          |          |          |
0+29       0.0013      0.04  |Q        |          |          |          |
0+30       0.0013      0.04  |Q        |          |          |          |
0+31       0.0014      0.04  |Q        |          |          |          |
0+32       0.0014      0.04  |Q        |          |          |          |
0+33       0.0015      0.04  |Q        |          |          |          |
0+34       0.0015      0.04  |Q        |          |          |          |
0+35       0.0016      0.04  |Q        |          |          |          |
0+36       0.0016      0.04  |Q        |          |          |          |
0+37       0.0017      0.04  |Q        |          |          |          |
0+38       0.0017      0.04  |Q        |          |          |          |
0+39       0.0018      0.04  |Q        |          |          |          |
0+40       0.0018      0.04  |Q        |          |          |          |
0+41       0.0019      0.04  |Q        |          |          |          |
0+42       0.0019      0.04  |Q        |          |          |          |
0+43       0.0020      0.04  |Q        |          |          |          |
0+44       0.0020      0.04  |Q        |          |          |          |
0+45       0.0021      0.04  |Q        |          |          |          |
0+46       0.0021      0.04  |Q        |          |          |          |
0+47       0.0022      0.04  |Q        |          |          |          |
0+48       0.0022      0.04  |Q        |          |          |          |
0+49       0.0023      0.04  |Q        |          |          |          |
0+50       0.0023      0.04  |Q        |          |          |          |
0+51       0.0024      0.04  |QV       |          |          |          |
0+52       0.0025      0.04  |QV       |          |          |          |
0+53       0.0025      0.04  |QV       |          |          |          |
0+54       0.0026      0.04  |QV       |          |          |          |
0+55       0.0026      0.04  |QV       |          |          |          |
0+56       0.0027      0.04  |QV       |          |          |          |
0+57       0.0027      0.04  |QV       |          |          |          |
0+58       0.0028      0.04  |QV       |          |          |          |
0+59       0.0028      0.04  |QV       |          |          |          |
1+ 0       0.0029      0.04  |QV       |          |          |          |
1+ 1       0.0029      0.04  |QV       |          |          |          |
1+ 2       0.0030      0.04  |QV       |          |          |          |
1+ 3       0.0031      0.04  |QV       |          |          |          |
1+ 4       0.0031      0.04  |QV       |          |          |          |
1+ 5       0.0032      0.04  |QV       |          |          |          |
1+ 6       0.0032      0.04  |QV       |          |          |          |
1+ 7       0.0033      0.04  |QV       |          |          |          |
1+ 8       0.0033      0.04  |QV       |          |          |          |
1+ 9       0.0034      0.04  |QV       |          |          |          |
1+10       0.0035      0.04  |QV       |          |          |          |
1+11       0.0035      0.04  |QV       |          |          |          |
```

```
1+12      0.0036      0.04  |Q V      |          |          |          |
1+13      0.0036      0.04  |Q V      |          |          |          |
1+14      0.0037      0.04  |Q V      |          |          |          |
1+15      0.0038      0.04  |Q V      |          |          |          |
1+16      0.0038      0.04  |Q V      |          |          |          |
1+17      0.0039      0.04  |Q V      |          |          |          |
1+18      0.0039      0.04  |Q V      |          |          |          |
1+19      0.0040      0.04  |Q V      |          |          |          |
1+20      0.0040      0.04  |Q V      |          |          |          |
1+21      0.0041      0.04  |Q V      |          |          |          |
1+22      0.0042      0.04  |Q V      |          |          |          |
1+23      0.0042      0.04  |Q V      |          |          |          |
1+24      0.0043      0.04  |Q V      |          |          |          |
1+25      0.0043      0.04  |Q V      |          |          |          |
1+26      0.0044      0.04  |Q V      |          |          |          |
1+27      0.0045      0.04  |Q V      |          |          |          |
1+28      0.0045      0.04  |Q V      |          |          |          |
1+29      0.0046      0.05  |Q V      |          |          |          |
1+30      0.0047      0.05  |Q V      |          |          |          |
1+31      0.0047      0.05  |Q V      |          |          |          |
1+32      0.0048      0.05  |Q  V     |          |          |          |
1+33      0.0048      0.05  |Q  V     |          |          |          |
1+34      0.0049      0.05  |Q  V     |          |          |          |
1+35      0.0050      0.05  |Q  V     |          |          |          |
1+36      0.0050      0.05  |Q  V     |          |          |          |
1+37      0.0051      0.05  |Q  V     |          |          |          |
1+38      0.0052      0.05  |Q  V     |          |          |          |
1+39      0.0052      0.05  |Q  V     |          |          |          |
1+40      0.0053      0.05  |Q  V     |          |          |          |
1+41      0.0054      0.05  |Q  V     |          |          |          |
1+42      0.0054      0.05  |Q  V     |          |          |          |
1+43      0.0055      0.05  |Q  V     |          |          |          |
1+44      0.0056      0.05  |Q  V     |          |          |          |
1+45      0.0056      0.05  |Q  V     |          |          |          |
1+46      0.0057      0.05  |Q  V     |          |          |          |
1+47      0.0058      0.05  |Q  V     |          |          |          |
1+48      0.0058      0.05  |Q  V     |          |          |          |
1+49      0.0059      0.05  |Q  V     |          |          |          |
1+50      0.0060      0.05  |Q   V    |          |          |          |
1+51      0.0060      0.05  |Q   V    |          |          |          |
1+52      0.0061      0.05  |Q   V    |          |          |          |
1+53      0.0062      0.05  |Q   V    |          |          |          |
1+54      0.0062      0.05  |Q   V    |          |          |          |
1+55      0.0063      0.05  |Q   V    |          |          |          |
1+56      0.0064      0.05  |Q   V    |          |          |          |
1+57      0.0064      0.05  |Q   V    |          |          |          |
1+58      0.0065      0.05  |Q   V    |          |          |          |
1+59      0.0066      0.05  |Q   V    |          |          |          |
2+ 0      0.0067      0.05  |Q   V    |          |          |          |
2+ 1      0.0067      0.05  |Q   V    |          |          |          |
2+ 2      0.0068      0.05  |Q   V    |          |          |          |
2+ 3      0.0069      0.05  |Q   V    |          |          |          |
2+ 4      0.0070      0.05  |Q   V    |          |          |          |
2+ 5      0.0070      0.05  |Q   V    |          |          |          |
2+ 6      0.0071      0.05  |Q   V    |          |          |          |
2+ 7      0.0072      0.05  |Q    V   |          |          |          |
2+ 8      0.0072      0.05  |Q    V   |          |          |          |
2+ 9      0.0073      0.05  |Q    V   |          |          |          |
2+10      0.0074      0.05  |Q    V   |          |          |          |
2+11      0.0075      0.06  |Q    V   |          |          |          |
```

```
2+12      0.0075      0.06  |Q    V   |          |          |          |
2+13      0.0076      0.06  |Q    V   |          |          |          |
2+14      0.0077      0.06  |Q    V   |          |          |          |
2+15      0.0078      0.06  |Q    V   |          |          |          |
2+16      0.0079      0.06  |Q    V   |          |          |          |
2+17      0.0079      0.06  |Q    V   |          |          |          |
2+18      0.0080      0.06  |Q    V   |          |          |          |
2+19      0.0081      0.06  |Q    V   |          |          |          |
2+20      0.0082      0.06  |Q    V   |          |          |          |
2+21      0.0083      0.06  |Q    V   |          |          |          |
2+22      0.0083      0.06  |Q     V  |          |          |          |
2+23      0.0084      0.06  |Q     V  |          |          |          |
2+24      0.0085      0.06  |Q     V  |          |          |          |
2+25      0.0086      0.06  |Q     V  |          |          |          |
2+26      0.0087      0.06  | Q    V  |          |          |          |
2+27      0.0088      0.06  | Q    V  |          |          |          |
2+28      0.0088      0.06  | Q    V  |          |          |          |
2+29      0.0089      0.06  | Q    V  |          |          |          |
2+30      0.0090      0.06  | Q    V  |          |          |          |
2+31      0.0091      0.06  | Q    V  |          |          |          |
2+32      0.0092      0.06  | Q    V  |          |          |          |
2+33      0.0093      0.06  | Q    V  |          |          |          |
2+34      0.0094      0.06  | Q    V  |          |          |          |
2+35      0.0094      0.06  | Q    V  |          |          |          |
2+36      0.0095      0.06  | Q     V |          |          |          |
2+37      0.0096      0.07  | Q     V |          |          |          |
2+38      0.0097      0.07  | Q     V |          |          |          |
2+39      0.0098      0.07  | Q     V |          |          |          |
2+40      0.0099      0.07  | Q     V |          |          |          |
2+41      0.0100      0.07  | Q     V |          |          |          |
2+42      0.0101      0.07  | Q     V |          |          |          |
2+43      0.0102      0.07  | Q     V |          |          |          |
2+44      0.0103      0.07  | Q     V |          |          |          |
2+45      0.0104      0.07  | Q     V |          |          |          |
2+46      0.0105      0.07  | Q     V |          |          |          |
2+47      0.0106      0.07  | Q     V |          |          |          |
2+48      0.0107      0.07  | Q      V|          |          |          |
2+49      0.0108      0.07  | Q      V|          |          |          |
2+50      0.0109      0.07  | Q      V|          |          |          |
2+51      0.0110      0.07  | Q      V|          |          |          |
2+52      0.0111      0.07  | Q      V|          |          |          |
2+53      0.0112      0.07  | Q      V|          |          |          |
2+54      0.0113      0.08  | Q      V|          |          |          |
2+55      0.0114      0.08  | Q      V|          |          |          |
2+56      0.0115      0.08  | Q      V|          |          |          |
2+57      0.0116      0.08  | Q      V|          |          |          |
2+58      0.0117      0.08  | Q      V|          |          |          |
2+59      0.0118      0.08  | Q      V|          |          |          |
3+ 0      0.0119      0.08  | Q       V          |          |          |
3+ 1      0.0120      0.08  | Q       V          |          |          |
3+ 2      0.0121      0.08  | Q       V          |          |          |
3+ 3      0.0122      0.08  | Q       V          |          |          |
3+ 4      0.0124      0.08  | Q       V          |          |          |
3+ 5      0.0125      0.08  | Q       V          |          |          |
3+ 6      0.0126      0.09  | Q       V          |          |          |
3+ 7      0.0127      0.09  | Q       V          |          |          |
3+ 8      0.0128      0.09  | Q       V          |          |          |
3+ 9      0.0130      0.09  | Q       V          |          |          |
3+10      0.0131      0.09  | Q       |V         |          |          |
3+11      0.0132      0.09  | Q       |V         |          |          |
```

```
3+12      0.0133      0.09  |  Q      |V        |         |         |
3+13      0.0135      0.09  |  Q      |V        |         |         |
3+14      0.0136      0.09  |  Q      |V        |         |         |
3+15      0.0137      0.09  |  Q      |V        |         |         |
3+16      0.0138      0.09  |  Q      |V        |         |         |
3+17      0.0140      0.10  |  Q      |V        |         |         |
3+18      0.0141      0.10  |  Q      |V        |         |         |
3+19      0.0143      0.10  |  Q      | V       |         |         |
3+20      0.0144      0.10  |  Q      | V       |         |         |
3+21      0.0145      0.10  |  Q      | V       |         |         |
3+22      0.0147      0.11  |  Q      | V       |         |         |
3+23      0.0148      0.11  |  Q      | V       |         |         |
3+24      0.0150      0.11  |  Q      | V       |         |         |
3+25      0.0151      0.11  |  Q      | V       |         |         |
3+26      0.0153      0.11  |  Q      | V       |         |         |
3+27      0.0154      0.11  |  Q      |  V      |         |         |
3+28      0.0156      0.11  |  Q      |  V      |         |         |
3+29      0.0158      0.12  |  Q      |  V      |         |         |
3+30      0.0159      0.12  |  Q      |  V      |         |         |
3+31      0.0161      0.12  |   Q     |  V      |         |         |
3+32      0.0163      0.12  |   Q     |  V      |         |         |
3+33      0.0164      0.13  |   Q     |  V      |         |         |
3+34      0.0166      0.13  |   Q     |   V     |         |         |
3+35      0.0168      0.14  |   Q     |   V     |         |         |
3+36      0.0170      0.14  |   Q     |   V     |         |         |
3+37      0.0172      0.14  |   Q     |   V     |         |         |
3+38      0.0174      0.15  |   Q     |   V     |         |         |
3+39      0.0176      0.15  |   Q     |   V     |         |         |
3+40      0.0178      0.15  |    Q    |    V    |         |         |
3+41      0.0180      0.15  |    Q    |    V    |         |         |
3+42      0.0182      0.16  |    Q    |    V    |         |         |
3+43      0.0185      0.16  |    Q    |    V    |         |         |
3+44      0.0187      0.16  |    Q    |    V    |         |         |
3+45      0.0189      0.17  |    Q    |    V    |         |         |
3+46      0.0192      0.19  |     Q   |     V   |         |         |
3+47      0.0195      0.20  |     Q   |     V   |         |         |
3+48      0.0197      0.21  |     Q   |     V   |         |         |
3+49      0.0200      0.22  |      Q  |     V   |         |         |
3+50      0.0204      0.23  |      Q  |      V  |         |         |
3+51      0.0207      0.24  |      Q  |      V  |         |         |
3+52      0.0210      0.25  |       Q |      V  |         |         |
3+53      0.0214      0.27  |       Q |       V |         |         |
3+54      0.0218      0.28  |        Q|       V |         |         |
3+55      0.0222      0.30  |        Q|       V |         |         |
3+56      0.0226      0.31  |         Q        V|         |         |
3+57      0.0231      0.32  |         Q        V|         |         |
3+58      0.0235      0.34  |         |Q       V|         |         |
3+59      0.0242      0.46  |         |    Q    V         |         |
4+ 0      0.0250      0.59  |         |         Q|V        |         |
4+ 1      0.0260      0.71  |         |          |V Q      |         |
4+ 2      0.0271      0.84  |         |          | V    Q  |         |
4+ 3      0.0284      0.96  |         |          |   V      |Q        |
4+ 4      0.0299      1.09  |         |          |    V     |    Q    |
4+ 5      0.0316      1.21  |         |          |     V    |         Q
4+ 6      0.0331      1.06  |         |          |      V   |    Q    |
4+ 7      0.0343      0.92  |         |          |        VQ          |
4+ 8      0.0354      0.77  |         |          |    Q   V|          |
4+ 9      0.0363      0.63  |         |          Q         V          |
4+10      0.0369      0.48  |         |    Q     |         |V         |
4+11      0.0374      0.34  |         |Q         |         |V         |
```

```
4+12      0.0377      0.19  |     Q   |         |         |V        |
4+13      0.0379      0.18  |     Q   |         |         | V       |
4+14      0.0382      0.17  |    Q    |         |         | V       |
4+15      0.0384      0.17  |    Q    |         |         | V       |
4+16      0.0386      0.16  |    Q    |         |         | V       |
4+17      0.0388      0.15  |   Q     |         |         | V       |
4+18      0.0390      0.14  |   Q     |         |         | V       |
4+19      0.0392      0.13  |   Q     |         |         |  V      |
4+20      0.0393      0.12  |   Q     |         |         |  V      |
4+21      0.0395      0.12  |  Q      |         |         |  V      |
4+22      0.0397      0.12  |  Q      |         |         |  V      |
4+23      0.0398      0.11  |  Q      |         |         |  V      |
4+24      0.0400      0.11  |  Q      |         |         |  V      |
4+25      0.0401      0.10  |  Q      |         |         |  V      |
4+26      0.0403      0.10  |  Q      |         |         |   V     |
4+27      0.0404      0.10  |  Q      |         |         |   V     |
4+28      0.0405      0.10  |  Q      |         |         |   V     |
4+29      0.0407      0.09  |  Q      |         |         |   V     |
4+30      0.0408      0.09  |  Q      |         |         |   V     |
4+31      0.0409      0.09  | Q       |         |         |   V     |
4+32      0.0410      0.09  | Q       |         |         |   V     |
4+33      0.0411      0.08  | Q       |         |         |   V     |
4+34      0.0413      0.08  | Q       |         |         |   V     |
4+35      0.0414      0.08  | Q       |         |         |   V     |
4+36      0.0415      0.08  | Q       |         |         |    V    |
4+37      0.0416      0.08  | Q       |         |         |    V    |
4+38      0.0417      0.08  | Q       |         |         |    V    |
4+39      0.0418      0.08  | Q       |         |         |    V    |
4+40      0.0419      0.07  | Q       |         |         |    V    |
4+41      0.0420      0.07  | Q       |         |         |    V    |
4+42      0.0421      0.07  | Q       |         |         |    V    |
4+43      0.0422      0.07  | Q       |         |         |    V    |
4+44      0.0423      0.07  | Q       |         |         |    V    |
4+45      0.0424      0.07  | Q       |         |         |    V    |
4+46      0.0425      0.07  | Q       |         |         |    V    |
4+47      0.0426      0.07  | Q       |         |         |    V    |
4+48      0.0426      0.06  | Q       |         |         |     V   |
4+49      0.0427      0.06  | Q       |         |         |     V   |
4+50      0.0428      0.06  | Q       |         |         |     V   |
4+51      0.0429      0.06  | Q       |         |         |     V   |
4+52      0.0430      0.06  | Q       |         |         |     V   |
4+53      0.0431      0.06  |Q        |         |         |     V   |
4+54      0.0432      0.06  |Q        |         |         |     V   |
4+55      0.0432      0.06  |Q        |         |         |     V   |
4+56      0.0433      0.06  |Q        |         |         |     V   |
4+57      0.0434      0.06  |Q        |         |         |     V   |
4+58      0.0435      0.06  |Q        |         |         |     V   |
4+59      0.0436      0.06  |Q        |         |         |     V   |
5+ 0      0.0436      0.06  |Q        |         |         |     V   |
5+ 1      0.0437      0.05  |Q        |         |         |     V   |
5+ 2      0.0438      0.05  |Q        |         |         |     V   |
5+ 3      0.0439      0.05  |Q        |         |         |      V  |
5+ 4      0.0439      0.05  |Q        |         |         |      V  |
5+ 5      0.0440      0.05  |Q        |         |         |      V  |
5+ 6      0.0441      0.05  |Q        |         |         |      V  |
5+ 7      0.0441      0.05  |Q        |         |         |      V  |
5+ 8      0.0442      0.05  |Q        |         |         |      V  |
5+ 9      0.0443      0.05  |Q        |         |         |      V  |
5+10      0.0443      0.05  |Q        |         |         |      V  |
5+11      0.0444      0.05  |Q        |         |         |      V  |
```

```
    5+12       0.0445      0.05  |Q        |          |          |      V  |
    5+13       0.0446      0.05  |Q        |          |          |      V  |
    5+14       0.0446      0.05  |Q        |          |          |      V  |
    5+15       0.0447      0.05  |Q        |          |          |      V  |
    5+16       0.0447      0.05  |Q        |          |          |      V  |
    5+17       0.0448      0.05  |Q        |          |          |      V  |
    5+18       0.0449      0.05  |Q        |          |          |      V  |
    5+19       0.0449      0.05  |Q        |          |          |      V  |
    5+20       0.0450      0.05  |Q        |          |          |       V |
    5+21       0.0451      0.05  |Q        |          |          |       V |
    5+22       0.0451      0.04  |Q        |          |          |       V |
    5+23       0.0452      0.04  |Q        |          |          |       V |
    5+24       0.0452      0.04  |Q        |          |          |       V |
    5+25       0.0453      0.04  |Q        |          |          |       V |
    5+26       0.0454      0.04  |Q        |          |          |       V |
    5+27       0.0454      0.04  |Q        |          |          |       V |
    5+28       0.0455      0.04  |Q        |          |          |       V |
    5+29       0.0455      0.04  |Q        |          |          |       V |
    5+30       0.0456      0.04  |Q        |          |          |       V |
    5+31       0.0457      0.04  |Q        |          |          |       V |
    5+32       0.0457      0.04  |Q        |          |          |       V |
    5+33       0.0458      0.04  |Q        |          |          |       V |
    5+34       0.0458      0.04  |Q        |          |          |       V |
    5+35       0.0459      0.04  |Q        |          |          |       V |
    5+36       0.0459      0.04  |Q        |          |          |       V |
    5+37       0.0460      0.04  |Q        |          |          |       V |
    5+38       0.0460      0.04  |Q        |          |          |       V |
    5+39       0.0461      0.04  |Q        |          |          |       V |
    5+40       0.0462      0.04  |Q        |          |          |       V |
    5+41       0.0462      0.04  |Q        |          |          |        V|
    5+42       0.0463      0.04  |Q        |          |          |        V|
    5+43       0.0463      0.04  |Q        |          |          |        V|
    5+44       0.0464      0.04  |Q        |          |          |        V|
    5+45       0.0464      0.04  |Q        |          |          |        V|
    5+46       0.0465      0.04  |Q        |          |          |        V|
    5+47       0.0465      0.04  |Q        |          |          |        V|
    5+48       0.0466      0.04  |Q        |          |          |        V|
    5+49       0.0466      0.04  |Q        |          |          |        V|
    5+50       0.0467      0.04  |Q        |          |          |        V|
    5+51       0.0467      0.04  |Q        |          |          |        V|
    5+52       0.0468      0.04  |Q        |          |          |        V|
    5+53       0.0468      0.04  |Q        |          |          |        V|
    5+54       0.0469      0.04  |Q        |          |          |        V|
    5+55       0.0469      0.04  |Q        |          |          |        V|
    5+56       0.0470      0.04  |Q        |          |          |        V|
    5+57       0.0470      0.04  |Q        |          |          |        V|
    5+58       0.0471      0.03  |Q        |          |          |        V|
    5+59       0.0471      0.03  |Q        |          |          |        V|
    6+ 0       0.0472      0.03  |Q        |          |          |        V|
    6+ 1       0.0472      0.03  |Q        |          |          |        V|
    6+ 2       0.0473      0.03  |Q        |          |          |        V|
    6+ 3       0.0473      0.03  |Q        |          |          |        V|
    6+ 4       0.0474      0.03  |Q        |          |          |         V
---------------------------------------------------------------------------


  End of computations, total study area =          0.630 (Ac.)
```

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 10/12/11
--------------------------------------------------------------------------
CABRILLO NEIGHBORHOOD PARK
5-YEAR STORM EVENT
EAST RAIN GARDEN
```

Proposed Conditions

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is     5.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  1.400
24 hour precipitation(inches) =  2.000
P6/P24 =    70.0%
Adjusted 6 hour precipitation (inches) =  1.300
Adjusted P6/P24 =    65.0%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
____________________________________________________________________________
User specified 'C' value of 0.870 given for subarea
Rainfall intensity (I) =      3.425(In/Hr) for a     5.0 year storm
User specified values are as follows:
TC =   5.00 min.  Rain intensity =       3.43(In/Hr)
Total area =        0.100(Ac.)  Total runoff =     0.300(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   396.500(Ft.)
Downstream point/station elevation =   394.400(Ft.)
Pipe length  =   210.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.300(CFS)
Given pipe size =      4.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.392(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      5.217(Ft.)
 Minor friction loss =      0.275(Ft.)  K-factor =   1.50
Pipe flow velocity =      3.44(Ft/s)
```

```
Travel time through pipe =    1.02 min.
Time of concentration (TC) =     6.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      502.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Rainfall intensity (I) =      3.039(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.870 given for subarea
Time of concentration =     6.02 min.
Rainfall intensity =      3.039(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.870  CA =      0.174
Subarea runoff =      0.229(CFS) for      0.100(Ac.)
Total runoff =      0.529(CFS)    Total area =       0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   394.400(Ft.)
Downstream point/station elevation =   393.600(Ft.)
Pipe length  =    80.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.529(CFS)
Given pipe size =      6.00(In.)
Calculated individual pipe flow  =     0.529(CFS)
Normal flow depth in pipe =    4.64(In.)
Flow top width inside pipe =    5.02(In.)
Critical Depth =    4.45(In.)
Pipe flow velocity =      3.25(Ft/s)
Travel time through pipe =    0.41 min.
Time of concentration (TC) =     6.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      503.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Rainfall intensity (I) =      2.913(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.720 given for subarea
Time of concentration =     6.43 min.
Rainfall intensity =      2.913(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.770  CA =      0.462
Subarea runoff =      0.817(CFS) for      0.400(Ac.)
Total runoff =      1.346(CFS)    Total area =       0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =   393.600(Ft.)
Downstream point elevation =   390.100(Ft.)
Channel length thru subarea  =   150.000(Ft.)
Channel base width     =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.200
Slope or 'Z' of right channel bank =   2.200
```

```
Estimated mean flow rate at midpoint of channel =      1.746(CFS)
Manning's 'N'    = 0.020
Maximum depth of channel  =    0.670(Ft.)
Flow(q) thru subarea =      1.746(CFS)
Depth of flow =   0.165(Ft.), Average velocity =   3.148(Ft/s)
Channel flow top width =    3.726(Ft.)
Flow Velocity =    3.15(Ft/s)
Travel time  =    0.79 min.
Time of concentration =    7.22 min.
Critical depth =      0.207(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      2.702(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.740 given for subarea
Rainfall intensity =      2.702(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.758  CA =      0.758
Subarea runoff =      0.702(CFS) for      0.400(Ac.)
Total runoff =      2.048(CFS)    Total area =       1.000(Ac.)
Depth of flow =   0.181(Ft.), Average velocity =   3.328(Ft/s)
Critical depth =      0.230(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   385.500(Ft.)
Downstream point/station elevation =   384.000(Ft.)
Pipe length  =   250.00(Ft.) Slope =   0.0060  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     2.048(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.048(CFS)
Normal flow depth in pipe =    5.64(In.)
Flow top width inside pipe =   16.70(In.)
Critical Depth =    6.47(In.)
Pipe flow velocity =      4.33(Ft/s)
Travel time through pipe =    0.96 min.
Time of concentration (TC) =     8.19 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.000(Ac.)
Runoff from this stream =      2.048(CFS)
Time of concentration =    8.19 min.
Rainfall intensity =     2.492(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
```

```
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =  230.000(Ft.)
Highest elevation =  399.600(Ft.)
Lowest elevation =  395.800(Ft.)
Elevation difference =    3.800(Ft.) Slope =  1.652 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   1.65 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.69 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   1.652^(1/3)]=   3.69
The initial area total distance of  230.00 (Ft.) entered leaves a
remaining distance of  155.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   1.84 minutes
for a distance of 155.00 (Ft.) and a slope of  1.65 %
with an elevation difference of   2.56(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    1.842 Minutes
Tt=[(11.9*0.0294^3)/(  2.56)]^.385=  1.84
Total initial area Ti =   3.69 minutes from Figure 3-3 formula plus
  1.84 minutes from the Figure 3-4 formula =   5.53 minutes
Rainfall intensity (I) =      3.208(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
Subarea runoff =      0.526(CFS)
Total initial stream area =        0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.760(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   2.344(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              0.33
      2             10.00              0.13
      3             11.33              0.00
      4             11.50              0.50
Manning's 'N' friction factor =   0.015
------------------------------------------------------------------
Sub-Channel flow  =      0.760(CFS)
  '     '   flow top width =      5.088(Ft.)
  '     '    velocity=    2.344(Ft/s)
  '     '   area =      0.324(Sq.Ft)
  '     '   Froude number =     1.636

Upstream point elevation =   395.800(Ft.)
Downstream point elevation =   392.600(Ft.)
Flow length =   140.000(Ft.)
Travel time  =    1.00 min.
Time of concentration =    6.53 min.
```

```
Depth of flow =   0.199(Ft.)
Average velocity =   2.344(Ft/s)
Total irregular channel flow =     0.760(CFS)
Irregular channel normal depth above invert elev. =   0.199(Ft.)
Average velocity of channel(s) =   2.344(Ft/s)
 Adding area flow to channel
Rainfall intensity (I) =      2.883(In/Hr) for a     5.0 year storm
User specified 'C' value of 0.800 given for subarea
Rainfall intensity =      2.883(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.810  CA =      0.324
Subarea runoff =      0.408(CFS) for      0.200(Ac.)
Total runoff =      0.934(CFS)    Total area =       0.400(Ac.)
Depth of flow =   0.210(Ft.), Average velocity =   2.446(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      509.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   389.250(Ft.)
Downstream point/station elevation =   384.000(Ft.)
Pipe length  =   200.00(Ft.) Slope =   0.0262  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     0.934(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     0.934(CFS)
Normal flow depth in pipe =    3.00(In.)
Flow top width inside pipe =   10.39(In.)
Critical Depth =    4.87(In.)
Pipe flow velocity =      6.09(Ft/s)
Travel time through pipe =    0.55 min.
Time of concentration (TC) =     7.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      509.000 to Point/Station      509.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.400(Ac.)
Runoff from this stream =      0.934(CFS)
Time of concentration =    7.08 min.
Rainfall intensity =     2.738(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MEDIUM DENSITY RESIDENTIAL                  ]
(4.3 DU/A or Less       )
Impervious value, Ai = 0.300
Sub-Area C Value = 0.520
Initial subarea total flow distance  =  110.000(Ft.)
```

```
Highest elevation =  396.000(Ft.)
Lowest elevation =  390.000(Ft.)
Elevation difference =    6.000(Ft.) Slope =  5.455 %
Top of Initial Area Slope adjusted by User to  2.000 %
Bottom of Initial Area Slope adjusted by User to  2.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 80.00 (Ft)
for the top area slope value of   2.00 %, in a development type of
 4.3 DU/A or Less
In Accordance With Figure 3-3
Initial Area Time of Concentration =   7.41 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.5200)*(  80.000^.5)/(   2.000^(1/3)]=   7.41
The initial area total distance of  110.00 (Ft.) entered leaves a
remaining distance of   30.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   0.48 minutes
for a distance of  30.00 (Ft.) and a slope of  2.00 %
with an elevation difference of   0.60(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    0.483 Minutes
Tt=[(11.9*0.0057^3)/(  0.60)]^.385=  0.48
Total initial area Ti =   7.41 minutes from Figure 3-3 formula plus
  0.48 minutes from the Figure 3-4 formula =   7.89 minutes
Rainfall intensity (I) =      2.551(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.520
Subarea runoff =      1.194(CFS)
Total initial stream area =        0.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.900(Ac.)
Runoff from this stream =      1.194(CFS)
Time of concentration =    7.89 min.
Rainfall intensity =     2.551(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        2.048      8.19             2.492
2        0.934      7.08             2.738
3        1.194      7.89             2.551
Qmax(1) =
         1.000 *    1.000 *     2.048) +
         0.910 *    1.000 *     0.934) +
         0.977 *    1.000 *     1.194) + =       4.065
Qmax(2) =
         1.000 *    0.865 *     2.048) +
         1.000 *    1.000 *     0.934) +
         1.000 *    0.896 *     1.194) + =       3.775
Qmax(3) =
         1.000 *    0.964 *     2.048) +
         0.932 *    1.000 *     0.934) +
         1.000 *    1.000 *     1.194) + =       4.040
```

```
Total of 3 main streams to confluence:
Flow rates before confluence point:
       2.048       0.934       1.194
Maximum flow rates at confluence using above data:
        4.065        3.775        4.040
Area of streams before confluence:
        1.000        0.400        0.900


Results of confluence:
Total flow rate =      4.065(CFS)
Time of concentration =     8.186 min.
Effective stream area after confluence  =      2.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** 6 HOUR HYDROGRAPH ****
________________________________________________________________________
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   8.19
Basin Area =     2.30 Acres
6 Hour Rainfall =  1.300 Inches
Runoff Coefficient =  0.674
Peak Discharge =     4.06 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       8               0.120
       16               0.122
       24               0.126
       32               0.128
       40               0.132
       48               0.134
       56               0.139
       64               0.142
       72               0.147
       80               0.150
       88               0.157
       96               0.160
       104               0.168
       112               0.172
       120               0.182
       128               0.187
       136               0.198
       144               0.205
       152               0.220
       160               0.228
       168               0.248
       176               0.260
       184               0.288
       192               0.306
       200               0.350
       208               0.380
       216               0.464
       224               0.529
       232               0.776
```

```
          240               1.094
          248               4.065
          256               0.623
          264               0.417
          272               0.326
          280               0.273
          288               0.238
          296               0.212
          304               0.192
          312               0.177
          320               0.164
          328               0.154
          336               0.145
          344               0.137
          352               0.130
          360               0.124
          368               0.119
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
    ----------------------------------------------------------------------
                Hydrograph in   1   Minute intervals ((CFS))

    ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        1.0       2.0       3.0       4.1
----------------------------------------------------------------------------
  0+ 0       0.0000      0.00  Q         |         |         |         |
  0+ 1       0.0000      0.02  Q         |         |         |         |
  0+ 2       0.0001      0.03  Q         |         |         |         |
  0+ 3       0.0001      0.05  Q         |         |         |         |
  0+ 4       0.0002      0.06  Q         |         |         |         |
  0+ 5       0.0003      0.08  Q         |         |         |         |
  0+ 6       0.0004      0.09  Q         |         |         |         |
  0+ 7       0.0006      0.11  VQ        |         |         |         |
  0+ 8       0.0007      0.12  VQ        |         |         |         |
  0+ 9       0.0009      0.12  VQ        |         |         |         |
  0+10       0.0011      0.12  VQ        |         |         |         |
  0+11       0.0012      0.12  VQ        |         |         |         |
  0+12       0.0014      0.12  VQ        |         |         |         |
  0+13       0.0016      0.12  VQ        |         |         |         |
  0+14       0.0017      0.12  VQ        |         |         |         |
  0+15       0.0019      0.12  VQ        |         |         |         |
  0+16       0.0021      0.12  VQ        |         |         |         |
  0+17       0.0023      0.12  VQ        |         |         |         |
  0+18       0.0024      0.12  VQ        |         |         |         |
  0+19       0.0026      0.12  VQ        |         |         |         |
  0+20       0.0028      0.12  VQ        |         |         |         |
  0+21       0.0029      0.12  VQ        |         |         |         |
  0+22       0.0031      0.12  VQ        |         |         |         |
  0+23       0.0033      0.13  VQ        |         |         |         |
  0+24       0.0035      0.13  VQ        |         |         |         |
  0+25       0.0036      0.13  VQ        |         |         |         |
  0+26       0.0038      0.13  VQ        |         |         |         |
  0+27       0.0040      0.13  VQ        |         |         |         |
  0+28       0.0041      0.13  VQ        |         |         |         |
  0+29       0.0043      0.13  |Q        |         |         |         |
  0+30       0.0045      0.13  |Q        |         |         |         |
  0+31       0.0047      0.13  |Q        |         |         |         |
  0+32       0.0049      0.13  |Q        |         |         |         |
  0+33       0.0050      0.13  |Q        |         |         |         |
```

```
0+34       0.0052      0.13  |Q        |          |          |          |
0+35       0.0054      0.13  |Q        |          |          |          |
0+36       0.0056      0.13  |Q        |          |          |          |
0+37       0.0057      0.13  |Q        |          |          |          |
0+38       0.0059      0.13  |Q        |          |          |          |
0+39       0.0061      0.13  |Q        |          |          |          |
0+40       0.0063      0.13  |Q        |          |          |          |
0+41       0.0065      0.13  |Q        |          |          |          |
0+42       0.0067      0.13  |Q        |          |          |          |
0+43       0.0068      0.13  |Q        |          |          |          |
0+44       0.0070      0.13  |Q        |          |          |          |
0+45       0.0072      0.13  |Q        |          |          |          |
0+46       0.0074      0.13  |Q        |          |          |          |
0+47       0.0076      0.13  |Q        |          |          |          |
0+48       0.0078      0.13  |Q        |          |          |          |
0+49       0.0079      0.13  |Q        |          |          |          |
0+50       0.0081      0.14  |Q        |          |          |          |
0+51       0.0083      0.14  |Q        |          |          |          |
0+52       0.0085      0.14  |QV       |          |          |          |
0+53       0.0087      0.14  |QV       |          |          |          |
0+54       0.0089      0.14  |QV       |          |          |          |
0+55       0.0091      0.14  |QV       |          |          |          |
0+56       0.0093      0.14  |QV       |          |          |          |
0+57       0.0095      0.14  |QV       |          |          |          |
0+58       0.0097      0.14  |QV       |          |          |          |
0+59       0.0098      0.14  |QV       |          |          |          |
1+ 0       0.0100      0.14  |QV       |          |          |          |
1+ 1       0.0102      0.14  |QV       |          |          |          |
1+ 2       0.0104      0.14  |QV       |          |          |          |
1+ 3       0.0106      0.14  |QV       |          |          |          |
1+ 4       0.0108      0.14  |QV       |          |          |          |
1+ 5       0.0110      0.14  |QV       |          |          |          |
1+ 6       0.0112      0.14  |QV       |          |          |          |
1+ 7       0.0114      0.14  |QV       |          |          |          |
1+ 8       0.0116      0.14  |QV       |          |          |          |
1+ 9       0.0118      0.15  |QV       |          |          |          |
1+10       0.0120      0.15  |QV       |          |          |          |
1+11       0.0122      0.15  |QV       |          |          |          |
1+12       0.0124      0.15  |QV       |          |          |          |
1+13       0.0126      0.15  |QV       |          |          |          |
1+14       0.0128      0.15  |Q V      |          |          |          |
1+15       0.0130      0.15  |Q V      |          |          |          |
1+16       0.0132      0.15  |Q V      |          |          |          |
1+17       0.0134      0.15  |Q V      |          |          |          |
1+18       0.0136      0.15  |Q V      |          |          |          |
1+19       0.0139      0.15  |Q V      |          |          |          |
1+20       0.0141      0.15  |Q V      |          |          |          |
1+21       0.0143      0.15  |Q V      |          |          |          |
1+22       0.0145      0.15  |Q V      |          |          |          |
1+23       0.0147      0.15  |Q V      |          |          |          |
1+24       0.0149      0.15  |Q V      |          |          |          |
1+25       0.0151      0.15  |Q V      |          |          |          |
1+26       0.0153      0.16  |Q V      |          |          |          |
1+27       0.0155      0.16  |Q V      |          |          |          |
1+28       0.0158      0.16  |Q V      |          |          |          |
1+29       0.0160      0.16  |Q V      |          |          |          |
1+30       0.0162      0.16  |Q V      |          |          |          |
1+31       0.0164      0.16  |Q V      |          |          |          |
1+32       0.0166      0.16  |Q V      |          |          |          |
1+33       0.0168      0.16  |Q V      |          |          |          |
```

```
1+34      0.0171      0.16  |Q  V     |          |          |          |
1+35      0.0173      0.16  |Q  V     |          |          |          |
1+36      0.0175      0.16  |Q  V     |          |          |          |
1+37      0.0177      0.16  |Q  V     |          |          |          |
1+38      0.0180      0.16  |Q  V     |          |          |          |
1+39      0.0182      0.16  |Q  V     |          |          |          |
1+40      0.0184      0.16  |Q  V     |          |          |          |
1+41      0.0186      0.17  |Q  V     |          |          |          |
1+42      0.0189      0.17  |Q  V     |          |          |          |
1+43      0.0191      0.17  |Q  V     |          |          |          |
1+44      0.0193      0.17  |Q  V     |          |          |          |
1+45      0.0196      0.17  |Q  V     |          |          |          |
1+46      0.0198      0.17  |Q  V     |          |          |          |
1+47      0.0200      0.17  |Q  V     |          |          |          |
1+48      0.0203      0.17  |Q  V     |          |          |          |
1+49      0.0205      0.17  |Q  V     |          |          |          |
1+50      0.0207      0.17  |Q  V     |          |          |          |
1+51      0.0210      0.17  |Q  V     |          |          |          |
1+52      0.0212      0.17  |Q   V    |          |          |          |
1+53      0.0214      0.17  |Q   V    |          |          |          |
1+54      0.0217      0.17  |Q   V    |          |          |          |
1+55      0.0219      0.18  |Q   V    |          |          |          |
1+56      0.0222      0.18  |Q   V    |          |          |          |
1+57      0.0224      0.18  |Q   V    |          |          |          |
1+58      0.0227      0.18  |Q   V    |          |          |          |
1+59      0.0229      0.18  |Q   V    |          |          |          |
2+ 0      0.0232      0.18  |Q   V    |          |          |          |
2+ 1      0.0234      0.18  |Q   V    |          |          |          |
2+ 2      0.0237      0.18  |Q   V    |          |          |          |
2+ 3      0.0239      0.18  |Q   V    |          |          |          |
2+ 4      0.0242      0.18  |Q   V    |          |          |          |
2+ 5      0.0244      0.18  |Q   V    |          |          |          |
2+ 6      0.0247      0.19  |Q   V    |          |          |          |
2+ 7      0.0249      0.19  |Q   V    |          |          |          |
2+ 8      0.0252      0.19  |Q   V    |          |          |          |
2+ 9      0.0254      0.19  |Q    V   |          |          |          |
2+10      0.0257      0.19  |Q    V   |          |          |          |
2+11      0.0260      0.19  |Q    V   |          |          |          |
2+12      0.0262      0.19  |Q    V   |          |          |          |
2+13      0.0265      0.19  |Q    V   |          |          |          |
2+14      0.0268      0.20  |Q    V   |          |          |          |
2+15      0.0270      0.20  |Q    V   |          |          |          |
2+16      0.0273      0.20  |Q    V   |          |          |          |
2+17      0.0276      0.20  |Q    V   |          |          |          |
2+18      0.0279      0.20  |Q    V   |          |          |          |
2+19      0.0281      0.20  |Q    V   |          |          |          |
2+20      0.0284      0.20  |Q    V   |          |          |          |
2+21      0.0287      0.20  |Q    V   |          |          |          |
2+22      0.0290      0.20  | Q   V   |          |          |          |
2+23      0.0293      0.20  | Q   V   |          |          |          |
2+24      0.0295      0.20  | Q   V   |          |          |          |
2+25      0.0298      0.21  | Q    V  |          |          |          |
2+26      0.0301      0.21  | Q    V  |          |          |          |
2+27      0.0304      0.21  | Q    V  |          |          |          |
2+28      0.0307      0.21  | Q    V  |          |          |          |
2+29      0.0310      0.21  | Q    V  |          |          |          |
2+30      0.0313      0.22  | Q    V  |          |          |          |
2+31      0.0316      0.22  | Q    V  |          |          |          |
2+32      0.0319      0.22  | Q    V  |          |          |          |
2+33      0.0322      0.22  | Q    V  |          |          |          |
```

```
2+34      0.0325      0.22  | Q    V  |          |          |          |
2+35      0.0328      0.22  | Q    V  |          |          |          |
2+36      0.0331      0.22  | Q    V  |          |          |          |
2+37      0.0334      0.23  | Q    V  |          |          |          |
2+38      0.0337      0.23  | Q    V  |          |          |          |
2+39      0.0341      0.23  | Q     V |          |          |          |
2+40      0.0344      0.23  | Q     V |          |          |          |
2+41      0.0347      0.23  | Q     V |          |          |          |
2+42      0.0350      0.23  | Q     V |          |          |          |
2+43      0.0353      0.24  | Q     V |          |          |          |
2+44      0.0357      0.24  | Q     V |          |          |          |
2+45      0.0360      0.24  | Q     V |          |          |          |
2+46      0.0363      0.24  | Q     V |          |          |          |
2+47      0.0367      0.25  | Q     V |          |          |          |
2+48      0.0370      0.25  | Q     V |          |          |          |
2+49      0.0374      0.25  | Q     V |          |          |          |
2+50      0.0377      0.25  | Q     V |          |          |          |
2+51      0.0380      0.25  | Q     V |          |          |          |
2+52      0.0384      0.25  | Q      V|          |          |          |
2+53      0.0387      0.26  | Q      V|          |          |          |
2+54      0.0391      0.26  | Q      V|          |          |          |
2+55      0.0395      0.26  | Q      V|          |          |          |
2+56      0.0398      0.26  | Q      V|          |          |          |
2+57      0.0402      0.26  | Q      V|          |          |          |
2+58      0.0405      0.27  | Q      V|          |          |          |
2+59      0.0409      0.27  | Q      V|          |          |          |
3+ 0      0.0413      0.27  | Q      V|          |          |          |
3+ 1      0.0417      0.28  | Q      V|          |          |          |
3+ 2      0.0421      0.28  | Q      V|          |          |          |
3+ 3      0.0425      0.28  | Q       V          |          |          |
3+ 4      0.0429      0.29  | Q       V          |          |          |
3+ 5      0.0433      0.29  | Q       V          |          |          |
3+ 6      0.0437      0.29  | Q       V          |          |          |
3+ 7      0.0441      0.29  | Q       V          |          |          |
3+ 8      0.0445      0.30  | Q       V          |          |          |
3+ 9      0.0449      0.30  | Q       V          |          |          |
3+10      0.0453      0.30  | Q       V          |          |          |
3+11      0.0457      0.30  | Q       V          |          |          |
3+12      0.0461      0.31  |  Q      V          |          |          |
3+13      0.0466      0.31  |  Q      |V          |          |          |
3+14      0.0470      0.32  |  Q      |V          |          |          |
3+15      0.0474      0.32  |  Q      |V          |          |          |
3+16      0.0479      0.33  |  Q      |V          |          |          |
3+17      0.0484      0.33  |  Q      |V          |          |          |
3+18      0.0488      0.34  |  Q      |V          |          |          |
3+19      0.0493      0.34  |  Q      |V          |          |          |
3+20      0.0498      0.35  |  Q      |V          |          |          |
3+21      0.0503      0.35  |  Q      |V          |          |          |
3+22      0.0508      0.36  |  Q      |V          |          |          |
3+23      0.0513      0.36  |  Q      | V         |          |          |
3+24      0.0518      0.37  |  Q      | V         |          |          |
3+25      0.0523      0.37  |  Q      | V         |          |          |
3+26      0.0528      0.37  |  Q      | V         |          |          |
3+27      0.0533      0.38  |  Q      | V         |          |          |
3+28      0.0538      0.38  |  Q      | V         |          |          |
3+29      0.0544      0.39  |  Q      | V         |          |          |
3+30      0.0549      0.40  |  Q      | V         |          |          |
3+31      0.0555      0.41  |   Q     |  V        |          |          |
3+32      0.0561      0.42  |   Q     |  V        |          |          |
3+33      0.0567      0.43  |   Q     |  V        |          |          |
```

```
3+34       0.0573      0.44  |   Q     |  V      |         |         |
3+35       0.0579      0.45  |   Q     |  V      |         |         |
3+36       0.0585      0.46  |   Q     |  V      |         |         |
3+37       0.0592      0.47  |   Q     |  V      |         |         |
3+38       0.0598      0.48  |   Q     |   V     |         |         |
3+39       0.0605      0.49  |   Q     |   V     |         |         |
3+40       0.0612      0.50  |   Q     |   V     |         |         |
3+41       0.0619      0.50  |   Q     |   V     |         |         |
3+42       0.0626      0.51  |    Q    |   V     |         |         |
3+43       0.0633      0.52  |    Q    |   V     |         |         |
3+44       0.0640      0.53  |    Q    |    V    |         |         |
3+45       0.0648      0.56  |    Q    |    V    |         |         |
3+46       0.0656      0.59  |    Q    |    V    |         |         |
3+47       0.0665      0.62  |     Q   |    V    |         |         |
3+48       0.0674      0.65  |     Q   |    V    |         |         |
3+49       0.0683      0.68  |     Q   |     V   |         |         |
3+50       0.0693      0.71  |      Q  |     V   |         |         |
3+51       0.0703      0.75  |      Q  |     V   |         |         |
3+52       0.0714      0.78  |      Q  |     V   |         |         |
3+53       0.0725      0.82  |       Q |      V  |         |         |
3+54       0.0737      0.86  |       Q |      V  |         |         |
3+55       0.0749      0.90  |       Q |      V  |         |         |
3+56       0.0762      0.94  |        Q|       V |         |         |
3+57       0.0776      0.97  |        Q|       V |         |         |
3+58       0.0790      1.01  |        Q|       V |         |         |
3+59       0.0804      1.05  |         Q       V|         |         |
4+ 0       0.0819      1.09  |         Q       V|         |         |
4+ 1       0.0839      1.47  |          |   Q   V|         |         |
4+ 2       0.0865      1.84  |          |       Q V         |         |
4+ 3       0.0895      2.21  |          |         |Q        |         |
4+ 4       0.0931      2.58  |          |         | V  Q    |         |
4+ 5       0.0971      2.95  |          |         | V      Q|         |
4+ 6       0.1017      3.32  |          |         |   V     | Q       |
4+ 7       0.1068      3.69  |          |         |    V    |     Q   |
4+ 8       0.1124      4.06  |          |         |     V   |         Q
4+ 9       0.1174      3.63  |          |         |      V  |    Q    |
4+10       0.1218      3.20  |          |         |       V |Q        |
4+11       0.1256      2.77  |          |         |      Q V|         |
4+12       0.1289      2.34  |          |         |  Q      V         |
4+13       0.1315      1.91  |          |       Q |         |V        |
4+14       0.1335      1.48  |          |   Q     |         |V        |
4+15       0.1350      1.05  |         Q|         |         |V        |
4+16       0.1359      0.62  |     Q    |         |         | V       |
4+17       0.1367      0.60  |    Q     |         |         | V       |
4+18       0.1375      0.57  |    Q     |         |         | V       |
4+19       0.1382      0.55  |    Q     |         |         | V       |
4+20       0.1389      0.52  |    Q     |         |         | V       |
4+21       0.1396      0.49  |   Q      |         |         |  V      |
4+22       0.1403      0.47  |   Q      |         |         |  V      |
4+23       0.1409      0.44  |   Q      |         |         |  V      |
4+24       0.1414      0.42  |   Q      |         |         |  V      |
4+25       0.1420      0.41  |  Q       |         |         |  V      |
4+26       0.1425      0.39  |  Q       |         |         |  V      |
4+27       0.1431      0.38  |  Q       |         |         |  V      |
4+28       0.1436      0.37  |  Q       |         |         |  V      |
4+29       0.1441      0.36  |  Q       |         |         |   V     |
4+30       0.1446      0.35  |  Q       |         |         |   V     |
4+31       0.1450      0.34  |  Q       |         |         |   V     |
4+32       0.1455      0.33  |  Q       |         |         |   V     |
4+33       0.1459      0.32  |  Q       |         |         |   V     |
```

```
4+34      0.1463      0.31  |  Q      |         |         |   V     |
4+35      0.1468      0.31  |  Q      |         |         |   V     |
4+36      0.1472      0.30  | Q       |         |         |   V     |
4+37      0.1476      0.29  | Q       |         |         |   V     |
4+38      0.1480      0.29  | Q       |         |         |   V     |
4+39      0.1484      0.28  | Q       |         |         |    V    |
4+40      0.1487      0.27  | Q       |         |         |    V    |
4+41      0.1491      0.27  | Q       |         |         |    V    |
4+42      0.1495      0.26  | Q       |         |         |    V    |
4+43      0.1498      0.26  | Q       |         |         |    V    |
4+44      0.1502      0.26  | Q       |         |         |    V    |
4+45      0.1505      0.25  | Q       |         |         |    V    |
4+46      0.1509      0.25  | Q       |         |         |    V    |
4+47      0.1512      0.24  | Q       |         |         |    V    |
4+48      0.1515      0.24  | Q       |         |         |    V    |
4+49      0.1518      0.23  | Q       |         |         |    V    |
4+50      0.1522      0.23  | Q       |         |         |    V    |
4+51      0.1525      0.23  | Q       |         |         |     V   |
4+52      0.1528      0.22  | Q       |         |         |     V   |
4+53      0.1531      0.22  | Q       |         |         |     V   |
4+54      0.1534      0.22  | Q       |         |         |     V   |
4+55      0.1537      0.22  | Q       |         |         |     V   |
4+56      0.1540      0.21  | Q       |         |         |     V   |
4+57      0.1543      0.21  | Q       |         |         |     V   |
4+58      0.1546      0.21  | Q       |         |         |     V   |
4+59      0.1548      0.20  | Q       |         |         |     V   |
5+ 0      0.1551      0.20  |Q        |         |         |     V   |
5+ 1      0.1554      0.20  |Q        |         |         |     V   |
5+ 2      0.1557      0.20  |Q        |         |         |     V   |
5+ 3      0.1559      0.19  |Q        |         |         |     V   |
5+ 4      0.1562      0.19  |Q        |         |         |     V   |
5+ 5      0.1565      0.19  |Q        |         |         |     V   |
5+ 6      0.1567      0.19  |Q        |         |         |      V  |
5+ 7      0.1570      0.19  |Q        |         |         |      V  |
5+ 8      0.1572      0.18  |Q        |         |         |      V  |
5+ 9      0.1575      0.18  |Q        |         |         |      V  |
5+10      0.1577      0.18  |Q        |         |         |      V  |
5+11      0.1580      0.18  |Q        |         |         |      V  |
5+12      0.1582      0.18  |Q        |         |         |      V  |
5+13      0.1585      0.18  |Q        |         |         |      V  |
5+14      0.1587      0.17  |Q        |         |         |      V  |
5+15      0.1589      0.17  |Q        |         |         |      V  |
5+16      0.1592      0.17  |Q        |         |         |      V  |
5+17      0.1594      0.17  |Q        |         |         |      V  |
5+18      0.1596      0.17  |Q        |         |         |      V  |
5+19      0.1599      0.17  |Q        |         |         |      V  |
5+20      0.1601      0.16  |Q        |         |         |      V  |
5+21      0.1603      0.16  |Q        |         |         |      V  |
5+22      0.1605      0.16  |Q        |         |         |      V  |
5+23      0.1608      0.16  |Q        |         |         |       V |
5+24      0.1610      0.16  |Q        |         |         |       V |
5+25      0.1612      0.16  |Q        |         |         |       V |
5+26      0.1614      0.16  |Q        |         |         |       V |
5+27      0.1616      0.15  |Q        |         |         |       V |
5+28      0.1618      0.15  |Q        |         |         |       V |
5+29      0.1620      0.15  |Q        |         |         |       V |
5+30      0.1622      0.15  |Q        |         |         |       V |
5+31      0.1625      0.15  |Q        |         |         |       V |
5+32      0.1627      0.15  |Q        |         |         |       V |
5+33      0.1629      0.15  |Q        |         |         |       V |
```

```
    5+34       0.1631      0.15  |Q        |          |          |        V |
    5+35       0.1633      0.15  |Q        |          |          |        V |
    5+36       0.1635      0.14  |Q        |          |          |        V |
    5+37       0.1637      0.14  |Q        |          |          |        V |
    5+38       0.1639      0.14  |Q        |          |          |        V |
    5+39       0.1641      0.14  |Q        |          |          |        V |
    5+40       0.1642      0.14  |Q        |          |          |        V |
    5+41       0.1644      0.14  |Q        |          |          |        V |
    5+42       0.1646      0.14  |Q        |          |          |        V |
    5+43       0.1648      0.14  |Q        |          |          |        V |
    5+44       0.1650      0.14  |Q        |          |          |         V|
    5+45       0.1652      0.14  |Q        |          |          |         V|
    5+46       0.1654      0.14  |Q        |          |          |         V|
    5+47       0.1656      0.13  |Q        |          |          |         V|
    5+48       0.1658      0.13  |Q        |          |          |         V|
    5+49       0.1659      0.13  |Q        |          |          |         V|
    5+50       0.1661      0.13  |Q        |          |          |         V|
    5+51       0.1663      0.13  |Q        |          |          |         V|
    5+52       0.1665      0.13  |Q        |          |          |         V|
    5+53       0.1667      0.13  |Q        |          |          |         V|
    5+54       0.1668      0.13  |Q        |          |          |         V|
    5+55       0.1670      0.13  |Q        |          |          |         V|
    5+56       0.1672      0.13  |Q        |          |          |         V|
    5+57       0.1674      0.13  |Q        |          |          |         V|
    5+58       0.1675      0.13  |Q        |          |          |         V|
    5+59       0.1677      0.12  |Q        |          |          |         V|
    6+ 0       0.1679      0.12  |Q        |          |          |         V|
    6+ 1       0.1680      0.12  |Q        |          |          |         V|
    6+ 2       0.1682      0.12  |Q        |          |          |         V|
    6+ 3       0.1684      0.12  |Q        |          |          |         V|
    6+ 4       0.1685      0.12  |Q        |          |          |         V|
    6+ 5       0.1687      0.12  |Q        |          |          |         V|
    6+ 6       0.1689      0.12  |Q        |          |          |         V|
    6+ 7       0.1690      0.12  |Q        |          |          |         V|
    6+ 8       0.1692      0.12  |Q        |          |          |          V
--------------------------------------------------------------------------


 End of computations, total study area =          2.300 (Ac.)
```

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study        Date: 10/12/11
--------------------------------------------------------------------------
CABRILLO HEIGHTS NEIGBORHOOD PARK
100-YEAR STORM EVENT
WEST RAIN GARDEN
```

Proposed Conditions

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  2.000
24 hour precipitation(inches) =  3.500
P6/P24 =    57.1%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =   55.000(Ft.)
Highest elevation =  393.400(Ft.)
Lowest elevation =  392.200(Ft.)
Elevation difference =    1.200(Ft.) Slope =  2.182 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   2.18 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.37 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   2.182^(1/3)]=   3.37
Calculated TC of    3.365 minutes is less than 5 minutes,
 resetting TC to 5.0 minutes for rainfall intensity calculations
Rainfall intensity (I) =      5.269(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
```

```
Subarea runoff =      0.130(CFS)
Total initial stream area =        0.030(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   392.200(Ft.)
End of street segment elevation =   390.300(Ft.)
Length of street segment  =   280.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   1.500(Ft.)
Gutter hike from flowline =  1.330(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.710(CFS)
Depth of flow =   0.213(Ft.), Average velocity =   1.425(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.618(Ft.)
Flow velocity =   1.42(Ft/s)
Travel time =    3.28 min.     TC =    6.64  min.
 Adding area flow to street
Rainfall intensity (I) =      4.388(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.730 given for subarea
Rainfall intensity =      4.388(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.736  CA =      0.317
Subarea runoff =      1.260(CFS) for      0.400(Ac.)
Total runoff =      1.389(CFS)    Total area =       0.430(Ac.)
Street flow at end of street =      1.389(CFS)
Half street flow at end of street =      1.389(CFS)
Depth of flow =   0.257(Ft.), Average velocity =   1.665(Ft/s)
Flow width (from curb towards crown)=   8.798(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
Rainfall intensity (I) =      4.388(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Time of concentration =     6.64 min.
Rainfall intensity =      4.388(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
```

```
(Q=KCIA) is C = 0.752  CA =      0.399
Subarea runoff =      0.360(CFS) for      0.100(Ac.)
Total runoff =      1.749(CFS)    Total area =       0.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   387.300(Ft.)
Downstream point/station elevation =   386.300(Ft.)
Pipe length  =    17.00(Ft.) Slope =   0.0588  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.749(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     1.749(CFS)
Normal flow depth in pipe =    3.36(In.)
Flow top width inside pipe =   10.78(In.)
Critical Depth =    6.75(In.)
Pipe flow velocity =      9.71(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     6.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.100 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
Rainfall intensity (I) =      4.376(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.410 given for subarea
Time of concentration =     6.67 min.
Rainfall intensity =      4.376(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.698  CA =      0.440
Subarea runoff =      0.174(CFS) for      0.100(Ac.)
Total runoff =      1.923(CFS)    Total area =       0.630(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.100 to Point/Station      103.000
**** 6 HOUR HYDROGRAPH ****
________________________________________________________________________
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   6.67
Basin Area =     0.63 Acres
6 Hour Rainfall =  2.000 Inches
Runoff Coefficient =  0.698
Peak Discharge =     1.92 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       6               0.052
       12               0.053
       18               0.054
       24               0.055
       30               0.056
       36               0.057
       42               0.058
       48               0.059
```

```
        54                0.061
        60                0.061
        66                0.063
        72                0.064
        78                0.066
        84                0.067
        90                0.069
        96                0.071
        102                0.073
        108                0.074
        114                0.077
        120                0.079
        126                0.082
        132                0.084
        138                0.088
        144                0.091
        150                0.095
        156                0.098
        162                0.104
        168                0.108
        174                0.115
        180                0.120
        186                0.130
        192                0.136
        198                0.151
        204                0.161
        210                0.184
        216                0.199
        222                0.244
        228                0.278
        234                0.408
        240                0.575
        246                1.923
        252                0.327
        258                0.219
        264                0.171
        270                0.143
        276                0.125
        282                0.111
        288                0.101
        294                0.093
        300                0.086
        306                0.081
        312                0.076
        318                0.072
        324                0.068
        330                0.065
        336                0.062
        342                0.060
        348                0.058
        354                0.055
        360                0.054
        366                0.052
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
              R u n o f f      H y d r o g r a p h
----------------------------------------------------------------------
            Hydrograph in   1   Minute intervals ((CFS))

----------------------------------------------------------------------
```

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	0.5	1.0	1.4	1.9
0+ 0	0.0000	0.00	Q				
0+ 1	0.0000	0.01	Q				
0+ 2	0.0000	0.02	Q				
0+ 3	0.0001	0.03	Q				
0+ 4	0.0001	0.03	Q				
0+ 5	0.0002	0.04	Q				
0+ 6	0.0003	0.05	VQ				
0+ 7	0.0003	0.05	VQ				
0+ 8	0.0004	0.05	VQ				
0+ 9	0.0005	0.05	VQ				
0+10	0.0005	0.05	VQ				
0+11	0.0006	0.05	VQ				
0+12	0.0007	0.05	VQ				
0+13	0.0008	0.05	VQ				
0+14	0.0008	0.05	VQ				
0+15	0.0009	0.05	VQ				
0+16	0.0010	0.05	VQ				
0+17	0.0011	0.05	VQ				
0+18	0.0011	0.05	VQ				
0+19	0.0012	0.05	VQ				
0+20	0.0013	0.05	VQ				
0+21	0.0014	0.05	VQ				
0+22	0.0014	0.05	VQ				
0+23	0.0015	0.05	VQ				
0+24	0.0016	0.05	VQ				
0+25	0.0017	0.06	VQ				
0+26	0.0017	0.06	VQ				
0+27	0.0018	0.06	|Q				
0+28	0.0019	0.06	|Q				
0+29	0.0020	0.06	|Q				
0+30	0.0020	0.06	|Q				
0+31	0.0021	0.06	|Q				
0+32	0.0022	0.06	|Q				
0+33	0.0023	0.06	|Q				
0+34	0.0024	0.06	|Q				
0+35	0.0024	0.06	|Q				
0+36	0.0025	0.06	|Q				
0+37	0.0026	0.06	|Q				
0+38	0.0027	0.06	|Q				
0+39	0.0027	0.06	|Q				
0+40	0.0028	0.06	|Q				
0+41	0.0029	0.06	|Q				
0+42	0.0030	0.06	|Q				
0+43	0.0031	0.06	|Q				
0+44	0.0031	0.06	|Q				
0+45	0.0032	0.06	|Q				
0+46	0.0033	0.06	|Q				
0+47	0.0034	0.06	|Q				
0+48	0.0035	0.06	|Q				
0+49	0.0036	0.06	|Q				
0+50	0.0036	0.06	|QV				
0+51	0.0037	0.06	|QV				
0+52	0.0038	0.06	|QV				
0+53	0.0039	0.06	|QV				
0+54	0.0040	0.06	|QV				
0+55	0.0041	0.06	|QV				
0+56	0.0041	0.06	|QV				
0+57	0.0042	0.06	|QV				

```
0+58      0.0043      0.06  |QV       |          |          |          |
0+59      0.0044      0.06  |QV       |          |          |          |
1+ 0      0.0045      0.06  |QV       |          |          |          |
1+ 1      0.0046      0.06  |QV       |          |          |          |
1+ 2      0.0046      0.06  |QV       |          |          |          |
1+ 3      0.0047      0.06  |QV       |          |          |          |
1+ 4      0.0048      0.06  |QV       |          |          |          |
1+ 5      0.0049      0.06  |QV       |          |          |          |
1+ 6      0.0050      0.06  |QV       |          |          |          |
1+ 7      0.0051      0.06  |QV       |          |          |          |
1+ 8      0.0052      0.06  |QV       |          |          |          |
1+ 9      0.0053      0.06  |QV       |          |          |          |
1+10      0.0053      0.06  |QV       |          |          |          |
1+11      0.0054      0.06  |Q V      |          |          |          |
1+12      0.0055      0.06  |Q V      |          |          |          |
1+13      0.0056      0.06  |Q V      |          |          |          |
1+14      0.0057      0.06  |Q V      |          |          |          |
1+15      0.0058      0.07  |Q V      |          |          |          |
1+16      0.0059      0.07  |Q V      |          |          |          |
1+17      0.0060      0.07  |Q V      |          |          |          |
1+18      0.0061      0.07  |Q V      |          |          |          |
1+19      0.0061      0.07  |Q V      |          |          |          |
1+20      0.0062      0.07  |Q V      |          |          |          |
1+21      0.0063      0.07  |Q V      |          |          |          |
1+22      0.0064      0.07  |Q V      |          |          |          |
1+23      0.0065      0.07  |Q V      |          |          |          |
1+24      0.0066      0.07  |Q V      |          |          |          |
1+25      0.0067      0.07  |Q V      |          |          |          |
1+26      0.0068      0.07  |Q V      |          |          |          |
1+27      0.0069      0.07  |Q V      |          |          |          |
1+28      0.0070      0.07  |Q V      |          |          |          |
1+29      0.0071      0.07  |Q V      |          |          |          |
1+30      0.0072      0.07  |Q V      |          |          |          |
1+31      0.0073      0.07  |Q  V     |          |          |          |
1+32      0.0074      0.07  |Q  V     |          |          |          |
1+33      0.0075      0.07  |Q  V     |          |          |          |
1+34      0.0076      0.07  |Q  V     |          |          |          |
1+35      0.0077      0.07  |Q  V     |          |          |          |
1+36      0.0078      0.07  |Q  V     |          |          |          |
1+37      0.0078      0.07  |Q  V     |          |          |          |
1+38      0.0079      0.07  |Q  V     |          |          |          |
1+39      0.0080      0.07  |Q  V     |          |          |          |
1+40      0.0081      0.07  |Q  V     |          |          |          |
1+41      0.0082      0.07  |Q  V     |          |          |          |
1+42      0.0083      0.07  |Q  V     |          |          |          |
1+43      0.0084      0.07  |Q  V     |          |          |          |
1+44      0.0085      0.07  |Q  V     |          |          |          |
1+45      0.0087      0.07  |Q  V     |          |          |          |
1+46      0.0088      0.07  |Q  V     |          |          |          |
1+47      0.0089      0.07  |Q  V     |          |          |          |
1+48      0.0090      0.07  |Q  V     |          |          |          |
1+49      0.0091      0.07  |Q   V    |          |          |          |
1+50      0.0092      0.08  |Q   V    |          |          |          |
1+51      0.0093      0.08  |Q   V    |          |          |          |
1+52      0.0094      0.08  |Q   V    |          |          |          |
1+53      0.0095      0.08  |Q   V    |          |          |          |
1+54      0.0096      0.08  |Q   V    |          |          |          |
1+55      0.0097      0.08  |Q   V    |          |          |          |
1+56      0.0098      0.08  |Q   V    |          |          |          |
1+57      0.0099      0.08  |Q   V    |          |          |          |
```

```
1+58       0.0100      0.08  |Q   V    |          |          |          |
1+59       0.0101      0.08  |Q   V    |          |          |          |
2+ 0       0.0102      0.08  |Q   V    |          |          |          |
2+ 1       0.0103      0.08  |Q   V    |          |          |          |
2+ 2       0.0105      0.08  |Q   V    |          |          |          |
2+ 3       0.0106      0.08  |Q   V    |          |          |          |
2+ 4       0.0107      0.08  |Q   V    |          |          |          |
2+ 5       0.0108      0.08  |Q   V    |          |          |          |
2+ 6       0.0109      0.08  |Q    V   |          |          |          |
2+ 7       0.0110      0.08  |Q    V   |          |          |          |
2+ 8       0.0111      0.08  |Q    V   |          |          |          |
2+ 9       0.0112      0.08  |Q    V   |          |          |          |
2+10       0.0114      0.08  |Q    V   |          |          |          |
2+11       0.0115      0.08  |Q    V   |          |          |          |
2+12       0.0116      0.08  |Q    V   |          |          |          |
2+13       0.0117      0.08  |Q    V   |          |          |          |
2+14       0.0118      0.09  |Q    V   |          |          |          |
2+15       0.0119      0.09  |Q    V   |          |          |          |
2+16       0.0121      0.09  |Q    V   |          |          |          |
2+17       0.0122      0.09  |Q    V   |          |          |          |
2+18       0.0123      0.09  |Q    V   |          |          |          |
2+19       0.0124      0.09  |Q    V   |          |          |          |
2+20       0.0126      0.09  |Q    V   |          |          |          |
2+21       0.0127      0.09  |Q     V  |          |          |          |
2+22       0.0128      0.09  |Q     V  |          |          |          |
2+23       0.0129      0.09  |Q     V  |          |          |          |
2+24       0.0131      0.09  |Q     V  |          |          |          |
2+25       0.0132      0.09  |Q     V  |          |          |          |
2+26       0.0133      0.09  |Q     V  |          |          |          |
2+27       0.0134      0.09  |Q     V  |          |          |          |
2+28       0.0136      0.09  |Q     V  |          |          |          |
2+29       0.0137      0.09  |Q     V  |          |          |          |
2+30       0.0138      0.10  |Q     V  |          |          |          |
2+31       0.0140      0.10  |Q     V  |          |          |          |
2+32       0.0141      0.10  | Q    V  |          |          |          |
2+33       0.0142      0.10  | Q    V  |          |          |          |
2+34       0.0144      0.10  | Q    V  |          |          |          |
2+35       0.0145      0.10  | Q     V |          |          |          |
2+36       0.0146      0.10  | Q     V |          |          |          |
2+37       0.0148      0.10  | Q     V |          |          |          |
2+38       0.0149      0.10  | Q     V |          |          |          |
2+39       0.0150      0.10  | Q     V |          |          |          |
2+40       0.0152      0.10  | Q     V |          |          |          |
2+41       0.0153      0.10  | Q     V |          |          |          |
2+42       0.0155      0.10  | Q     V |          |          |          |
2+43       0.0156      0.10  | Q     V |          |          |          |
2+44       0.0158      0.11  | Q     V |          |          |          |
2+45       0.0159      0.11  | Q     V |          |          |          |
2+46       0.0160      0.11  | Q     V |          |          |          |
2+47       0.0162      0.11  | Q      V|          |          |          |
2+48       0.0163      0.11  | Q      V|          |          |          |
2+49       0.0165      0.11  | Q      V|          |          |          |
2+50       0.0166      0.11  | Q      V|          |          |          |
2+51       0.0168      0.11  | Q      V|          |          |          |
2+52       0.0170      0.11  | Q      V|          |          |          |
2+53       0.0171      0.11  | Q      V|          |          |          |
2+54       0.0173      0.12  | Q      V|          |          |          |
2+55       0.0174      0.12  | Q      V|          |          |          |
2+56       0.0176      0.12  | Q      V|          |          |          |
2+57       0.0178      0.12  | Q      V|          |          |          |
```

```
2+58      0.0179      0.12  | Q      V|         |         |         |
2+59      0.0181      0.12  | Q       V         |         |         |
3+ 0      0.0182      0.12  | Q       V         |         |         |
3+ 1      0.0184      0.12  | Q       V         |         |         |
3+ 2      0.0186      0.12  | Q       V         |         |         |
3+ 3      0.0188      0.13  | Q       V         |         |         |
3+ 4      0.0189      0.13  | Q       V         |         |         |
3+ 5      0.0191      0.13  | Q       V         |         |         |
3+ 6      0.0193      0.13  | Q       V         |         |         |
3+ 7      0.0195      0.13  | Q       V         |         |         |
3+ 8      0.0196      0.13  | Q       V         |         |         |
3+ 9      0.0198      0.13  | Q       |V         |         |         |
3+10      0.0200      0.13  | Q       |V         |         |         |
3+11      0.0202      0.14  | Q       |V         |         |         |
3+12      0.0204      0.14  | Q       |V         |         |         |
3+13      0.0206      0.14  | Q       |V         |         |         |
3+14      0.0208      0.14  | Q       |V         |         |         |
3+15      0.0210      0.14  | Q       |V         |         |         |
3+16      0.0212      0.15  |  Q      |V         |         |         |
3+17      0.0214      0.15  |  Q      |V         |         |         |
3+18      0.0216      0.15  |  Q      | V        |         |         |
3+19      0.0218      0.15  |  Q      | V        |         |         |
3+20      0.0220      0.15  |  Q      | V        |         |         |
3+21      0.0222      0.16  |  Q      | V        |         |         |
3+22      0.0224      0.16  |  Q      | V        |         |         |
3+23      0.0227      0.16  |  Q      | V        |         |         |
3+24      0.0229      0.16  |  Q      | V        |         |         |
3+25      0.0231      0.16  |  Q      | V        |         |         |
3+26      0.0233      0.17  |  Q      | V        |         |         |
3+27      0.0236      0.17  |  Q      |  V       |         |         |
3+28      0.0238      0.18  |  Q      |  V       |         |         |
3+29      0.0241      0.18  |  Q      |  V       |         |         |
3+30      0.0243      0.18  |  Q      |  V       |         |         |
3+31      0.0246      0.19  |  Q      |  V       |         |         |
3+32      0.0248      0.19  |  Q      |  V       |         |         |
3+33      0.0251      0.19  |  Q      |  V       |         |         |
3+34      0.0254      0.19  |   Q     |   V      |         |         |
3+35      0.0256      0.20  |   Q     |   V      |         |         |
3+36      0.0259      0.20  |   Q     |   V      |         |         |
3+37      0.0262      0.21  |   Q     |   V      |         |         |
3+38      0.0265      0.21  |   Q     |   V      |         |         |
3+39      0.0268      0.22  |   Q     |   V      |         |         |
3+40      0.0271      0.23  |   Q     |    V     |         |         |
3+41      0.0274      0.24  |   Q     |    V     |         |         |
3+42      0.0278      0.24  |    Q    |    V     |         |         |
3+43      0.0281      0.25  |    Q    |    V     |         |         |
3+44      0.0285      0.26  |    Q    |    V     |         |         |
3+45      0.0288      0.26  |    Q    |     V    |         |         |
3+46      0.0292      0.27  |    Q    |     V    |         |         |
3+47      0.0296      0.27  |    Q    |     V    |         |         |
3+48      0.0300      0.28  |    Q    |     V    |         |         |
3+49      0.0304      0.30  |     Q   |     V    |         |         |
3+50      0.0308      0.32  |     Q   |      V   |         |         |
3+51      0.0313      0.34  |      Q  |      V   |         |         |
3+52      0.0318      0.36  |      Q  |      V   |         |         |
3+53      0.0323      0.39  |       Q |      V   |         |         |
3+54      0.0329      0.41  |       Q |       V  |         |         |
3+55      0.0335      0.44  |        Q|       V  |         |         |
3+56      0.0341      0.46  |        Q|       V  |         |         |
3+57      0.0348      0.49  |         Q        V|         |         |
```

```
3+58      0.0355      0.52  |          Q         V|          |          |
3+59      0.0363      0.55  |          |Q         V          |          |
4+ 0      0.0371      0.57  |          |Q         V          |          |
4+ 1      0.0382      0.80  |          |      Q   |V          |          |
4+ 2      0.0396      1.02  |          |          |QV         |          |
4+ 3      0.0413      1.25  |          |          | V  Q      |          |
4+ 4      0.0433      1.47  |          |          |   V      Q          |
4+ 5      0.0457      1.70  |          |          |     V     |     Q    |
4+ 6      0.0483      1.92  |          |          |      V    |          Q|
4+ 7      0.0506      1.66  |          |          |         V |    Q     |
4+ 8      0.0525      1.39  |          |          |           QV|          |
4+ 9      0.0541      1.13  |          |          |  Q        V          |
4+10      0.0552      0.86  |          |       Q  |           V          |
4+11      0.0561      0.59  |          | Q        |           |V         |
4+12      0.0565      0.33  |      Q   |          |           |V         |
4+13      0.0569      0.31  |      Q   |          |           |V         |
4+14      0.0573      0.29  |      Q   |          |           |V         |
4+15      0.0577      0.27  |     Q    |          |           | V        |
4+16      0.0581      0.25  |     Q    |          |           | V        |
4+17      0.0584      0.24  |    Q     |          |           | V        |
4+18      0.0587      0.22  |    Q     |          |           | V        |
4+19      0.0590      0.21  |    Q     |          |           | V        |
4+20      0.0593      0.20  |    Q     |          |           | V        |
4+21      0.0595      0.20  |    Q     |          |           |  V       |
4+22      0.0598      0.19  |   Q      |          |           |  V       |
4+23      0.0600      0.18  |   Q      |          |           |  V       |
4+24      0.0603      0.17  |   Q      |          |           |  V       |
4+25      0.0605      0.17  |   Q      |          |           |  V       |
4+26      0.0607      0.16  |   Q      |          |           |  V       |
4+27      0.0609      0.16  |   Q      |          |           |  V       |
4+28      0.0612      0.15  |   Q      |          |           |   V      |
4+29      0.0614      0.15  |   Q      |          |           |   V      |
4+30      0.0616      0.14  | Q        |          |           |   V      |
4+31      0.0617      0.14  | Q        |          |           |   V      |
4+32      0.0619      0.14  | Q        |          |           |   V      |
4+33      0.0621      0.13  | Q        |          |           |   V      |
4+34      0.0623      0.13  | Q        |          |           |   V      |
4+35      0.0625      0.13  | Q        |          |           |   V      |
4+36      0.0626      0.12  | Q        |          |           |   V      |
4+37      0.0628      0.12  | Q        |          |           |   V      |
4+38      0.0630      0.12  | Q        |          |           |    V     |
4+39      0.0631      0.12  | Q        |          |           |    V     |
4+40      0.0633      0.12  | Q        |          |           |    V     |
4+41      0.0635      0.11  | Q        |          |           |    V     |
4+42      0.0636      0.11  | Q        |          |           |    V     |
4+43      0.0638      0.11  | Q        |          |           |    V     |
4+44      0.0639      0.11  | Q        |          |           |    V     |
4+45      0.0641      0.11  | Q        |          |           |    V     |
4+46      0.0642      0.10  | Q        |          |           |    V     |
4+47      0.0643      0.10  | Q        |          |           |    V     |
4+48      0.0645      0.10  | Q        |          |           |    V     |
4+49      0.0646      0.10  | Q        |          |           |    V     |
4+50      0.0648      0.10  | Q        |          |           |     V    |
4+51      0.0649      0.10  | Q        |          |           |     V    |
4+52      0.0650      0.10  |Q         |          |           |     V    |
4+53      0.0652      0.09  |Q         |          |           |     V    |
4+54      0.0653      0.09  |Q         |          |           |     V    |
4+55      0.0654      0.09  |Q         |          |           |     V    |
4+56      0.0655      0.09  |Q         |          |           |     V    |
4+57      0.0657      0.09  |Q         |          |           |     V    |
```

```
4+58      0.0658      0.09  |Q        |          |          |      V   |
4+59      0.0659      0.09  |Q        |          |          |      V   |
5+ 0      0.0660      0.09  |Q        |          |          |      V   |
5+ 1      0.0661      0.09  |Q        |          |          |      V   |
5+ 2      0.0663      0.08  |Q        |          |          |      V   |
5+ 3      0.0664      0.08  |Q        |          |          |      V   |
5+ 4      0.0665      0.08  |Q        |          |          |      V   |
5+ 5      0.0666      0.08  |Q        |          |          |       V  |
5+ 6      0.0667      0.08  |Q        |          |          |       V  |
5+ 7      0.0668      0.08  |Q        |          |          |       V  |
5+ 8      0.0669      0.08  |Q        |          |          |       V  |
5+ 9      0.0670      0.08  |Q        |          |          |       V  |
5+10      0.0671      0.08  |Q        |          |          |       V  |
5+11      0.0672      0.08  |Q        |          |          |       V  |
5+12      0.0673      0.08  |Q        |          |          |       V  |
5+13      0.0675      0.08  |Q        |          |          |       V  |
5+14      0.0676      0.07  |Q        |          |          |       V  |
5+15      0.0677      0.07  |Q        |          |          |       V  |
5+16      0.0678      0.07  |Q        |          |          |       V  |
5+17      0.0679      0.07  |Q        |          |          |       V  |
5+18      0.0680      0.07  |Q        |          |          |       V  |
5+19      0.0681      0.07  |Q        |          |          |       V  |
5+20      0.0681      0.07  |Q        |          |          |       V  |
5+21      0.0682      0.07  |Q        |          |          |       V  |
5+22      0.0683      0.07  |Q        |          |          |       V  |
5+23      0.0684      0.07  |Q        |          |          |        V |
5+24      0.0685      0.07  |Q        |          |          |        V |
5+25      0.0686      0.07  |Q        |          |          |        V |
5+26      0.0687      0.07  |Q        |          |          |        V |
5+27      0.0688      0.07  |Q        |          |          |        V |
5+28      0.0689      0.07  |Q        |          |          |        V |
5+29      0.0690      0.07  |Q        |          |          |        V |
5+30      0.0691      0.07  |Q        |          |          |        V |
5+31      0.0692      0.06  |Q        |          |          |        V |
5+32      0.0693      0.06  |Q        |          |          |        V |
5+33      0.0693      0.06  |Q        |          |          |        V |
5+34      0.0694      0.06  |Q        |          |          |        V |
5+35      0.0695      0.06  |Q        |          |          |        V |
5+36      0.0696      0.06  |Q        |          |          |        V |
5+37      0.0697      0.06  |Q        |          |          |        V |
5+38      0.0698      0.06  |Q        |          |          |        V |
5+39      0.0699      0.06  |Q        |          |          |        V |
5+40      0.0699      0.06  |Q        |          |          |        V |
5+41      0.0700      0.06  |Q        |          |          |        V |
5+42      0.0701      0.06  |Q        |          |          |        V |
5+43      0.0702      0.06  |Q        |          |          |         V|
5+44      0.0703      0.06  |Q        |          |          |         V|
5+45      0.0704      0.06  |Q        |          |          |         V|
5+46      0.0704      0.06  |Q        |          |          |         V|
5+47      0.0705      0.06  |Q        |          |          |         V|
5+48      0.0706      0.06  |Q        |          |          |         V|
5+49      0.0707      0.06  |Q        |          |          |         V|
5+50      0.0707      0.06  |Q        |          |          |         V|
5+51      0.0708      0.06  |Q        |          |          |         V|
5+52      0.0709      0.06  |Q        |          |          |         V|
5+53      0.0710      0.06  |Q        |          |          |         V|
5+54      0.0711      0.06  |Q        |          |          |         V|
5+55      0.0711      0.06  |Q        |          |          |         V|
5+56      0.0712      0.05  |Q        |          |          |         V|
5+57      0.0713      0.05  |Q        |          |          |         V|
```

```
    5+58       0.0714      0.05  |Q        |          |          |        V|
    5+59       0.0714      0.05  |Q        |          |          |        V|
    6+ 0       0.0715      0.05  |Q        |          |          |        V|
    6+ 1       0.0716      0.05  |Q        |          |          |        V|
    6+ 2       0.0717      0.05  |Q        |          |          |        V|
    6+ 3       0.0717      0.05  |Q        |          |          |        V|
    6+ 4       0.0718      0.05  |Q        |          |          |        V|
    6+ 5       0.0719      0.05  |Q        |          |          |        V|
    6+ 6       0.0719      0.05  |Q        |          |          |         V
-------------------------------------------------------------------------


      End of computations, total study area =          0.630 (Ac.)
```

```
            San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2006 Version 7.7

Rational method hydrology  program based on
San Diego County Flood Control Division 2003 hydrology manual
     Rational Hydrology Study        Date: 10/12/11
--------------------------------------------------------------------------
CABRILLO NEIGHBORHOOD PARK
100-YEAR STORM EVENT
EAST RAIN GARDEN
```

Proposed Conditions

```
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------


Program License Serial Number 6116

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour,  precipitation(inches) =  2.000
24 hour precipitation(inches) =  3.500
P6/P24 =    57.1%
San Diego hydrology manual 'C' values used


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
--------------------------------------------------------------------------
User specified 'C' value of 0.870 given for subarea
Rainfall intensity (I) =      5.269(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   5.00 min.  Rain intensity =       5.27(In/Hr)
Total area =        0.100(Ac.)  Total runoff =     0.300(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
--------------------------------------------------------------------------
Upstream point/station elevation =   396.500(Ft.)
Downstream point/station elevation =   394.400(Ft.)
Pipe length  =   210.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.300(CFS)
Given pipe size =      4.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.392(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      5.217(Ft.)
 Minor friction loss =      0.275(Ft.)  K-factor =   1.50
Pipe flow velocity =      3.44(Ft/s)
Travel time through pipe =    1.02 min.
Time of concentration (TC) =     6.02 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      502.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Rainfall intensity (I) =      4.676(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.870 given for subarea
Time of concentration =     6.02 min.
Rainfall intensity =      4.676(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.870  CA =      0.174
Subarea runoff =      0.514(CFS) for      0.100(Ac.)
Total runoff =      0.814(CFS)    Total area =       0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   394.400(Ft.)
Downstream point/station elevation =   393.600(Ft.)
Pipe length  =    80.00(Ft.) Slope =   0.0100  Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.814(CFS)
Given pipe size =      6.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.281(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.681(Ft.)
 Minor friction loss =      0.400(Ft.)  K-factor =   1.50
Pipe flow velocity =      4.14(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     6.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      503.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Rainfall intensity (I) =      4.521(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.720 given for subarea
Time of concentration =     6.34 min.
Rainfall intensity =      4.521(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.770  CA =      0.462
Subarea runoff =      1.275(CFS) for      0.400(Ac.)
Total runoff =      2.089(CFS)    Total area =       0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =   393.600(Ft.)
Downstream point elevation =   390.100(Ft.)
Channel length thru subarea  =   150.000(Ft.)
Channel base width     =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.200
Slope or 'Z' of right channel bank =   2.200
Estimated mean flow rate at midpoint of channel =      2.683(CFS)
```

```
Manning's 'N'    = 0.020
Maximum depth of channel  =    0.670(Ft.)
Flow(q) thru subarea =      2.683(CFS)
Depth of flow =   0.212(Ft.), Average velocity =   3.652(Ft/s)
Channel flow top width =    3.933(Ft.)
Flow Velocity =    3.65(Ft/s)
Travel time  =    0.68 min.
Time of concentration =    7.02 min.
Critical depth =      0.273(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.232(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.740 given for subarea
Rainfall intensity =      4.232(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.758  CA =      0.758
Subarea runoff =      1.119(CFS) for      0.400(Ac.)
Total runoff =      3.208(CFS)    Total area =       1.000(Ac.)
Depth of flow =   0.235(Ft.), Average velocity =   3.880(Ft/s)
Critical depth =      0.305(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   385.500(Ft.)
Downstream point/station elevation =   384.000(Ft.)
Pipe length  =   250.00(Ft.) Slope =   0.0060  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     3.208(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.208(CFS)
Normal flow depth in pipe =    7.16(In.)
Flow top width inside pipe =   17.62(In.)
Critical Depth =    8.18(In.)
Pipe flow velocity =      4.90(Ft/s)
Travel time through pipe =    0.85 min.
Time of concentration (TC) =     7.88 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      504.000 to Point/Station      505.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.000(Ac.)
Runoff from this stream =      3.208(CFS)
Time of concentration =    7.88 min.
Rainfall intensity =     3.931(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
```

```
[COMMERCIAL area type                        ]
(General Commercial    )
Impervious value, Ai = 0.850
Sub-Area C Value = 0.820
Initial subarea total flow distance  =  230.000(Ft.)
Highest elevation =  399.600(Ft.)
Lowest elevation =  395.800(Ft.)
Elevation difference =    3.800(Ft.) Slope =  1.652 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 75.00 (Ft)
for the top area slope value of   1.65 %, in a development type of
 General Commercial
In Accordance With Figure 3-3
Initial Area Time of Concentration =   3.69 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.8200)*(  75.000^.5)/(   1.652^(1/3)]=   3.69
The initial area total distance of  230.00 (Ft.) entered leaves a
remaining distance of  155.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   1.84 minutes
for a distance of 155.00 (Ft.) and a slope of  1.65 %
with an elevation difference of   2.56(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    1.842 Minutes
Tt=[(11.9*0.0294^3)/(  2.56)]^.385=  1.84
Total initial area Ti =   3.69 minutes from Figure 3-3 formula plus
  1.84 minutes from the Figure 3-4 formula =   5.53 minutes
Rainfall intensity (I) =      4.936(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
Subarea runoff =      0.809(CFS)
Total initial stream area =        0.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.172(CFS)
Depth of flow =   0.222(Ft.), Average velocity =   2.568(Ft/s)
      ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              0.33
      2             10.00              0.13
      3             11.33              0.00
      4             11.50              0.50
Manning's 'N' friction factor =   0.015
------------------------------------------------------------------
Sub-Channel flow  =      1.172(CFS)
  '     '   flow top width =      6.261(Ft.)
  '     '    velocity=    2.568(Ft/s)
  '     '   area =      0.456(Sq.Ft)
  '     '   Froude number =     1.676

Upstream point elevation =   395.800(Ft.)
Downstream point elevation =   392.600(Ft.)
Flow length =   140.000(Ft.)
Travel time  =    0.91 min.
Time of concentration =    6.44 min.
Depth of flow =   0.222(Ft.)
```

```
Average velocity =   2.568(Ft/s)
Total irregular channel flow =     1.172(CFS)
Irregular channel normal depth above invert elev. =   0.222(Ft.)
Average velocity of channel(s) =   2.568(Ft/s)
 Adding area flow to channel
Rainfall intensity (I) =      4.475(In/Hr) for a   100.0 year storm
User specified 'C' value of 0.800 given for subarea
Rainfall intensity =      4.475(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.810  CA =      0.324
Subarea runoff =      0.640(CFS) for      0.200(Ac.)
Total runoff =      1.450(CFS)    Total area =       0.400(Ac.)
Depth of flow =   0.235(Ft.), Average velocity =   2.693(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      509.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   389.250(Ft.)
Downstream point/station elevation =   384.000(Ft.)
Pipe length  =   200.00(Ft.) Slope =   0.0262  Manning's N = 0.011
No. of pipes = 1  Required pipe flow  =     1.450(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     1.450(CFS)
Normal flow depth in pipe =    3.76(In.)
Flow top width inside pipe =   11.13(In.)
Critical Depth =    6.12(In.)
Pipe flow velocity =      6.90(Ft/s)
Travel time through pipe =    0.48 min.
Time of concentration (TC) =     6.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      509.000 to Point/Station      509.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.400(Ac.)
Runoff from this stream =      1.450(CFS)
Time of concentration =    6.93 min.
Rainfall intensity =     4.271(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MEDIUM DENSITY RESIDENTIAL                 ]
(4.3 DU/A or Less       )
Impervious value, Ai = 0.300
Sub-Area C Value = 0.520
Initial subarea total flow distance  =  110.000(Ft.)
Highest elevation =  396.000(Ft.)
```

```
Lowest elevation =  390.000(Ft.)
Elevation difference =    6.000(Ft.) Slope =  5.455 %
Top of Initial Area Slope adjusted by User to  2.000 %
Bottom of Initial Area Slope adjusted by User to  2.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 80.00 (Ft)
for the top area slope value of   2.00 %, in a development type of
 4.3 DU/A or Less
In Accordance With Figure 3-3
Initial Area Time of Concentration =   7.41 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.5200)*(  80.000^.5)/(   2.000^(1/3)]=   7.41
The initial area total distance of  110.00 (Ft.) entered leaves a
remaining distance of   30.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   0.48 minutes
for a distance of  30.00 (Ft.) and a slope of  2.00 %
with an elevation difference of   0.60(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    0.483 Minutes
Tt=[(11.9*0.0057^3)/(  0.60)]^.385=  0.48
Total initial area Ti =   7.41 minutes from Figure 3-3 formula plus
  0.48 minutes from the Figure 3-4 formula =   7.89 minutes
Rainfall intensity (I) =      3.925(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.520
Subarea runoff =      1.837(CFS)
Total initial stream area =        0.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.900(Ac.)
Runoff from this stream =      1.837(CFS)
Time of concentration =    7.89 min.
Rainfall intensity =     3.925(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        3.208      7.88             3.931
2        1.450      6.93             4.271
3        1.837      7.89             3.925
Qmax(1) =
         1.000 *    1.000 *     3.208) +
         0.920 *    1.000 *     1.450) +
         1.000 *    0.998 *     1.837) + =       6.375
Qmax(2) =
         1.000 *    0.879 *     3.208) +
         1.000 *    1.000 *     1.450) +
         1.000 *    0.877 *     1.837) + =       5.882
Qmax(3) =
         0.998 *    1.000 *     3.208) +
         0.919 *    1.000 *     1.450) +
         1.000 *    1.000 *     1.837) + =       6.372
```

```
Total of 3 main streams to confluence:
Flow rates before confluence point:
       3.208       1.450       1.837
Maximum flow rates at confluence using above data:
        6.375        5.882        6.372
Area of streams before confluence:
        1.000        0.400        0.900


Results of confluence:
Total flow rate =      6.375(CFS)
Time of concentration =     7.875 min.
Effective stream area after confluence  =      2.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      510.000 to Point/Station      511.000
**** 6 HOUR HYDROGRAPH ****
________________________________________________________________________
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003


Time of Concentration =   7.88
Basin Area =     2.30 Acres
6 Hour Rainfall =  2.000 Inches
Runoff Coefficient =  0.674
Peak Discharge =     6.37 CFS
     Time (Min)     Discharge (CFS)
       0               0.000
       7               0.186
       14               0.188
       21               0.193
       28               0.196
       35               0.202
       42               0.205
       49               0.211
       56               0.214
       63               0.222
       70               0.225
       77               0.233
       84               0.238
       91               0.247
       98               0.252
       105               0.263
       112               0.269
       119               0.282
       126               0.289
       133               0.305
       140               0.313
       147               0.333
       154               0.344
       161               0.368
       168               0.383
       175               0.416
       182               0.436
       189               0.483
       196               0.512
       203               0.587
       210               0.637
```

217	0.778
224	0.887
231	1.302
238	1.834
245	6.375
252	1.044
259	0.699
266	0.547
273	0.458
280	0.398
287	0.355
294	0.323
301	0.297
308	0.275
315	0.257
322	0.242
329	0.229
336	0.218
343	0.208
350	0.199
357	0.191
364	0.184

++

6 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 1 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	1.6	3.2	4.8	6.4
0+ 0	0.0000	0.00	Q	|	|	|	|
0+ 1	0.0000	0.03	Q	|	|	|	|
0+ 2	0.0001	0.05	Q	|	|	|	|
0+ 3	0.0002	0.08	Q	|	|	|	|
0+ 4	0.0004	0.11	Q	|	|	|	|
0+ 5	0.0005	0.13	Q	|	|	|	|
0+ 6	0.0008	0.16	VQ	|	|	|	|
0+ 7	0.0010	0.19	VQ	|	|	|	|
0+ 8	0.0013	0.19	VQ	|	|	|	|
0+ 9	0.0015	0.19	VQ	|	|	|	|
0+10	0.0018	0.19	VQ	|	|	|	|
0+11	0.0021	0.19	VQ	|	|	|	|
0+12	0.0023	0.19	VQ	|	|	|	|
0+13	0.0026	0.19	VQ	|	|	|	|
0+14	0.0028	0.19	VQ	|	|	|	|
0+15	0.0031	0.19	VQ	|	|	|	|
0+16	0.0034	0.19	VQ	|	|	|	|
0+17	0.0036	0.19	VQ	|	|	|	|
0+18	0.0039	0.19	VQ	|	|	|	|
0+19	0.0041	0.19	VQ	|	|	|	|
0+20	0.0044	0.19	VQ	|	|	|	|
0+21	0.0047	0.19	VQ	|	|	|	|
0+22	0.0049	0.19	VQ	|	|	|	|
0+23	0.0052	0.19	VQ	|	|	|	|
0+24	0.0055	0.19	VQ	|	|	|	|
0+25	0.0057	0.19	VQ	|	|	|	|
0+26	0.0060	0.20	VQ	|	|	|	|
0+27	0.0063	0.20	VQ	|	|	|	|
0+28	0.0066	0.20	|Q	|	|	|	|

```
0+29       0.0068      0.20  |Q        |          |          |          |
0+30       0.0071      0.20  |Q        |          |          |          |
0+31       0.0074      0.20  |Q        |          |          |          |
0+32       0.0076      0.20  |Q        |          |          |          |
0+33       0.0079      0.20  |Q        |          |          |          |
0+34       0.0082      0.20  |Q        |          |          |          |
0+35       0.0085      0.20  |Q        |          |          |          |
0+36       0.0088      0.20  |Q        |          |          |          |
0+37       0.0090      0.20  |Q        |          |          |          |
0+38       0.0093      0.20  |Q        |          |          |          |
0+39       0.0096      0.20  |Q        |          |          |          |
0+40       0.0099      0.20  |Q        |          |          |          |
0+41       0.0102      0.20  |Q        |          |          |          |
0+42       0.0104      0.20  |Q        |          |          |          |
0+43       0.0107      0.21  |Q        |          |          |          |
0+44       0.0110      0.21  |Q        |          |          |          |
0+45       0.0113      0.21  |Q        |          |          |          |
0+46       0.0116      0.21  |Q        |          |          |          |
0+47       0.0119      0.21  |Q        |          |          |          |
0+48       0.0122      0.21  |Q        |          |          |          |
0+49       0.0124      0.21  |Q        |          |          |          |
0+50       0.0127      0.21  |Q        |          |          |          |
0+51       0.0130      0.21  |QV       |          |          |          |
0+52       0.0133      0.21  |QV       |          |          |          |
0+53       0.0136      0.21  |QV       |          |          |          |
0+54       0.0139      0.21  |QV       |          |          |          |
0+55       0.0142      0.21  |QV       |          |          |          |
0+56       0.0145      0.21  |QV       |          |          |          |
0+57       0.0148      0.22  |QV       |          |          |          |
0+58       0.0151      0.22  |QV       |          |          |          |
0+59       0.0154      0.22  |QV       |          |          |          |
1+ 0       0.0157      0.22  |QV       |          |          |          |
1+ 1       0.0160      0.22  |QV       |          |          |          |
1+ 2       0.0163      0.22  |QV       |          |          |          |
1+ 3       0.0166      0.22  |QV       |          |          |          |
1+ 4       0.0169      0.22  |QV       |          |          |          |
1+ 5       0.0172      0.22  |QV       |          |          |          |
1+ 6       0.0175      0.22  |QV       |          |          |          |
1+ 7       0.0178      0.22  |QV       |          |          |          |
1+ 8       0.0181      0.22  |QV       |          |          |          |
1+ 9       0.0185      0.22  |QV       |          |          |          |
1+10       0.0188      0.23  |QV       |          |          |          |
1+11       0.0191      0.23  |QV       |          |          |          |
1+12       0.0194      0.23  |Q V      |          |          |          |
1+13       0.0197      0.23  |Q V      |          |          |          |
1+14       0.0200      0.23  |Q V      |          |          |          |
1+15       0.0203      0.23  |Q V      |          |          |          |
1+16       0.0207      0.23  |Q V      |          |          |          |
1+17       0.0210      0.23  |Q V      |          |          |          |
1+18       0.0213      0.23  |Q V      |          |          |          |
1+19       0.0216      0.23  |Q V      |          |          |          |
1+20       0.0220      0.24  |Q V      |          |          |          |
1+21       0.0223      0.24  |Q V      |          |          |          |
1+22       0.0226      0.24  |Q V      |          |          |          |
1+23       0.0229      0.24  |Q V      |          |          |          |
1+24       0.0233      0.24  |Q V      |          |          |          |
1+25       0.0236      0.24  |Q V      |          |          |          |
1+26       0.0239      0.24  |Q V      |          |          |          |
1+27       0.0243      0.24  |Q V      |          |          |          |
1+28       0.0246      0.24  |Q V      |          |          |          |
```

```
1+29      0.0249      0.24  |Q V      |          |          |          |
1+30      0.0253      0.25  |Q V      |          |          |          |
1+31      0.0256      0.25  |Q  V     |          |          |          |
1+32      0.0259      0.25  |Q  V     |          |          |          |
1+33      0.0263      0.25  |Q  V     |          |          |          |
1+34      0.0266      0.25  |Q  V     |          |          |          |
1+35      0.0270      0.25  |Q  V     |          |          |          |
1+36      0.0273      0.25  |Q  V     |          |          |          |
1+37      0.0277      0.25  |Q  V     |          |          |          |
1+38      0.0280      0.25  |Q  V     |          |          |          |
1+39      0.0284      0.25  |Q  V     |          |          |          |
1+40      0.0287      0.26  |Q  V     |          |          |          |
1+41      0.0291      0.26  |Q  V     |          |          |          |
1+42      0.0294      0.26  |Q  V     |          |          |          |
1+43      0.0298      0.26  |Q  V     |          |          |          |
1+44      0.0301      0.26  |Q  V     |          |          |          |
1+45      0.0305      0.26  |Q  V     |          |          |          |
1+46      0.0309      0.26  |Q  V     |          |          |          |
1+47      0.0312      0.26  |Q  V     |          |          |          |
1+48      0.0316      0.27  |Q  V     |          |          |          |
1+49      0.0320      0.27  |Q   V    |          |          |          |
1+50      0.0323      0.27  |Q   V    |          |          |          |
1+51      0.0327      0.27  |Q   V    |          |          |          |
1+52      0.0331      0.27  |Q   V    |          |          |          |
1+53      0.0334      0.27  |Q   V    |          |          |          |
1+54      0.0338      0.27  |Q   V    |          |          |          |
1+55      0.0342      0.27  |Q   V    |          |          |          |
1+56      0.0346      0.28  |Q   V    |          |          |          |
1+57      0.0350      0.28  |Q   V    |          |          |          |
1+58      0.0354      0.28  |Q   V    |          |          |          |
1+59      0.0357      0.28  |Q   V    |          |          |          |
2+ 0      0.0361      0.28  |Q   V    |          |          |          |
2+ 1      0.0365      0.28  |Q   V    |          |          |          |
2+ 2      0.0369      0.28  |Q   V    |          |          |          |
2+ 3      0.0373      0.29  |Q   V    |          |          |          |
2+ 4      0.0377      0.29  |Q   V    |          |          |          |
2+ 5      0.0381      0.29  |Q   V    |          |          |          |
2+ 6      0.0385      0.29  |Q    V   |          |          |          |
2+ 7      0.0389      0.29  |Q    V   |          |          |          |
2+ 8      0.0393      0.29  |Q    V   |          |          |          |
2+ 9      0.0397      0.30  |Q    V   |          |          |          |
2+10      0.0401      0.30  |Q    V   |          |          |          |
2+11      0.0405      0.30  |Q    V   |          |          |          |
2+12      0.0409      0.30  |Q    V   |          |          |          |
2+13      0.0414      0.30  |Q    V   |          |          |          |
2+14      0.0418      0.31  |Q    V   |          |          |          |
2+15      0.0422      0.31  |Q    V   |          |          |          |
2+16      0.0426      0.31  |Q    V   |          |          |          |
2+17      0.0431      0.31  |Q    V   |          |          |          |
2+18      0.0435      0.31  |Q    V   |          |          |          |
2+19      0.0439      0.31  |Q    V   |          |          |          |
2+20      0.0444      0.31  |Q    V   |          |          |          |
2+21      0.0448      0.32  |Q     V  |          |          |          |
2+22      0.0452      0.32  | Q    V  |          |          |          |
2+23      0.0457      0.32  | Q    V  |          |          |          |
2+24      0.0461      0.32  | Q    V  |          |          |          |
2+25      0.0466      0.33  | Q    V  |          |          |          |
2+26      0.0470      0.33  | Q    V  |          |          |          |
2+27      0.0475      0.33  | Q    V  |          |          |          |
2+28      0.0479      0.33  | Q    V  |          |          |          |
```

```
2+29      0.0484      0.34  | Q    V  |          |          |          |
2+30      0.0489      0.34  | Q    V  |          |          |          |
2+31      0.0493      0.34  | Q    V  |          |          |          |
2+32      0.0498      0.34  | Q    V  |          |          |          |
2+33      0.0503      0.34  | Q    V  |          |          |          |
2+34      0.0507      0.34  | Q    V  |          |          |          |
2+35      0.0512      0.35  | Q     V |          |          |          |
2+36      0.0517      0.35  | Q     V |          |          |          |
2+37      0.0522      0.35  | Q     V |          |          |          |
2+38      0.0527      0.36  | Q     V |          |          |          |
2+39      0.0532      0.36  | Q     V |          |          |          |
2+40      0.0537      0.36  | Q     V |          |          |          |
2+41      0.0542      0.37  | Q     V |          |          |          |
2+42      0.0547      0.37  | Q     V |          |          |          |
2+43      0.0552      0.37  | Q     V |          |          |          |
2+44      0.0557      0.37  | Q     V |          |          |          |
2+45      0.0563      0.38  | Q     V |          |          |          |
2+46      0.0568      0.38  | Q     V |          |          |          |
2+47      0.0573      0.38  | Q     V |          |          |          |
2+48      0.0578      0.38  | Q      V|          |          |          |
2+49      0.0584      0.39  | Q      V|          |          |          |
2+50      0.0589      0.39  | Q      V|          |          |          |
2+51      0.0595      0.40  | Q      V|          |          |          |
2+52      0.0600      0.40  | Q      V|          |          |          |
2+53      0.0606      0.41  | Q      V|          |          |          |
2+54      0.0611      0.41  | Q      V|          |          |          |
2+55      0.0617      0.42  | Q      V|          |          |          |
2+56      0.0623      0.42  | Q      V|          |          |          |
2+57      0.0629      0.42  | Q      V|          |          |          |
2+58      0.0634      0.42  | Q      V|          |          |          |
2+59      0.0640      0.43  | Q       V          |          |          |
3+ 0      0.0646      0.43  | Q       V          |          |          |
3+ 1      0.0652      0.43  | Q       V          |          |          |
3+ 2      0.0658      0.44  | Q       V          |          |          |
3+ 3      0.0664      0.44  | Q       V          |          |          |
3+ 4      0.0671      0.45  | Q       V          |          |          |
3+ 5      0.0677      0.46  | Q       V          |          |          |
3+ 6      0.0683      0.46  | Q       V          |          |          |
3+ 7      0.0690      0.47  | Q       V          |          |          |
3+ 8      0.0696      0.48  | Q       V          |          |          |
3+ 9      0.0703      0.48  |  Q      |V          |          |          |
3+10      0.0710      0.49  |  Q      |V          |          |          |
3+11      0.0716      0.49  |  Q      |V          |          |          |
3+12      0.0723      0.50  |  Q      |V          |          |          |
3+13      0.0730      0.50  |  Q      |V          |          |          |
3+14      0.0737      0.50  |  Q      |V          |          |          |
3+15      0.0744      0.51  |  Q      |V          |          |          |
3+16      0.0751      0.51  |  Q      |V          |          |          |
3+17      0.0758      0.52  |  Q      |V          |          |          |
3+18      0.0766      0.53  |  Q      | V         |          |          |
3+19      0.0773      0.54  |  Q      | V         |          |          |
3+20      0.0781      0.56  |  Q      | V         |          |          |
3+21      0.0789      0.57  |  Q      | V         |          |          |
3+22      0.0796      0.58  |  Q      | V         |          |          |
3+23      0.0805      0.59  |  Q      | V         |          |          |
3+24      0.0813      0.59  |  Q      | V         |          |          |
3+25      0.0821      0.60  |  Q      | V         |          |          |
3+26      0.0829      0.61  |  Q      |  V        |          |          |
3+27      0.0838      0.62  |  Q      |  V        |          |          |
3+28      0.0846      0.62  |  Q      |  V        |          |          |
```

```
3+29       0.0855      0.63   |  Q       |  V       |          |          |
3+30       0.0864      0.64   |  Q       |  V       |          |          |
3+31       0.0873      0.66   |   Q      |  V       |          |          |
3+32       0.0882      0.68   |   Q      |  V       |          |          |
3+33       0.0892      0.70   |   Q      |  V       |          |          |
3+34       0.0902      0.72   |   Q      |   V      |          |          |
3+35       0.0912      0.74   |   Q      |   V      |          |          |
3+36       0.0922      0.76   |   Q      |   V      |          |          |
3+37       0.0933      0.78   |   Q      |   V      |          |          |
3+38       0.0944      0.79   |   Q      |   V      |          |          |
3+39       0.0955      0.81   |    Q     |   V      |          |          |
3+40       0.0967      0.82   |    Q     |    V     |          |          |
3+41       0.0978      0.84   |    Q     |    V     |          |          |
3+42       0.0990      0.86   |    Q     |    V     |          |          |
3+43       0.1002      0.87   |    Q     |    V     |          |          |
3+44       0.1014      0.89   |    Q     |    V     |          |          |
3+45       0.1027      0.95   |    Q     |     V    |          |          |
3+46       0.1041      1.01   |     Q    |     V    |          |          |
3+47       0.1056      1.06   |     Q    |     V    |          |          |
3+48       0.1071      1.12   |      Q   |     V    |          |          |
3+49       0.1087      1.18   |      Q   |      V   |          |          |
3+50       0.1105      1.24   |      Q   |      V   |          |          |
3+51       0.1122      1.30   |       Q  |      V   |          |          |
3+52       0.1141      1.38   |       Q  |      V   |          |          |
3+53       0.1161      1.45   |        Q |       V  |          |          |
3+54       0.1183      1.53   |        Q |       V  |          |          |
3+55       0.1205      1.61   |         Q|       V  |          |          |
3+56       0.1228      1.68   |         Q|        V |          |          |
3+57       0.1252      1.76   |          |Q       V |          |          |
3+58       0.1277      1.83   |          |Q        V|          |          |
3+59       0.1312      2.48   |          |    Q    V|          |          |
4+ 0       0.1355      3.13   |          |         Q|V         |          |
4+ 1       0.1407      3.78   |          |          | VQ       |          |
4+ 2       0.1468      4.43   |          |          |  V   Q   |          |
4+ 3       0.1538      5.08   |          |          |   V      |Q         |
4+ 4       0.1617      5.73   |          |          |    V     |    Q     |
4+ 5       0.1704      6.37   |          |          |     V    |          Q
4+ 6       0.1782      5.61   |          |          |      V   |    Q     |
4+ 7       0.1848      4.85   |          |          |       V Q|          |
4+ 8       0.1905      4.09   |          |          |    Q   V |          |
4+ 9       0.1951      3.33   |          |         Q|          V          |
4+10       0.1986      2.57   |          |     Q    |          |V         |
4+11       0.2011      1.81   |          |Q         |          |V         |
4+12       0.2025      1.04   |     Q    |          |          |V         |
4+13       0.2039      0.99   |     Q    |          |          |V         |
4+14       0.2052      0.95   |    Q     |          |          | V        |
4+15       0.2064      0.90   |    Q     |          |          | V        |
4+16       0.2076      0.85   |    Q     |          |          | V        |
4+17       0.2087      0.80   |    Q     |          |          | V        |
4+18       0.2097      0.75   |   Q      |          |          | V        |
4+19       0.2107      0.70   |   Q      |          |          |  V       |
4+20       0.2116      0.68   |   Q      |          |          |  V       |
4+21       0.2125      0.66   |   Q      |          |          |  V       |
4+22       0.2134      0.63   |  Q       |          |          |  V       |
4+23       0.2142      0.61   |  Q       |          |          |  V       |
4+24       0.2151      0.59   |  Q       |          |          |  V       |
4+25       0.2158      0.57   |  Q       |          |          |  V       |
4+26       0.2166      0.55   |  Q       |          |          |  V       |
4+27       0.2173      0.53   |  Q       |          |          |   V      |
4+28       0.2180      0.52   |  Q       |          |          |   V      |
```

```
4+29      0.2187      0.51  |  Q      |         |         |   V     |
4+30      0.2194      0.50  |  Q      |         |         |   V     |
4+31      0.2201      0.48  |  Q      |         |         |   V     |
4+32      0.2207      0.47  | Q       |         |         |   V     |
4+33      0.2214      0.46  | Q       |         |         |   V     |
4+34      0.2220      0.45  | Q       |         |         |   V     |
4+35      0.2226      0.44  | Q       |         |         |   V     |
4+36      0.2232      0.43  | Q       |         |         |    V    |
4+37      0.2238      0.42  | Q       |         |         |    V    |
4+38      0.2243      0.42  | Q       |         |         |    V    |
4+39      0.2249      0.41  | Q       |         |         |    V    |
4+40      0.2255      0.40  | Q       |         |         |    V    |
4+41      0.2260      0.39  | Q       |         |         |    V    |
4+42      0.2265      0.39  | Q       |         |         |    V    |
4+43      0.2271      0.38  | Q       |         |         |    V    |
4+44      0.2276      0.37  | Q       |         |         |    V    |
4+45      0.2281      0.37  | Q       |         |         |    V    |
4+46      0.2286      0.36  | Q       |         |         |    V    |
4+47      0.2291      0.36  | Q       |         |         |    V    |
4+48      0.2295      0.35  | Q       |         |         |    V    |
4+49      0.2300      0.35  | Q       |         |         |     V   |
4+50      0.2305      0.34  | Q       |         |         |     V   |
4+51      0.2310      0.34  | Q       |         |         |     V   |
4+52      0.2314      0.33  | Q       |         |         |     V   |
4+53      0.2319      0.33  | Q       |         |         |     V   |
4+54      0.2323      0.32  | Q       |         |         |     V   |
4+55      0.2327      0.32  | Q       |         |         |     V   |
4+56      0.2332      0.32  |Q        |         |         |     V   |
4+57      0.2336      0.31  |Q        |         |         |     V   |
4+58      0.2340      0.31  |Q        |         |         |     V   |
4+59      0.2345      0.30  |Q        |         |         |     V   |
5+ 0      0.2349      0.30  |Q        |         |         |     V   |
5+ 1      0.2353      0.30  |Q        |         |         |     V   |
5+ 2      0.2357      0.29  |Q        |         |         |     V   |
5+ 3      0.2361      0.29  |Q        |         |         |      V  |
5+ 4      0.2365      0.29  |Q        |         |         |      V  |
5+ 5      0.2369      0.28  |Q        |         |         |      V  |
5+ 6      0.2373      0.28  |Q        |         |         |      V  |
5+ 7      0.2376      0.28  |Q        |         |         |      V  |
5+ 8      0.2380      0.28  |Q        |         |         |      V  |
5+ 9      0.2384      0.27  |Q        |         |         |      V  |
5+10      0.2388      0.27  |Q        |         |         |      V  |
5+11      0.2391      0.27  |Q        |         |         |      V  |
5+12      0.2395      0.27  |Q        |         |         |      V  |
5+13      0.2399      0.26  |Q        |         |         |      V  |
5+14      0.2402      0.26  |Q        |         |         |      V  |
5+15      0.2406      0.26  |Q        |         |         |      V  |
5+16      0.2409      0.26  |Q        |         |         |      V  |
5+17      0.2413      0.25  |Q        |         |         |      V  |
5+18      0.2416      0.25  |Q        |         |         |      V  |
5+19      0.2420      0.25  |Q        |         |         |      V  |
5+20      0.2423      0.25  |Q        |         |         |      V  |
5+21      0.2426      0.24  |Q        |         |         |       V |
5+22      0.2430      0.24  |Q        |         |         |       V |
5+23      0.2433      0.24  |Q        |         |         |       V |
5+24      0.2436      0.24  |Q        |         |         |       V |
5+25      0.2440      0.24  |Q        |         |         |       V |
5+26      0.2443      0.23  |Q        |         |         |       V |
5+27      0.2446      0.23  |Q        |         |         |       V |
5+28      0.2449      0.23  |Q        |         |         |       V |
```

```
    5+29       0.2452      0.23  |Q        |          |          |        V |
    5+30       0.2456      0.23  |Q        |          |          |        V |
    5+31       0.2459      0.23  |Q        |          |          |        V |
    5+32       0.2462      0.22  |Q        |          |          |        V |
    5+33       0.2465      0.22  |Q        |          |          |        V |
    5+34       0.2468      0.22  |Q        |          |          |        V |
    5+35       0.2471      0.22  |Q        |          |          |        V |
    5+36       0.2474      0.22  |Q        |          |          |        V |
    5+37       0.2477      0.22  |Q        |          |          |        V |
    5+38       0.2480      0.22  |Q        |          |          |        V |
    5+39       0.2483      0.21  |Q        |          |          |        V |
    5+40       0.2486      0.21  |Q        |          |          |        V |
    5+41       0.2489      0.21  |Q        |          |          |         V|
    5+42       0.2491      0.21  |Q        |          |          |         V|
    5+43       0.2494      0.21  |Q        |          |          |         V|
    5+44       0.2497      0.21  |Q        |          |          |         V|
    5+45       0.2500      0.21  |Q        |          |          |         V|
    5+46       0.2503      0.20  |Q        |          |          |         V|
    5+47       0.2506      0.20  |Q        |          |          |         V|
    5+48       0.2508      0.20  |Q        |          |          |         V|
    5+49       0.2511      0.20  |Q        |          |          |         V|
    5+50       0.2514      0.20  |Q        |          |          |         V|
    5+51       0.2517      0.20  |Q        |          |          |         V|
    5+52       0.2519      0.20  |Q        |          |          |         V|
    5+53       0.2522      0.20  |Q        |          |          |         V|
    5+54       0.2525      0.19  |Q        |          |          |         V|
    5+55       0.2527      0.19  |Q        |          |          |         V|
    5+56       0.2530      0.19  |Q        |          |          |         V|
    5+57       0.2533      0.19  |Q        |          |          |         V|
    5+58       0.2535      0.19  |Q        |          |          |         V|
    5+59       0.2538      0.19  |Q        |          |          |         V|
    6+ 0       0.2540      0.19  |Q        |          |          |         V|
    6+ 1       0.2543      0.19  |Q        |          |          |         V|
    6+ 2       0.2546      0.19  |Q        |          |          |         V|
    6+ 3       0.2548      0.18  |Q        |          |          |         V|
    6+ 4       0.2551      0.18  |Q        |          |          |          V
-------------------------------------------------------------------------------


  End of computations, total study area =          2.300 (Ac.)
```

Appendix D:

Rain Garden and Pipe Sizing Calculations

Hydrograph Report

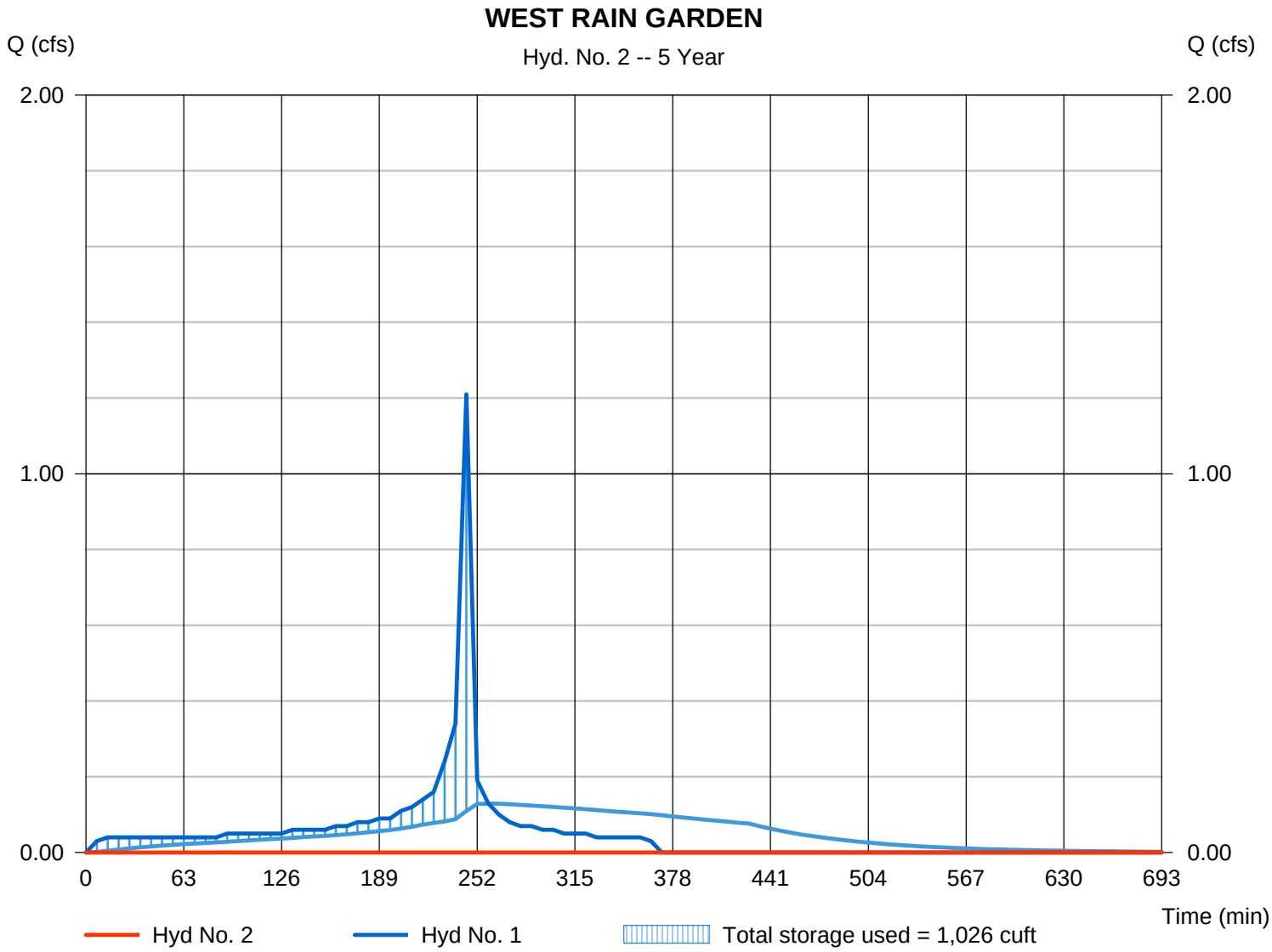
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Monday, Apr 30, 2012

Hyd. No. 2

WEST RAIN GARDEN

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	63 min
Time interval	=	7 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - WEST RAIN GARDEN	Max. Elevation	=	387.73 ft
Reservoir name	=	WEST RAIN GARDEN	Max. Storage	=	1,026 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 1 - WEST RAIN GARDEN

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 386.30 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	386.30	302	0	0
0.70	387.00	660	329	329
1.70	388.00	1,283	954	1,283
2.00	388.30	1,481	414	1,697

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 383.00	0.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 388.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 5.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	386.30	0.00	---	---	---	0.00	---	---	---	0.000	---	0.000
0.07	33	386.37	0.00	---	---	---	0.00	---	---	---	0.008	---	0.008
0.14	66	386.44	0.00	---	---	---	0.00	---	---	---	0.015	---	0.015
0.21	99	386.51	0.00	---	---	---	0.00	---	---	---	0.023	---	0.023
0.28	131	386.58	0.00	---	---	---	0.00	---	---	---	0.031	---	0.031
0.35	164	386.65	0.00	---	---	---	0.00	---	---	---	0.038	---	0.038
0.42	197	386.72	0.00	---	---	---	0.00	---	---	---	0.046	---	0.046
0.49	230	386.79	0.00	---	---	---	0.00	---	---	---	0.053	---	0.053
0.56	263	386.86	0.00	---	---	---	0.00	---	---	---	0.061	---	0.061
0.63	296	386.93	0.00	---	---	---	0.00	---	---	---	0.069	---	0.069
0.70	329	387.00	0.00	---	---	---	0.00	---	---	---	0.076	---	0.076
0.80	424	387.10	0.00	---	---	---	0.00	---	---	---	0.084	---	0.084
0.90	519	387.20	0.00	---	---	---	0.00	---	---	---	0.091	---	0.091
1.00	615	387.30	0.00	---	---	---	0.00	---	---	---	0.098	---	0.098
1.10	710	387.40	0.00	---	---	---	0.00	---	---	---	0.105	---	0.105
1.20	806	387.50	0.00	---	---	---	0.00	---	---	---	0.112	---	0.112
1.30	901	387.60	0.00	---	---	---	0.00	---	---	---	0.120	---	0.120
1.40	997	387.70	0.00	---	---	---	0.00	---	---	---	0.127	---	0.127
1.50	1,092	387.80	0.00	---	---	---	0.00	---	---	---	0.134	---	0.134
1.60	1,187	387.90	0.00	---	---	---	0.00	---	---	---	0.141	---	0.141
1.70	1,283	388.00	0.00	---	---	---	0.00	---	---	---	0.148	---	0.148
1.73	1,324	388.03	0.00	---	---	---	0.00	---	---	---	0.151	---	0.151
1.76	1,366	388.06	0.00	---	---	---	0.00	---	---	---	0.153	---	0.153
1.79	1,407	388.09	0.00	---	---	---	0.00	---	---	---	0.155	---	0.155
1.82	1,449	388.12	0.00	---	---	---	0.00	---	---	---	0.158	---	0.158
1.85	1,490	388.15	0.00	---	---	---	0.00	---	---	---	0.160	---	0.160
1.88	1,531	388.18	0.00	---	---	---	0.00	---	---	---	0.162	---	0.162
1.91	1,573	388.21	0.00	---	---	---	0.00	---	---	---	0.165	---	0.165
1.94	1,614	388.24	0.00	---	---	---	0.00	---	---	---	0.167	---	0.167
1.97	1,656	388.27	0.00	---	---	---	0.00	---	---	---	0.169	---	0.169
2.00	1,697	388.30	0.00	---	---	---	0.00	---	---	---	0.171	---	0.171

Hydrograph Report

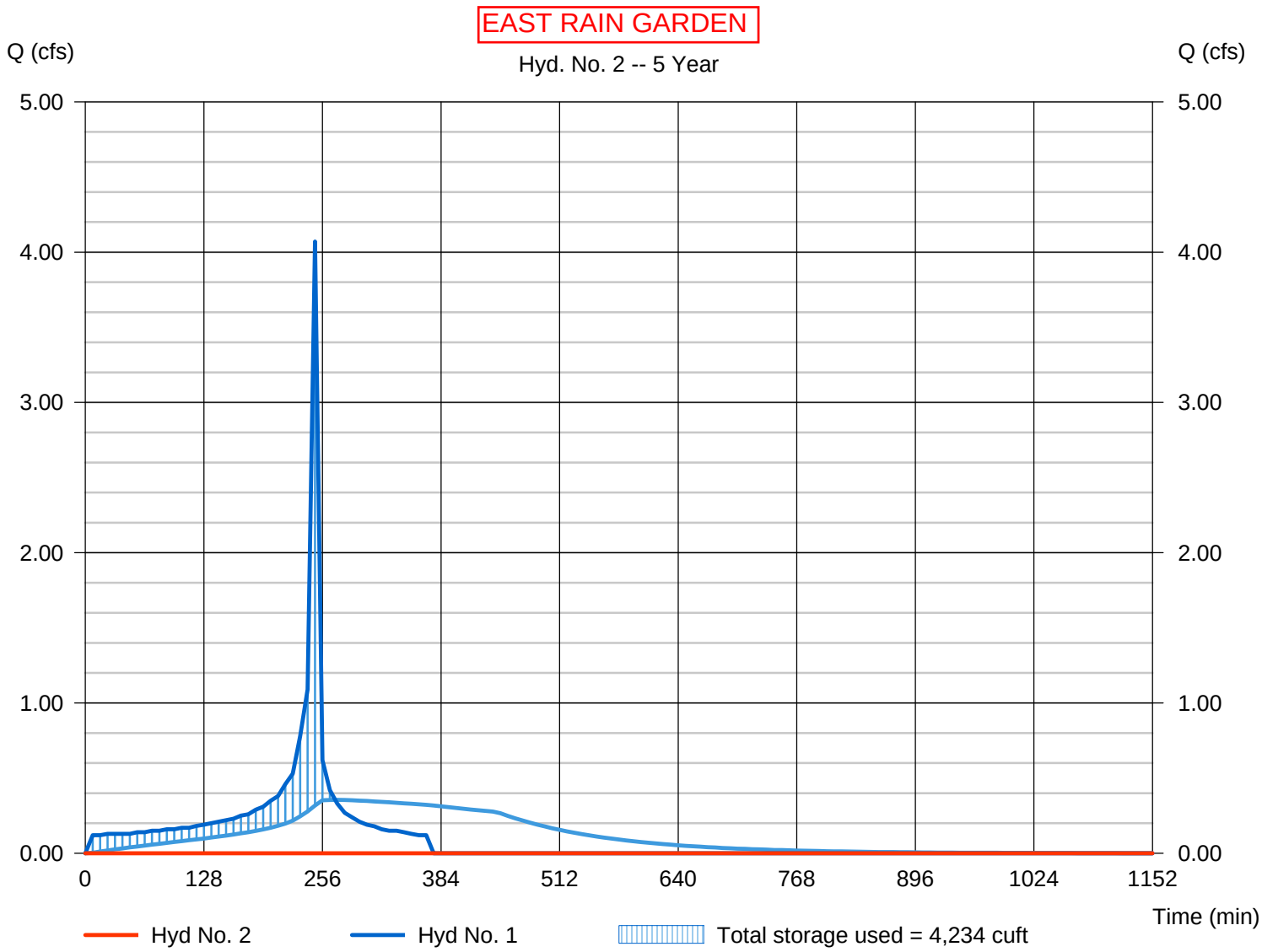
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Monday, Apr 30, 2012

Hyd. No. 2

EAST RAIN GARDEN

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	104 min
Time interval	=	8 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	EAST RAIN GARDEN	Max. Elevation	=	385.81 ft
Reservoir name	=	EAST RAIN GARDEN	Max. Storage	=	4,234 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - EAST RAIN GARDEN

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 384.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	384.00	1,593	0	0
1.00	385.00	2,371	1,969	1,969
2.00	386.00	3,236	2,792	4,761
3.00	387.00	4,170	3,693	8,454
4.00	388.00	5,195	4,673	13,126
5.00	389.00	7,228	6,183	19,309

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 383.00	0.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 388.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	384.00	0.00	---	---	---	0.00	---	---	---	0.000	---	0.000
0.10	197	384.10	0.00	---	---	---	0.00	---	---	---	0.027	---	0.027
0.20	394	384.20	0.00	---	---	---	0.00	---	---	---	0.055	---	0.055
0.30	591	384.30	0.00	---	---	---	0.00	---	---	---	0.082	---	0.082
0.40	788	384.40	0.00	---	---	---	0.00	---	---	---	0.110	---	0.110
0.50	984	384.50	0.00	---	---	---	0.00	---	---	---	0.137	---	0.137
0.60	1,181	384.60	0.00	---	---	---	0.00	---	---	---	0.165	---	0.165
0.70	1,378	384.70	0.00	---	---	---	0.00	---	---	---	0.192	---	0.192
0.80	1,575	384.80	0.00	---	---	---	0.00	---	---	---	0.220	---	0.220
0.90	1,772	384.90	0.00	---	---	---	0.00	---	---	---	0.247	---	0.247
1.00	1,969	385.00	0.00	---	---	---	0.00	---	---	---	0.274	---	0.274
1.10	2,248	385.10	0.00	---	---	---	0.00	---	---	---	0.284	---	0.284
1.20	2,527	385.20	0.00	---	---	---	0.00	---	---	---	0.294	---	0.294
1.30	2,807	385.30	0.00	---	---	---	0.00	---	---	---	0.304	---	0.304
1.40	3,086	385.40	0.00	---	---	---	0.00	---	---	---	0.314	---	0.314
1.50	3,365	385.50	0.00	---	---	---	0.00	---	---	---	0.324	---	0.324
1.60	3,644	385.60	0.00	---	---	---	0.00	---	---	---	0.334	---	0.334
1.70	3,923	385.70	0.00	---	---	---	0.00	---	---	---	0.345	---	0.345
1.80	4,203	385.80	0.00	---	---	---	0.00	---	---	---	0.355	---	0.355
1.90	4,482	385.90	0.00	---	---	---	0.00	---	---	---	0.365	---	0.365
2.00	4,761	386.00	0.00	---	---	---	0.00	---	---	---	0.375	---	0.375
2.10	5,130	386.10	0.00	---	---	---	0.00	---	---	---	0.385	---	0.385
2.20	5,500	386.20	0.00	---	---	---	0.00	---	---	---	0.396	---	0.396
2.30	5,869	386.30	0.00	---	---	---	0.00	---	---	---	0.407	---	0.407
2.40	6,238	386.40	0.00	---	---	---	0.00	---	---	---	0.418	---	0.418
2.50	6,607	386.50	0.00	---	---	---	0.00	---	---	---	0.429	---	0.429
2.60	6,977	386.60	0.00	---	---	---	0.00	---	---	---	0.439	---	0.439
2.70	7,346	386.70	0.00	---	---	---	0.00	---	---	---	0.450	---	0.450
2.80	7,715	386.80	0.00	---	---	---	0.00	---	---	---	0.461	---	0.461
2.90	8,084	386.90	0.00	---	---	---	0.00	---	---	---	0.472	---	0.472
3.00	8,454	387.00	0.00	---	---	---	0.00	---	---	---	0.483	---	0.483
3.10	8,921	387.10	0.00	---	---	---	0.00	---	---	---	0.494	---	0.494
3.20	9,388	387.20	0.00	---	---	---	0.00	---	---	---	0.506	---	0.506
3.30	9,856	387.30	0.00	---	---	---	0.00	---	---	---	0.518	---	0.518
3.40	10,323	387.40	0.00	---	---	---	0.00	---	---	---	0.530	---	0.530
3.50	10,790	387.50	0.00	---	---	---	0.00	---	---	---	0.542	---	0.542
3.60	11,257	387.60	0.00	---	---	---	0.00	---	---	---	0.554	---	0.554
3.70	11,725	387.70	0.00	---	---	---	0.00	---	---	---	0.566	---	0.566
3.80	12,192	387.80	0.00	---	---	---	0.00	---	---	---	0.578	---	0.578

Continues on next page...

RAIN GARDEN 2

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.90	12,659	387.90	0.00	---	---	---	0.00	---	---	---	0.589	---	0.589
4.00	13,126	388.00	0.00	---	---	---	0.00	---	---	---	0.601	---	0.601
4.10	13,745	388.10	0.00	---	---	---	0.00	---	---	---	0.625	---	0.625
4.20	14,363	388.20	0.00	---	---	---	0.00	---	---	---	0.648	---	0.648
4.30	14,981	388.30	0.00	---	---	---	0.00	---	---	---	0.672	---	0.672
4.40	15,600	388.40	0.00	---	---	---	0.00	---	---	---	0.695	---	0.695
4.50	16,218	388.50	0.00	---	---	---	0.00	---	---	---	0.719	---	0.719
4.60	16,836	388.60	0.00	---	---	---	0.00	---	---	---	0.742	---	0.742
4.70	17,455	388.70	0.00	---	---	---	0.00	---	---	---	0.766	---	0.766
4.80	18,073	388.80	0.00	---	---	---	0.00	---	---	---	0.790	---	0.790
4.90	18,691	388.90	0.00	---	---	---	0.00	---	---	---	0.813	---	0.813
5.00	19,309	389.00	0.00	---	---	---	0.00	---	---	---	0.837	---	0.837

...End

Hydraflow HGL Computation Procedure

General Procedure: Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

Hydraulic Grade Line Computations

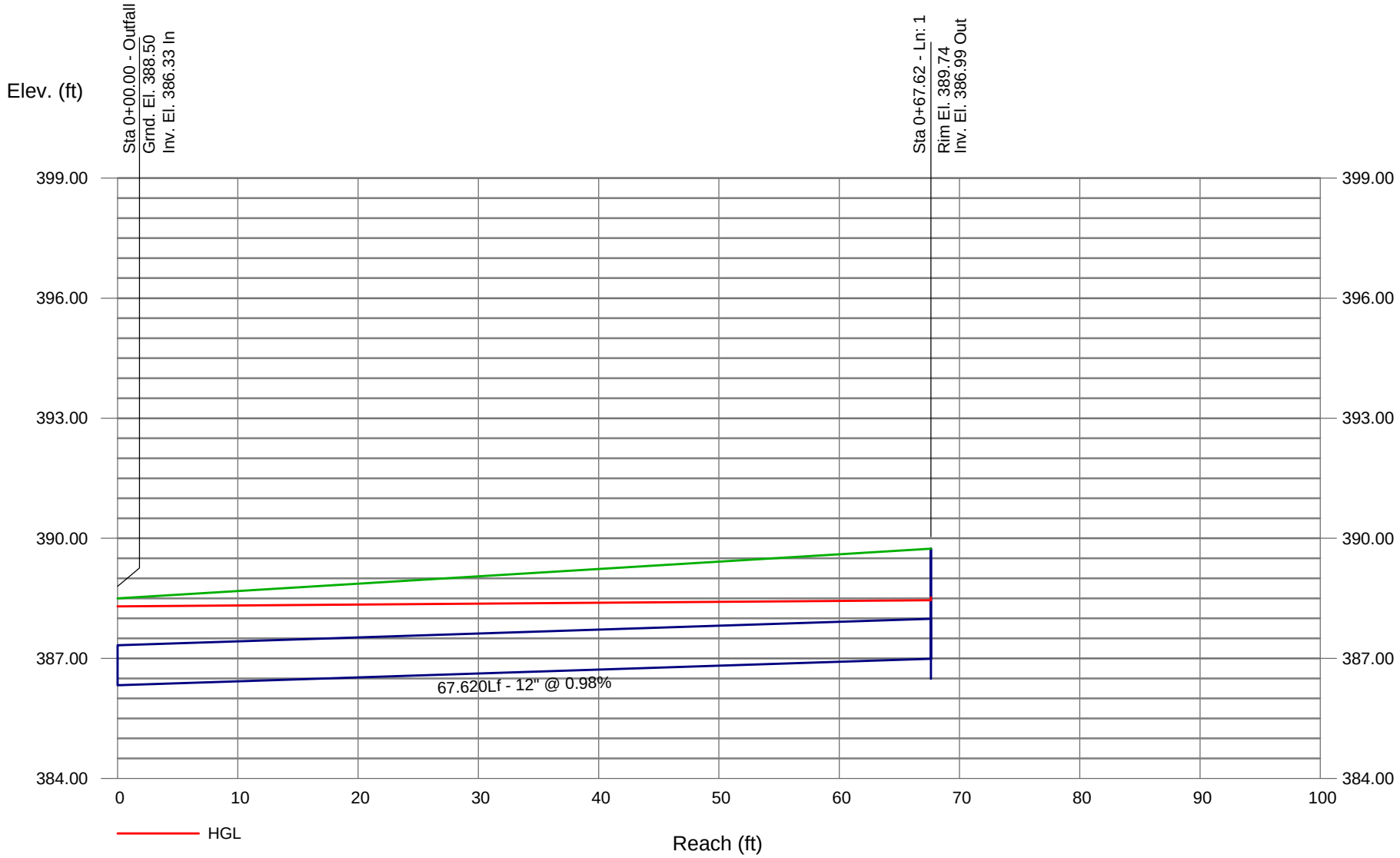
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
1	12	1.70	386.33	388.30	1.00	0.79	2.16	0.07	388.37	0.228	67.620	386.99	388.45	1.00	0.79	2.16	0.07	388.53	0.228	0.228	0.154	1.00	0.07

Project File: LINE-A.stm | Number of lines: 1 | Run Date: 04-17-2012

; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: LINE-A.stm



Hydraulic Grade Line Computations

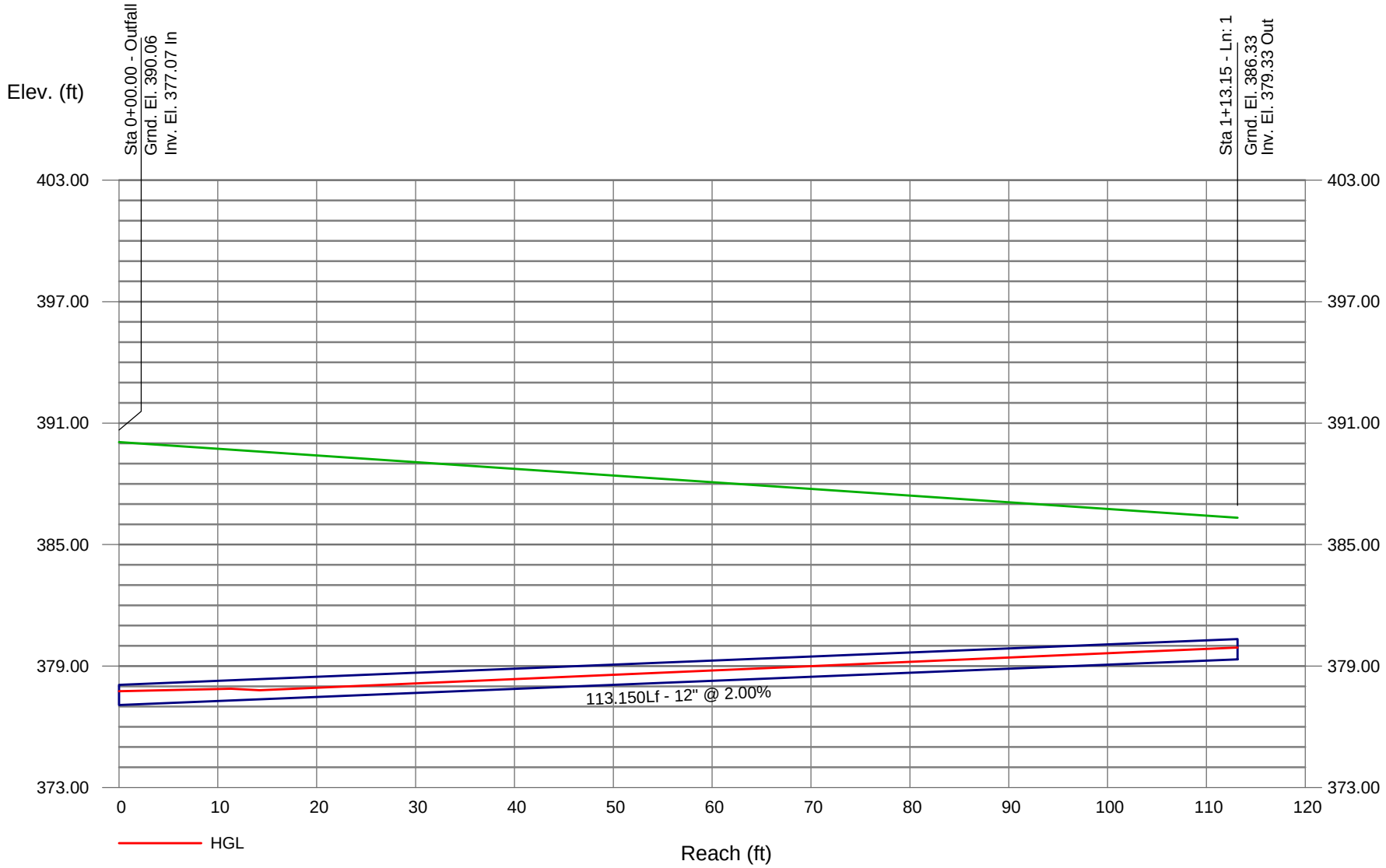
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
1	12	1.90	377.07	377.76	0.69	0.58	3.29	0.17	377.93	0.422	113.150	379.33	379.91 j	0.58**	0.48	3.98	0.25	380.16	0.683	0.553	n/a	1.00	0.25

Project File: LINE-B.stm | Number of lines: 1 | Run Date: 04-17-2012

Notes: ; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: LINE-B.stm



Hydraulic Grade Line Computations

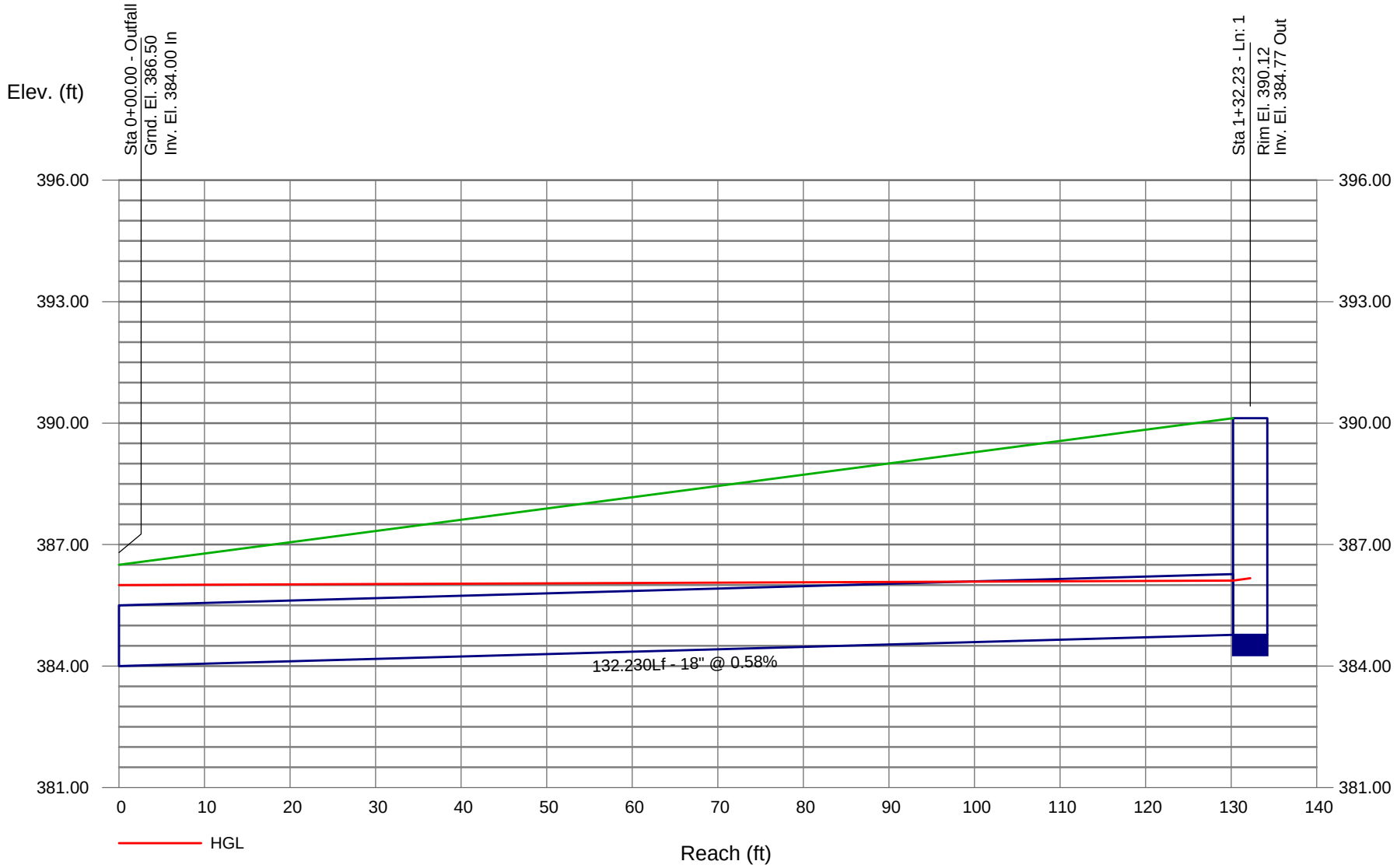
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	3.20	384.00	386.00	1.50	1.77	1.81	0.05	386.05	0.093	132.230	384.77	386.11	1.34	1.67	1.92	0.06	386.17	0.082	0.088	0.116	1.00	0.06

LINE-C | Number of lines: 1 | Run Date: 04-17-2012

; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: LINE-C.stm



Hydraulic Grade Line Computations

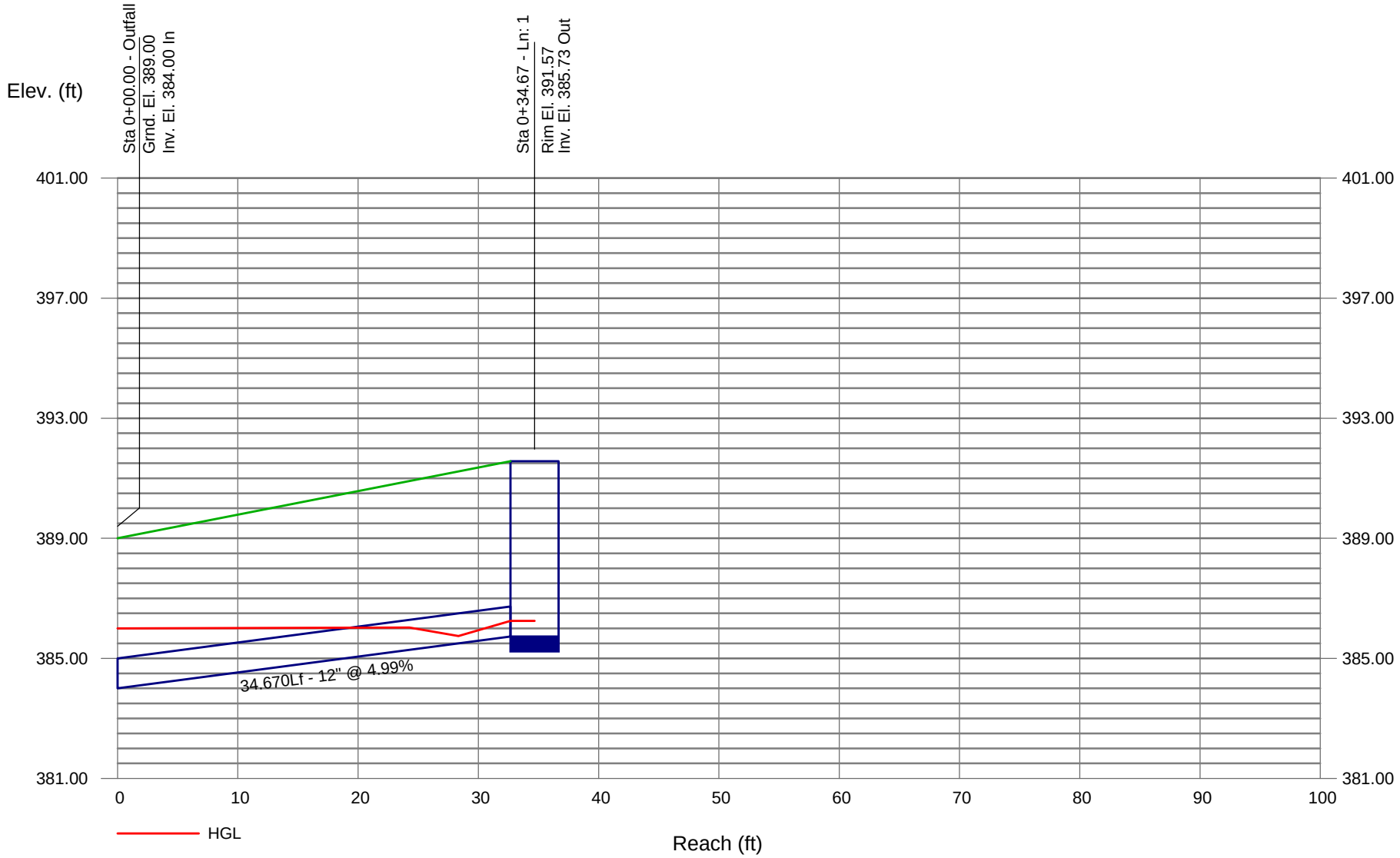
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	1.50	384.00	386.00	1.00	0.79	1.91	0.06	386.06	0.177	34.670	385.73	386.25 j	0.52**	0.41	3.64	0.21	386.46	0.624	0.401	n/a	0.15	n/a
2	12	1.50	388.45	389.01	0.56*	0.45	3.34	0.17	389.18	0.497	140.610	389.15	389.71	0.56	0.45	3.34	0.17	389.88	0.497	0.497	0.699	1.00	0.17
3	12	1.50	389.15	389.88	0.73	0.61	2.44	0.09	389.97	0.228	19.250	389.25	389.91	0.66	0.55	2.74	0.12	390.02	0.301	0.264	0.051	1.00	0.12

Project File: LINE-D.stm | Number of lines: 3 | Run Date: 04-17-2012

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: LINE-D.stm



Hydraulic Grade Line Computations

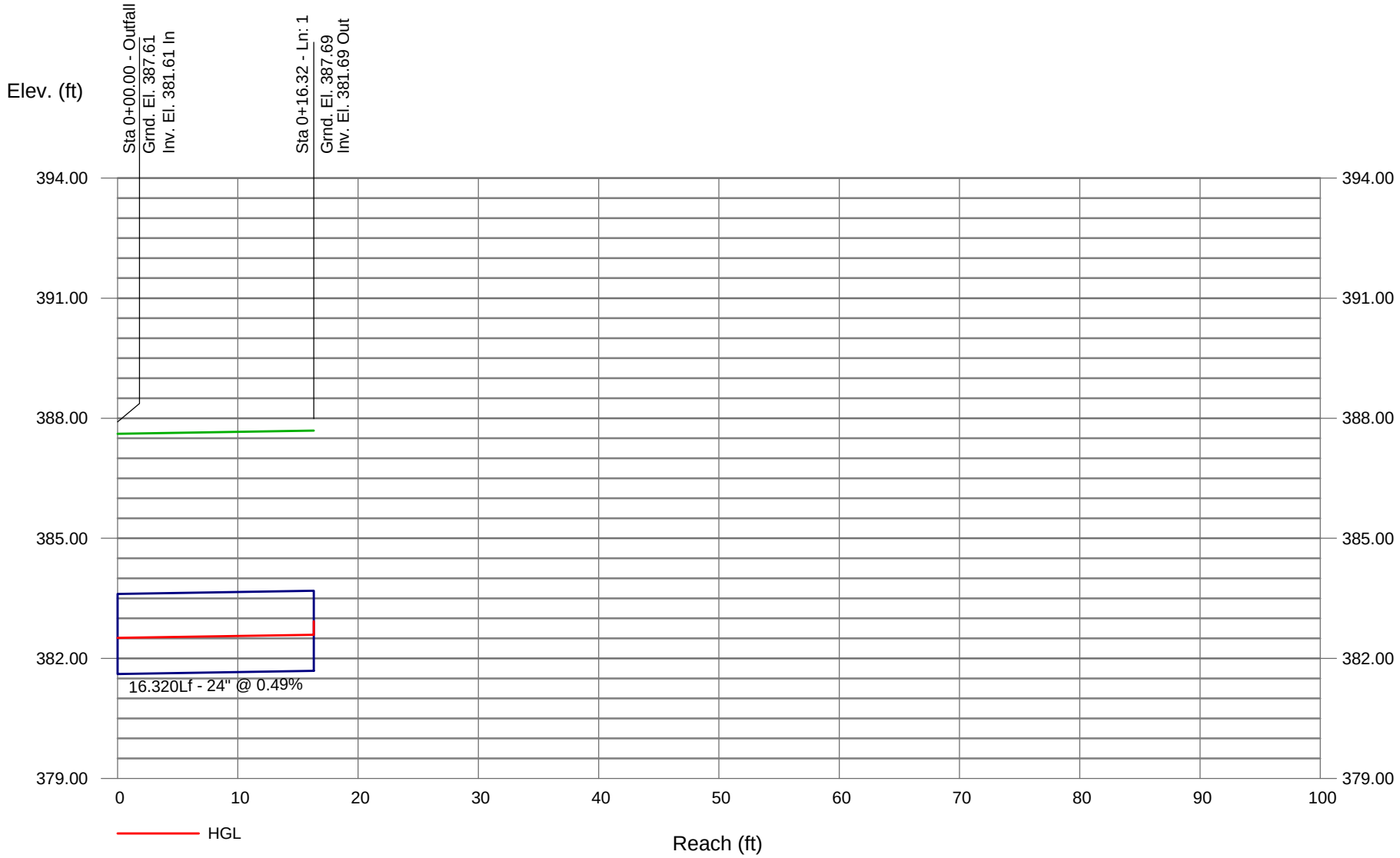
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
1	24	6.40	381.61	382.51	0.90	1.37	4.67	0.34	382.85	0.461	16.320	381.69	382.59	0.90**	1.37	4.66	0.34	382.93	0.460	0.461	0.075	1.00	0.34

Project File: LINE-E.stm | Number of lines: 1 | Run Date: 04-17-2012

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

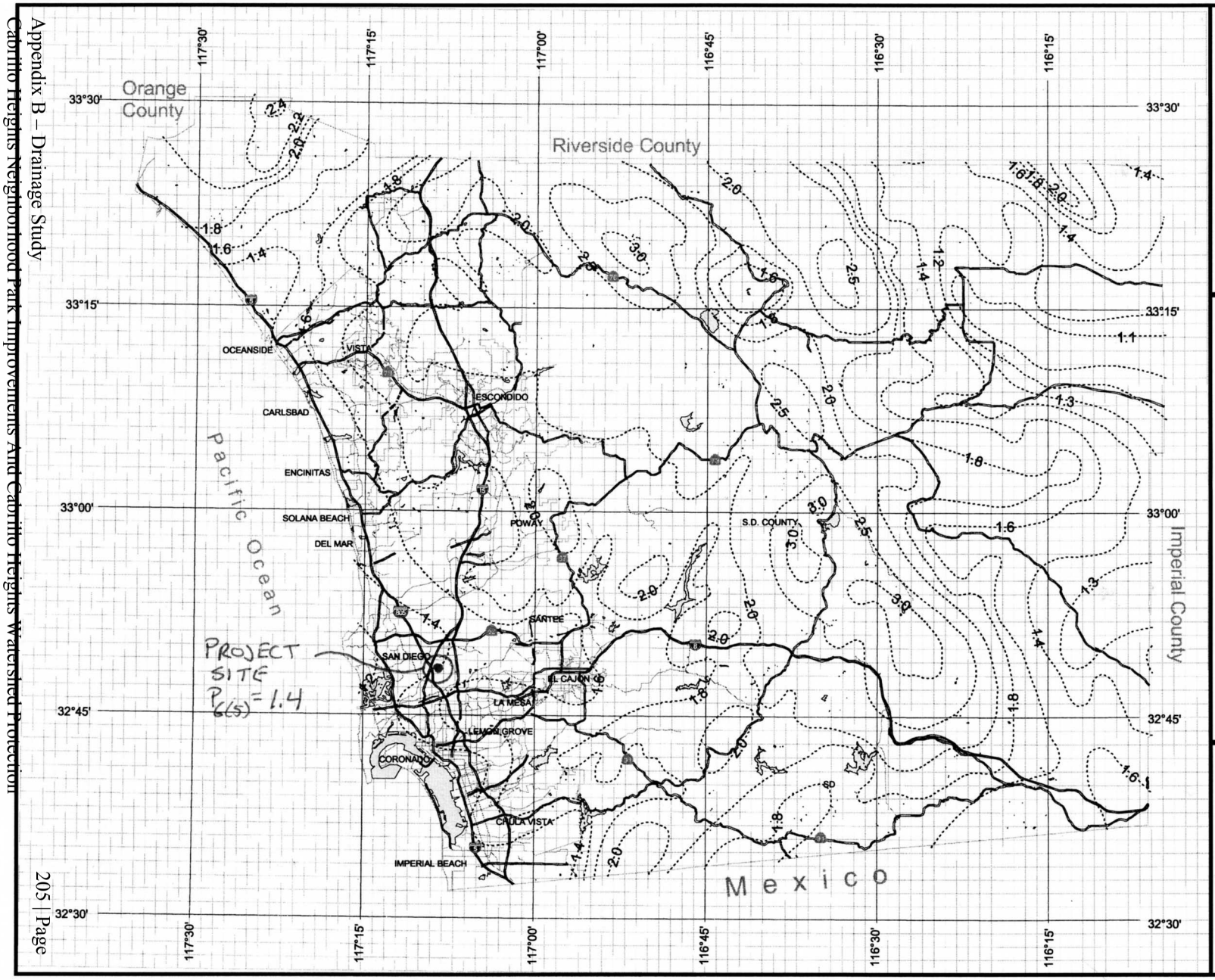
Storm Sewer Profile

Proj. file: LINE-E.stm



Appendix E:

Hydrologic Information



County of San Diego Hydrology Manual

Rainfall Isopluvials

5 Year Rainfall Event - 6 Hours

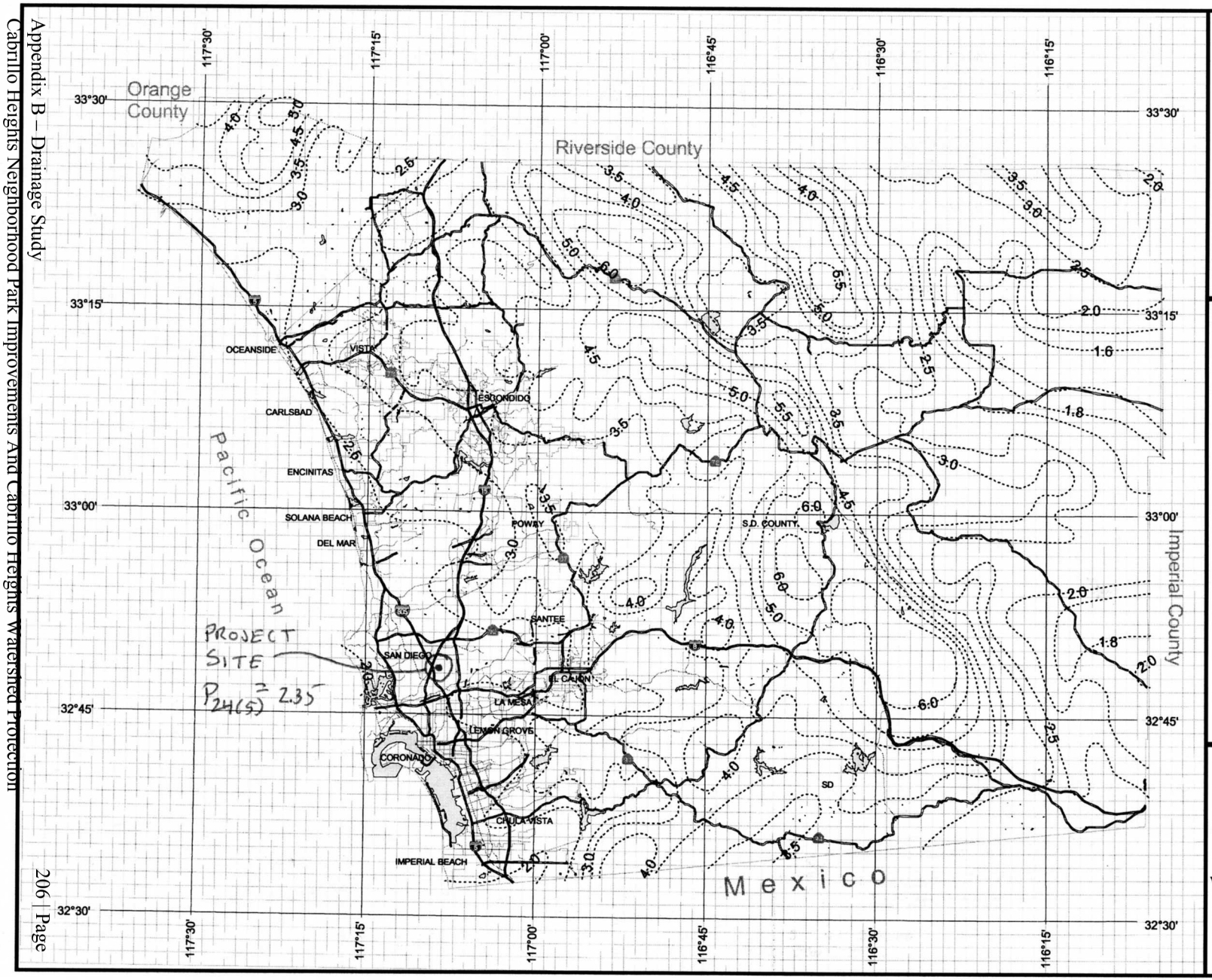
Isopluvial (inches)

DPW GIS
Department of Public Works Geographic Information Services

SanGIS
We Have San Diego Covered!

N W E S

3 0 3 Miles



County of San Diego Hydrology Manual

Rainfall Isopluvials

5 Year Rainfall Event - 24 Hours

Isopluvial (inches)

DPW GIS
Department of Public Works Geographic Information Systems

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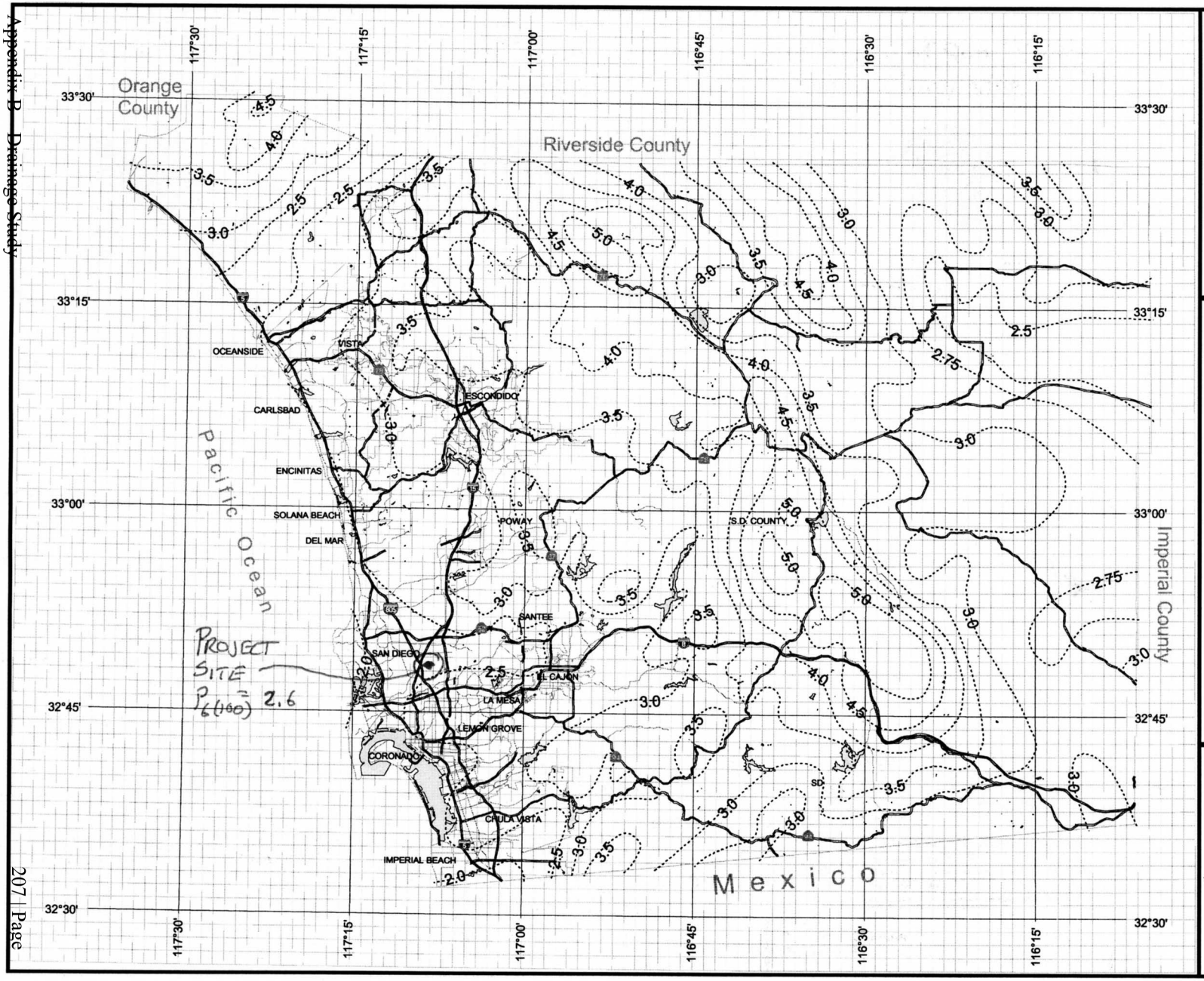
N W E S

3 0 3 Miles



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

DPW GIS
Department of Public Works Geographic Information Services

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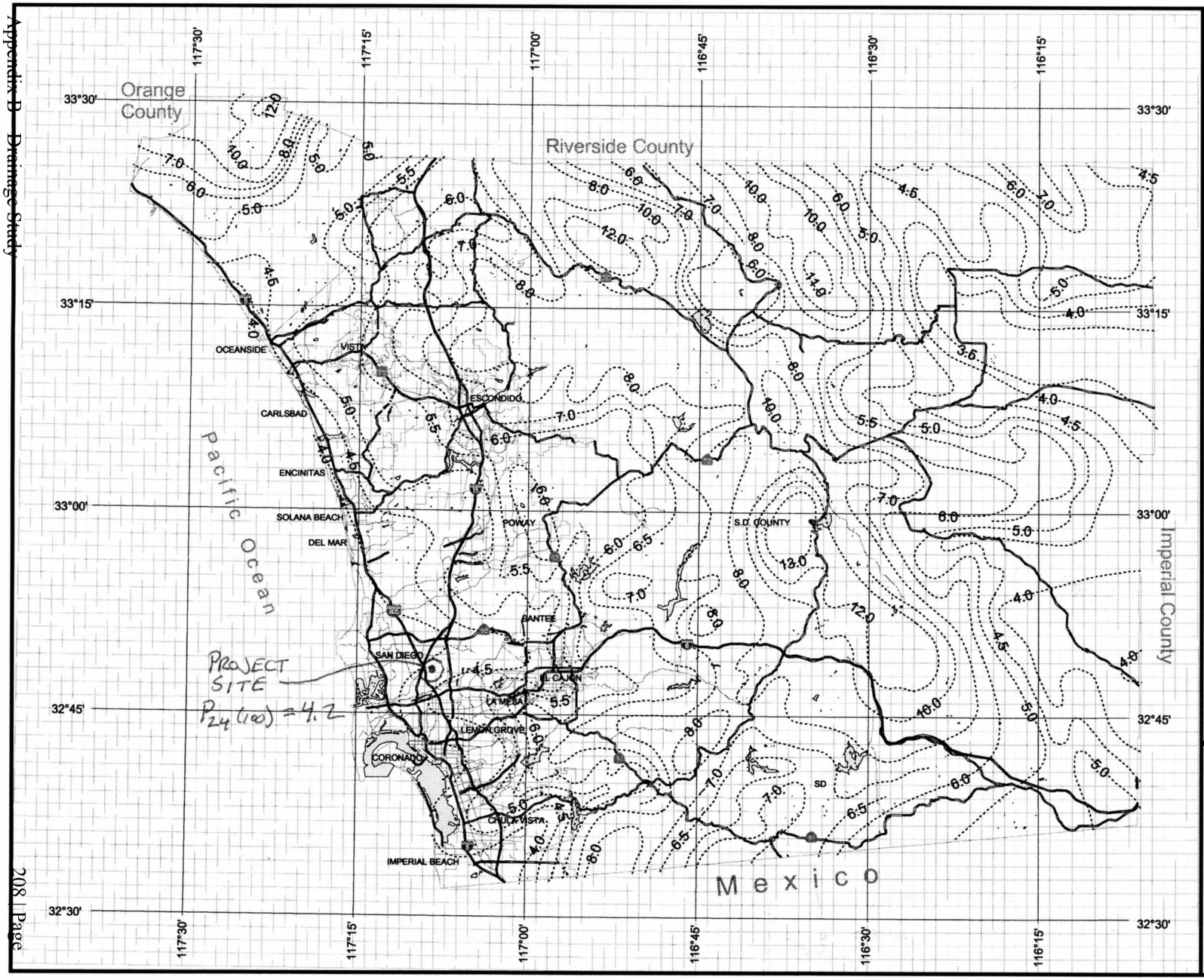
N W E S

3 0 3 Miles



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

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Geographic Information Services

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N
W E
S

3 0 3 Miles

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service

Note that the Initial Time of Concentration should be reflective of the general land-use at the upstream end of a drainage basin. A single lot with an area of two or less acres does not have a significant effect where the drainage basin area is 20 to 600 acres.

Table 3-2 provides limits of the length (Maximum Length (L_M)) of sheet flow to be used in hydrology studies. Initial T_i values based on average C values for the Land Use Element are also included. These values can be used in planning and design applications as described below. Exceptions may be approved by the "Regulating Agency" when submitted with a detailed study.

Table 3-2

MAXIMUM OVERLAND FLOW LENGTH (L_M) & INITIAL TIME OF CONCENTRATION (T_i)

Element*	DU/ Acre	.5%		1%		2%		3%		5%		10%	
		L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i
Natural		50	13.2	70	12.5	85	10.9	100	10.3	100	8.7	100	6.9
LDR	1	50	12.2	70	11.5	85	10.0	100	9.5	100	8.0	100	6.4
LDR	2	50	11.3	70	10.5	85	9.2	100	8.8	100	7.4	100	5.8
LDR	2.9	50	10.7	70	10.0	85	8.8	95	8.1	100	7.0	100	5.6
MDR	4.3	50	10.2	70	9.6	80	8.1	95	7.8	100	6.7	100	5.3
MDR	7.3	50	9.2	65	8.4	80	7.4	95	7.0	100	6.0	100	4.8
MDR	10.9	50	8.7	65	7.9	80	6.9	90	6.4	100	5.7	100	4.5
MDR	14.5	50	8.2	65	7.4	80	6.5	90	6.0	100	5.4	100	4.3
HDR	24	50	6.7	65	6.1	75	5.1	90	4.9	95	4.3	100	3.5
HDR	43	50	5.3	65	4.7	75	4.0	85	3.8	95	3.4	100	2.7
N. Com		50	5.3	60	4.5	75	4.0	85	3.8	95	3.4	100	2.7
G. Com		50	4.7	60	4.1	75	3.6	85	3.4	90	2.9	100	2.4
O.P./Com		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
Limited I.		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
General I.		50	3.7	60	3.2	70	2.7	80	2.6	90	2.3	100	1.9

*See Table 3-1 for more detailed description

Table A-3

Table A-3 Average Manning Roughness Coefficients for Small Open Channels Conveying Less than 50 cfs[4]

	Design Flow Depth		
Lining Type	**0 – 0.5 ft**	**0.5 – 2.0 ft**	**> 2.0 ft**
Concrete (Poured)	0.015	0.013	0.013
Air Blown Concrete	0.023	0.019	0.016
Grouted Riprap	0.040	0.030	0.028
Stone Masonry	0.042	0.032	0.030
Soil Cement	0.025	0.022	0.020
Bare Soil	0.023	0.020	0.020
Rock Cut	0.045	0.035	0.025
Rock Riprap	Based on Rock Size (See Section 5.7.2)		

Table A-4

Table A-4 Average Manning Roughness Coefficients for Larger Open Channels

Unlined Channels	
Clay Loam	0.023
Sand	0.020
Lined Channels	
Grass Lined (Well-Maintained)	0.035 TURF AREAS
Grass Lined (Not Maintained)	0.045
Wetland-Bottom Channels (New Channel)	0.023
Wetland-Bottom Channels (Mature Channel)	See Table A-5
Riprap-Lined Channels	See Section 5.7.2
Concrete (Poured)	0.014
Air Blown Mortar (Gunite or Shotcrete)[5]	0.016
Asphaltic Concrete or Bituminous Plant Mix	0.018

For channels with revetments or multiple lining types, use composite Manning roughness coefficient based on component lining materials.

[4] Based on materials and workmanship required by standard specifications.
[5] For air-blown concrete, use n=0.012 (if troweled) and n=0.025 if purposely roughened.

Table A-5 Average Manning Roughness Coefficients for Natural Channels

Minor Streams (Surface Width at Flood Stage < 100 ft)	
Fairly Regular Section	
(A) Some Grass and Weeds, Little or No Brush	0.030
(B) Dense Growth of Weeds, Depth of Flow Materially Greater Than Weed Height	0.040
(C) Some Weeds, Light Brush on Banks	0.040
(D) Some Weeds, Heavy Brush on Banks	0.060
(E) For Trees within Channel with Branches Submerged at High Stage, Increase All Above Values By	0.015
Irregular Section, with Pools, Slight Channel Meander	
Channels (A) to (E) Above, Increase All Values By	0.015
Mountain Streams; No Vegetation in Channel, Banks Usually Steep, Trees and Brush along Banks Submerged at High Stage	
(A) Bottom, Gravel, Cobbles and Few Boulders	0.050 DG.
(B) Bottom, Cobbles with Large Boulders	0.060
Flood Plains (Adjacent To Natural Streams)	
Pasture, No Brush	
(A) Short Grass	0.030
(B) High Grass	0.040
Cultivated Areas	
(A) No Crop	0.040
(B) Mature Row Crops	0.040
(C) Mature Field Crops	0.050
Heavy Weeds, Scattered Brush	0.050
Light Brush and Trees	0.060
Medium To Dense Brush	0.090
Dense Willows	0.170
Cleared Land with Tree Stumps, 100-150 Per Acre	0.060
Heavy Stand of Timber, Little Undergrowth	
(A) Flood Depth below Branches	0.110
(B) Flood Depth Reaches Branches	0.140

Appendix F:

BMP Information

Bioretention

TC-32

Design Considerations

- Soil for Infiltration
- Tributary Area
- Slope
- Aesthetics
- Environmental Side-effects

Description

The bioretention best management practice (BMP) functions as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. These facilities normally consist of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. The runoff's velocity is reduced by passing over or through buffer strip and subsequently distributed evenly along a ponding area. Exfiltration of the stored water in the bioretention area planting soil into the underlying soils occurs over a period of days.

Targeted Constituents

☑	Sediment	■
☑	Nutrients	▲
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

California Experience

None documented. Bioretention has been used as a stormwater BMP since 1992. In addition to Prince George's County, MD and Alexandria, VA, bioretention has been used successfully at urban and suburban areas in Montgomery County, MD; Baltimore County, MD; Chesterfield County, VA; Prince William County, VA; Smith Mountain Lake State Park, VA; and Cary, NC.

Advantages

- Bioretention provides stormwater treatment that enhances the quality of downstream water bodies by temporarily storing runoff in the BMP and releasing it over a period of four days to the receiving water (EPA, 1999).
- The vegetation provides shade and wind breaks, absorbs noise, and improves an area's landscape.

Limitations

- The bioretention BMP is not recommended for areas with slopes greater than 20% or where mature tree removal would

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be required since clogging may result, particularly if the BMP receives runoff with high sediment loads (EPA, 1999).

- Bioretention is not a suitable BMP at locations where the water table is within 6 feet of the ground surface and where the surrounding soil stratum is unstable.
- By design, bioretention BMPs have the potential to create very attractive habitats for mosquitoes and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water.
- In cold climates the soil may freeze, preventing runoff from infiltrating into the planting soil.

Design and Sizing Guidelines

- The bioretention area should be sized to capture the design storm runoff.
- In areas where the native soil permeability is less than 0.5 in/hr an underdrain should be provided.
- Recommended minimum dimensions are 15 feet by 40 feet, although the preferred width is 25 feet. Excavated depth should be 4 feet.
- Area should drain completely within 72 hours.
- Approximately 1 tree or shrub per 50 ft^2 of bioretention area should be included.
- Cover area with about 3 inches of mulch.

Construction/Inspection Considerations

Bioretention area should not be established until contributing watershed is stabilized.

Performance

Bioretention removes stormwater pollutants through physical and biological processes, including adsorption, filtration, plant uptake, microbial activity, decomposition, sedimentation and volatilization (EPA, 1999). Adsorption is the process whereby particulate pollutants attach to soil (e.g., clay) or vegetation surfaces. Adequate contact time between the surface and pollutant must be provided for in the design of the system for this removal process to occur. Thus, the infiltration rate of the soils must not exceed those specified in the design criteria or pollutant removal may decrease. Pollutants removed by adsorption include metals, phosphorus, and hydrocarbons. Filtration occurs as runoff passes through the bioretention area media, such as the sand bed, ground cover, and planting soil.

Common particulates removed from stormwater include particulate organic matter, phosphorus, and suspended solids. Biological processes that occur in wetlands result in pollutant uptake by plants and microorganisms in the soil. Plant growth is sustained by the uptake of nutrients from the soils, with woody plants locking up these nutrients through the seasons. Microbial activity within the soil also contributes to the removal of nitrogen and organic matter. Nitrogen is removed by nitrifying and denitrifying bacteria, while aerobic bacteria are responsible for the decomposition of the organic matter. Microbial processes require oxygen and can result in depleted oxygen levels if the bioretention area is not adequately

aerated. Sedimentation occurs in the swale or ponding area as the velocity slows and solids fall out of suspension.

The removal effectiveness of bioretention has been studied during field and laboratory studies conducted by the University of Maryland (Davis et al, 1998). During these experiments, synthetic stormwater runoff was pumped through several laboratory and field bioretention areas to simulate typical storm events in Prince George's County, MD. Removal rates for heavy metals and nutrients are shown in Table 1.

Table 1 Laboratory and Estimated Bioretention Davis et al. (1998); PGDER (1993)

Pollutant	Removal Rate
Total Phosphorus	70-83%
Metals (Cu, Zn, Pb)	93-98%
TKN	68-80%
Total Suspended Solids	90%
Organics	90%
Bacteria	90%

Results for both the laboratory and field experiments were similar for each of the pollutants analyzed. Doubling or halving the influent pollutant levels had little effect on the effluent pollutants concentrations (Davis et al, 1998).

The microbial activity and plant uptake occurring in the bioretention area will likely result in higher removal rates than those determined for infiltration BMPs.

Siting Criteria

Bioretention BMPs are generally used to treat stormwater from impervious surfaces at commercial, residential, and industrial areas (EPA, 1999). Implementation of bioretention for stormwater management is ideal for median strips, parking lot islands, and swales. Moreover, the runoff in these areas can be designed to either divert directly into the bioretention area or convey into the bioretention area by a curb and gutter collection system.

The best location for bioretention areas is upland from inlets that receive sheet flow from graded areas and at areas that will be excavated (EPA, 1999). In order to maximize treatment effectiveness, the site must be graded in such a way that minimizes erosive conditions as sheet flow is conveyed to the treatment area. Locations where a bioretention area can be readily incorporated into the site plan without further environmental damage are preferred. Furthermore, to effectively minimize sediment loading in the treatment area, bioretention only should be used in stabilized drainage areas.

Additional Design Guidelines

The layout of the bioretention area is determined after site constraints such as location of utilities, underlying soils, existing vegetation, and drainage are considered (EPA, 1999). Sites with loamy sand soils are especially appropriate for bioretention because the excavated soil can be backfilled and used as the planting soil, thus eliminating the cost of importing planting soil.

The use of bioretention may not be feasible given an unstable surrounding soil stratum, soils with clay content greater than 25 percent, a site with slopes greater than 20 percent, and/or a site with mature trees that would be removed during construction of the BMP.

Bioretention can be designed to be off-line or on-line of the existing drainage system (EPA, 1999). The drainage area for a bioretention area should be between 0.1 and 0.4 hectares (0.25 and 1.0 acres). Larger drainage areas may require multiple bioretention areas. Furthermore, the maximum drainage area for a bioretention area is determined by the expected rainfall intensity and runoff rate. Stabilized areas may erode when velocities are greater than 5 feet per second (1.5 meter per second). The designer should determine the potential for erosive conditions at the site.

The size of the bioretention area, which is a function of the drainage area and the runoff generated from the area is sized to capture the water quality volume.

The recommended minimum dimensions of the bioretention area are 15 feet (4.6 meters) wide by 40 feet (12.2 meters) long, where the minimum width allows enough space for a dense, randomly-distributed area of trees and shrubs to become established. Thus replicating a natural forest and creating a microclimate, thereby enabling the bioretention area to tolerate the effects of heat stress, acid rain, runoff pollutants, and insect and disease infestations which landscaped areas in urban settings typically are unable to tolerate. The preferred width is 25 feet (7.6 meters), with a length of twice the width. Essentially, any facilities wider than 20 feet (6.1 meters) should be twice as long as they are wide, which promotes the distribution of flow and decreases the chances of concentrated flow.

In order to provide adequate storage and prevent water from standing for excessive periods of time the ponding depth of the bioretention area should not exceed 6 inches (15 centimeters). Water should not be left to stand for more than 72 hours. A restriction on the type of plants that can be used may be necessary due to some plants' water intolerance. Furthermore, if water is left standing for longer than 72 hours mosquitoes and other insects may start to breed.

The appropriate planting soil should be backfilled into the excavated bioretention area. Planting soils should be sandy loam, loamy sand, or loam texture with a clay content ranging from 10 to 25 percent.

Generally the soil should have infiltration rates greater than 0.5 inches (1.25 centimeters) per hour, which is typical of sandy loams, loamy sands, or loams. The pH of the soil should range between 5.5 and 6.5, where pollutants such as organic nitrogen and phosphorus can be adsorbed by the soil and microbial activity can flourish. Additional requirements for the planting soil include a 1.5 to 3 percent organic content and a maximum 500 ppm concentration of soluble salts.

Soil tests should be performed for every 500 cubic yards (382 cubic meters) of planting soil, with the exception of pH and organic content tests, which are required only once per bioretention area (EPA, 1999). Planting soil should be 4 inches (10.1 centimeters) deeper than the bottom of the largest root ball and 4 feet (1.2 meters) altogether. This depth will provide adequate soil for the plants' root systems to become established, prevent plant damage due to severe wind, and provide adequate moisture capacity. Most sites will require excavation in order to obtain the recommended depth.

Planting soil depths of greater than 4 feet (1.2 meters) may require additional construction practices such as shoring measures (EPA, 1999). Planting soil should be placed in 18 inches or greater lifts and lightly compacted until the desired depth is reached. Since high canopy trees may be destroyed during maintenance the bioretention area should be vegetated to resemble a terrestrial forest community ecosystem that is dominated by understory trees. Three species each of both trees and shrubs are recommended to be planted at a rate of 2500 trees and shrubs per hectare (1000 per acre). For instance, a 15 foot (4.6 meter) by 40 foot (12.2 meter) bioretention area (600 square feet or 55.75 square meters) would require 14 trees and shrubs. The shrub-to-tree ratio should be 2:1 to 3:1.

Trees and shrubs should be planted when conditions are favorable. Vegetation should be watered at the end of each day for fourteen days following its planting. Plant species tolerant of pollutant loads and varying wet and dry conditions should be used in the bioretention area.

The designer should assess aesthetics, site layout, and maintenance requirements when selecting plant species. Adjacent non-native invasive species should be identified and the designer should take measures, such as providing a soil breach to eliminate the threat of these species invading the bioretention area. Regional landscaping manuals should be consulted to ensure that the planting of the bioretention area meets the landscaping requirements established by the local authorities. The designers should evaluate the best placement of vegetation within the bioretention area. Plants should be placed at irregular intervals to replicate a natural forest. Trees should be placed on the perimeter of the area to provide shade and shelter from the wind. Trees and shrubs can be sheltered from damaging flows if they are placed away from the path of the incoming runoff. In cold climates, species that are more tolerant to cold winds, such as evergreens, should be placed in windier areas of the site.

Following placement of the trees and shrubs, the ground cover and/or mulch should be established. Ground cover such as grasses or legumes can be planted at the beginning of the growing season. Mulch should be placed immediately after trees and shrubs are planted. Two to 3 inches (5 to 7.6 cm) of commercially-available fine shredded hardwood mulch or shredded hardwood chips should be applied to the bioretention area to protect from erosion.

Maintenance

The primary maintenance requirement for bioretention areas is that of inspection and repair or replacement of the treatment area's components. Generally, this involves nothing more than the routine periodic maintenance that is required of any landscaped area. Plants that are appropriate for the site, climatic, and watering conditions should be selected for use in the bioretention cell. Appropriately selected plants will aide in reducing fertilizer, pesticide, water, and overall maintenance requirements. Bioretention system components should blend over time through plant and root growth, organic decomposition, and the development of a natural

soil horizon. These biologic and physical processes over time will lengthen the facility's life span and reduce the need for extensive maintenance.

Routine maintenance should include a biannual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation (EPA, 1999). Diseased vegetation should be treated as needed using preventative and low-toxic measures to the extent possible. BMPs have the potential to create very attractive habitats for mosquitoes and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water. Routine inspections for areas of standing water within the BMP and corrective measures to restore proper infiltration rates are necessary to prevent creating mosquito and other vector habitat. In addition, bioretention BMPs are susceptible to invasion by aggressive plant species such as cattails, which increase the chances of water standing and subsequent vector production if not routinely maintained.

In order to maintain the treatment area's appearance it may be necessary to prune and weed. Furthermore, mulch replacement is suggested when erosion is evident or when the site begins to look unattractive. Specifically, the entire area may require mulch replacement every two to three years, although spot mulching may be sufficient when there are random void areas. Mulch replacement should be done prior to the start of the wet season.

New Jersey's Department of Environmental Protection states in their bioretention systems standards that accumulated sediment and debris removal (especially at the inflow point) will normally be the primary maintenance function. Other potential tasks include replacement of dead vegetation, soil pH regulation, erosion repair at inflow points, mulch replenishment, unclogging the underdrain, and repairing overflow structures. There is also the possibility that the cation exchange capacity of the soils in the cell will be significantly reduced over time. Depending on pollutant loads, soils may need to be replaced within 5-10 years of construction (LID, 2000).

Cost

Construction Cost

Construction cost estimates for a bioretention area are slightly greater than those for the required landscaping for a new development (EPA, 1999). A general rule of thumb (Coffman, 1999) is that residential bioretention areas average about $3 to $4 per square foot, depending on soil conditions and the density and types of plants used. Commercial, industrial and institutional site costs can range between $10 to $40 per square foot, based on the need for control structures, curbing, storm drains and underdrains.

Retrofitting a site typically costs more, averaging $6,500 per bioretention area. The higher costs are attributed to the demolition of existing concrete, asphalt, and existing structures and the replacement of fill material with planting soil. The costs of retrofitting a commercial site in Maryland, Kettering Development, with 15 bioretention areas were estimated at $111,600.

In any bioretention area design, the cost of plants varies substantially and can account for a significant portion of the expenditures. While these cost estimates are slightly greater than those of typical landscaping treatment (due to the increased number of plantings, additional soil excavation, backfill material, use of underdrains etc.), those landscaping expenses that would be required regardless of the bioretention installation should be subtracted when determining the net cost.

Perhaps of most importance, however, the cost savings compared to the use of traditional structural stormwater conveyance systems makes bioretention areas quite attractive financially. For example, the use of bioretention can decrease the cost required for constructing stormwater conveyance systems at a site. A medical office building in Maryland was able to reduce the amount of storm drain pipe that was needed from 800 to 230 feet - a cost savings of $24,000 (PGDER, 1993). And a new residential development spent a total of approximately $100,000 using bioretention cells on each lot instead of nearly $400,000 for the traditional stormwater ponds that were originally planned (Rappahanock,). Also, in residential areas, stormwater management controls become a part of each property owner's landscape, reducing the public burden to maintain large centralized facilities.

Maintenance Cost

The operation and maintenance costs for a bioretention facility will be comparable to those of typical landscaping required for a site. Costs beyond the normal landscaping fees will include the cost for testing the soils and may include costs for a sand bed and planting soil.

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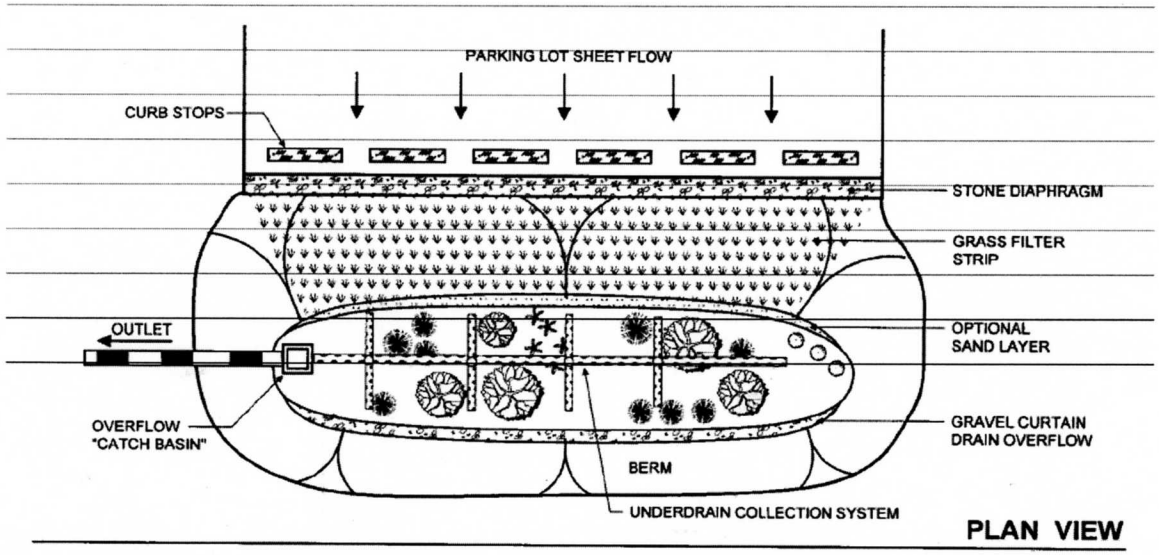

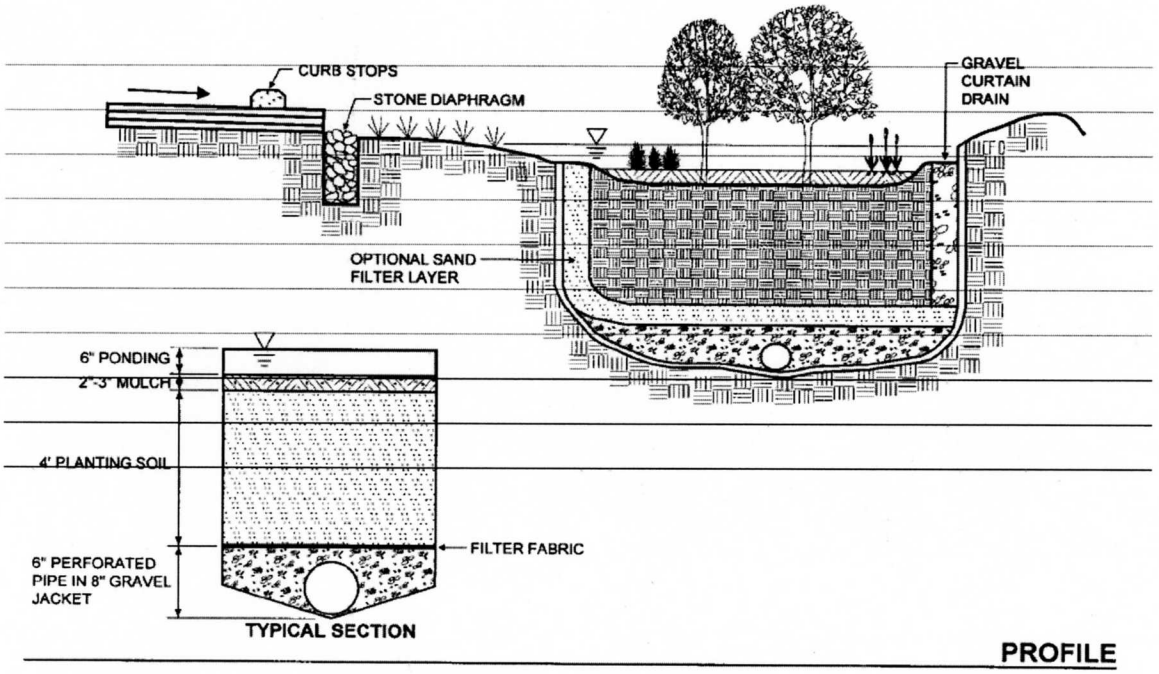

Schematic of a Bioretention Facility (MDE, 2000)

APPENDIX C

FEASIBILITY STUDY REPORT LOW IMPACT DEVELOPMENT (LID) CONCEPT STUDY BY ALLIED GEOTECHNICAL ENGINEERS, DATED APRIL 4, 2008

FEASIBILITY STUDY REPORT FOR THE CITY OF SAN DIEGO LOW IMPACT DEVELOPMENT (LID) CONCEPT STUDY CABRILLO HEIGHTS PARK, SAN DIEGO, CALIFORNIA

Submitted to:

MWH AMERICAS, INC.
9444 Farnham Street, Suite 300
San Diego, CA 92123

By:

ALLIED GEOTECHNICAL ENGINEERS, INC.
9500 Cuyamaca Street, Suite 102
Santee, California 92071-2685

April 4, 2008

April 4, 2008

Mr. Christopher E. Eccles, P.E.
MWH Americas, Inc.
9444 Farnham Street, Suite 300
San Diego , CA 92123

Subject: **FEASIBILITY STUDY REPORT FOR THE CITY OF SAN DIEGO LOW IMPACT DEVELOPMENT (LID) CONCEPT STUDY CABRILLO HEIGHTS PARK, SAN DIEGO, CALIFORNIA AGE Project No. 109 GS-05-C**

Dear Mr. Eccles:

In accordance with your request, we are pleased to submit the accompanying report to present the results of a study which was performed to evaluate the feasibility of implementing "Low Impact Development" (LID) measures at the Cabrillo Heights Park.

We appreciate the opportunity to be of service on this important project. If you have any questions regarding the contents of this report or need further assistance, please feel free to give us a call.

Sincerely,

ALLIED GEOTECHNICAL ENGINEERS, INC.

Sani Sutanto, P.E.
Senior Engineer

SS/TJL:sem
Distr. (6) Addressee

REGISTERED PROFESSIONAL ENGINEER SANI SUTANTO No. 61078 Exp. 06/30/09 CIVIL STATE OF CALIFORNIA

Tiong J. Liem, P.G., C.E.G.
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FEASIBILITY STUDY REPORT FOR THE CITY OF SAN DIEGO LOW IMPACT DEVELOPMENT (LID) CONCEPT STUDY CABRILLO HEIGHTS PARK, SAN DIEGO, CALIFORNIA

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1.0 INTRODUCTION

In accordance with the request of MWH Americas, Inc. (MWH), Allied Geotechnical Engineers, Inc. (AGE) has performed a geotechnical field exploration study at Cabrillo Heights Park which is located in the Kearny Mesa area in San Diego, California. The objectives of the study were to characterize the subsurface soil conditions and to evaluate the feasibility of implementing Low Impact Development (LID) stormwater infiltration facilities at the project site.

This report presents the results of the feasibility study that was conducted by AGE. The scope of the study included the advancement of exploratory soil borings, field percolation testing, and the performance of laboratory tests on selected soil samples collected from the borings.

The services provided by AGE were performed in conformance with the authorized scope of work as outlined in Task Order No. 3 of the Master Consulting Services Subcontract between MWH and AGE dated June 3, 2005.

2.0 PROJECT UNDERSTANDING

It is our understanding that the City of San Diego (City) plans to develop guidelines for the design and implementation of Low Impact Development (LID) Best Management Practices (BMPs) for priority development projects as defined in the municipal stormwater permit for the City. The City has retained MWH to prepare conceptual LID designs for 2 sites that are located on City-owned properties or streets.

The borings and percolation tests performed at the Cabrillo Heights Park in San Diego, California were performed as part of a study to evaluate the feasibility of implementing these LID measures which may include infiltration planters and/or porous paving, holding, diversion and infiltration basins.

3.0 SITE DESCRIPTION

The Cabrillo Heights Park is situated on a 13.7 acre site that is located adjacent to Angier Elementary School in San Diego California (see Vicinity Map, Figure 1). The park is bounded by an office complex to the north, Hurlbut Street to the south, Angier Elementary School to the east and Kearny Villa Road to the west. Existing park facilities include lighted multi-sport fields, a childrens play area, picnic facilities, a concession stand, two comfort stations (restrooms), and parking along Hurlbut Street and at the western end of the park. A decomposed granite (DG) access road extends along the northern park boundary.

Existing site elevations range from a low of +388 feet above the mean sea level (MSL) in the center of the fields to a high of +404 feet MSL adjacent to Hurlbut Street. The proposed LID study area is located in the northeastern portion of the park at an approximate elevation of +390 feet MSL. The approximate limits of the study area are shown on the Site Plan (Figure 2).

Based on the information gathered from our utility clearance efforts, it appears that buried utilities within the park include water, sewer and stormdrain pipelines, and electrical conduits.

4.0 FEASIBILITY STUDY

The scope of the feasibility study performed for the subject project included several tasks which are described in the following sections of this report.

4.1 Information Review

This task consisted of a review of readily available published and unpublished information pertaining to the project site. The available information included published geologic literature and maps, U.S. Geological Survey topographic quadrangles, and AGE's in-house references. A listing of the references that were reviewed is presented in Section 9.0.

4.2 Site Selection

MWH compiled and provided AGE with a list of several sites that are located in the San Diego River and Tijuana River watershed areas for consideration as potential LID feasibility study sites. Based on the results of AGE's information review, several of these sites were eliminated from further consideration based on known or suspected unfavorable geologic conditions. Subsequently, representatives from AGE and MWH performed site reconnaissance visits to the sites that were deemed most promising for implementation of a LID facility. These sites included the following:

- Robb Field , Dusty Rhodes Park, Collier Park, and Cleator Community Park in the Ocean Beach area
- Grantville Park in the Grantville area
- Serra Mesa Community park in the Serra Mesa area
- Cabrillo Heights Park in the Kearny Mesa area

- Brown Field Municipal Airport, Camino Maquiladora, Beyer Boulevard, Camino de la Plaza, Park Avenue, Halo Street, and Leon Avenue in the Otay Mesa and San Ysidro areas.

MWH presented and discussed the findings of the site selection process with the City, and a decision was made to proceed with the LID feasibility study at the Cabrillo Heights Park site.

4.3 Field Exploration Program

4.3.1 Planning, Permitting and Utility Clearance

Prior to commencement of the drilling operations, representatives from AGE and MWH conducted a site visit to select suitable locations for the borings and percolation test holes. These locations were coordinated with the City in subsequent site visits. Selection of the boring and percolation test hole locations was based on various considerations, such as anticipated subsurface conditions, drill rig access limitations, presence of existing buried utilities, and permitting issues..

Underground Service Alert (USA) was subsequently contacted to coordinate clearance of the boring locations with respect to existing underground utilities. In addition, AGE contacted the County of San Diego Department of Environmental Health Services (DEHS) and obtained a waiver for a boring permit.

4.3.2 Soil Borings and Test Holes

This task involved the advancement of two deep exploratory soil borings and six percolation test holes in the study area. In addition, two deep borings was performed in the eastern half of the sports field and one boring in the parking lot at the western end of the park.

Prior to commencement of the drilling operations, AGE performed clearance of the proposed boring locations with respect to existing buried utilities through Underground Service Alert (USA). The field exploration was conducted on February 8, 2008. The soil borings and percolation test holes were extended to depths on the order of 14 to 27 feet below existing grade (bgs) and 3 to 8 feet bgs, respectively, at the approximate locations shown on Figure 2. A more detailed description of the drilling and sampling activities, and logs of the borings are presented in Appendix A.

4.3.3 Percolation Test Program

Percolation testing was performed in the 6 test holes on February 12 and 13, 2008. A more detailed description of the testing procedures and the test results are presented in Appendix A.

4.4 Geotechnical Laboratory Testing

Selected soil samples obtained from the soil borings were tested in the laboratory to verify field classifications and evaluate certain engineering characteristics. The geotechnical laboratory tests were performed in general conformance with the American Society for Testing and Materials (ASTM) or other generally accepted testing procedures.

The geotechnical laboratory testing performed for this investigation included: in-place moisture content and unit dry weight, mechanical sieve (wash) analysis, hydrometer analysis, and compaction. A description of the laboratory tests that were performed and the final test results are presented in Appendix B.

5.0 SUBSURFACE CONDITIONS

5.1 Geologic Units

Based on soil type and composition, the soil materials encountered in the borings can be categorized into two distinct geologic units which include undocumented fill materials and Mission Valley Formation. A brief description of these units is presented below.

5.1.1 Fill Materials

Fill materials were encountered in all five borings to depths ranging from 5.5 feet to 10.5 feet. The fill materials generally consist of brown silty sand ranging in consistency from loose to dense. The fill materials in borings B-3, B-4 and B-5 contain variable amounts of gravel and cobble.

There is no documentation regarding the original placement and extent of the fill materials at the park site. We suspect that the fill materials may be associated with the filling of a canyon that originally crossed the park site. Following completion of the subsurface investigation, we reviewed historical aerial photographs flown in 1953. The photographs indicate that a tributary drainage to Murray Canyon formerly traversed the park site in a southwesterly direction.

5.1.2 Mission Valley Formation

The Mission Valley Formation is mapped in the canyon walls in the upper reaches of Murray Canyon (M.P. Kennedy, 1975). This formation is a predominantly marine sandstone unit of Eocene age. The Mission Valley Formation was encountered below the fill in all five borings to the maximum depth of exploration of 27 feet in boring B-1. The soils consist primarily of a gray, fine to medium grained siltstone with localized conglomeratic beds and lenses.

5.2 Groundwater

Groundwater was not encountered in any of the borings at the time of our field exploration. Samples collected of the fill materials were found to possess moisture contents on the order of 3% (damp) to 13% (moist). The moisture content of the Mission Valley Formation soils ranged from 12% (moist) to 27% (saturated). Minor seepage which may be caused by perched water within the fill materials was observed in boring B-4 at a depth of 4 feet bgs.

The park site lies within the Lower San Diego Hydrologic Area of the San Diego Hydrologic Unit as designated by the California Regional Water Quality Control Board (CRWQCB), San Diego Region 9. Groundwater in this area is excepted from municipal use but has beneficial use for agricultural, industrial, recreational, and warm freshwater and wildlife habitat supply. The depth (elevation) of the regional groundwater table beneath the study area is unknown but, based on available information, is estimated to be in excess of 100 feet. Localized perched water conditions may be expected to occur at shallower depths in other areas on the mesa. Groundwater flow beneath the park site is anticipated to be in a southwesterly direction generally following the orientation of the former canyon.

5.3 Ground Permeability

The field percolation test results indicate that the permeability of the subsurface soils within the study area decrease with depth. The test results show soil percolation rates in the fill materials ranging from 37 to 87 minutes per inch (mpi). The percolation rates decrease very rapidly in the underlying Mission Valley Formation soil materials to more than 330 mpi.

6.0 SUMMARY OF FINDINGS

Based on a review of the published geologic maps and our initial site reconnaissance, we anticipated to encounter the Lindavista Formation in the borings. During our subsurface investigation, however, the borings encountered fill materials overlying a siltstone unit of the Mission Valley Formation.

The results of the field percolation tests indicate that there is a substantial difference in soil percolation rates between the two geologic units. The percolation rates in the fill materials were found to vary between 37 to 87 mpi whereas the percolation rates in Mission Valley Formation soils exceed 330 mpi. It is our opinion that infiltration of surface and/or storm water into the fill materials will be confined on top of the contact with the Mission Valley Formation and then be redirected in a southwesterly direction within the former tributary canyon.

7.0 LIMITATIONS

This report has been prepared for the sole use of MWH Americas, Inc. and the City of San Diego in their development of design criteria for the proposed LID measures in the study area as described herein. This report is intended for preliminary planning and design purposes only and does not provide sufficient data for final design and construction.

The geotechnical field exploration and laboratory testing conducted by AGE for this project have been performed in accordance with generally accepted principles and practices of the local geotechnical profession at the time of report preparation. No other warranty, either expressed or implied, is made by AGE.

The geotechnical field exploration and laboratory testing described in this report pertain only to specific locations within Cabrillo Heights Park. Consequently, the subsurface conditions in other areas of the park may be substantially different from those reported herein.

8.0 REFERENCES

City of San Diego, Draft Guidelines for Geotechnical Evaluations for Low Impact Development Stormwater Infiltration Facilities.

Kennedy, M.P., 1975, Geology of the San Diego Metropolitan Area, California, California Division of Mines and Geology Bulletin 200.

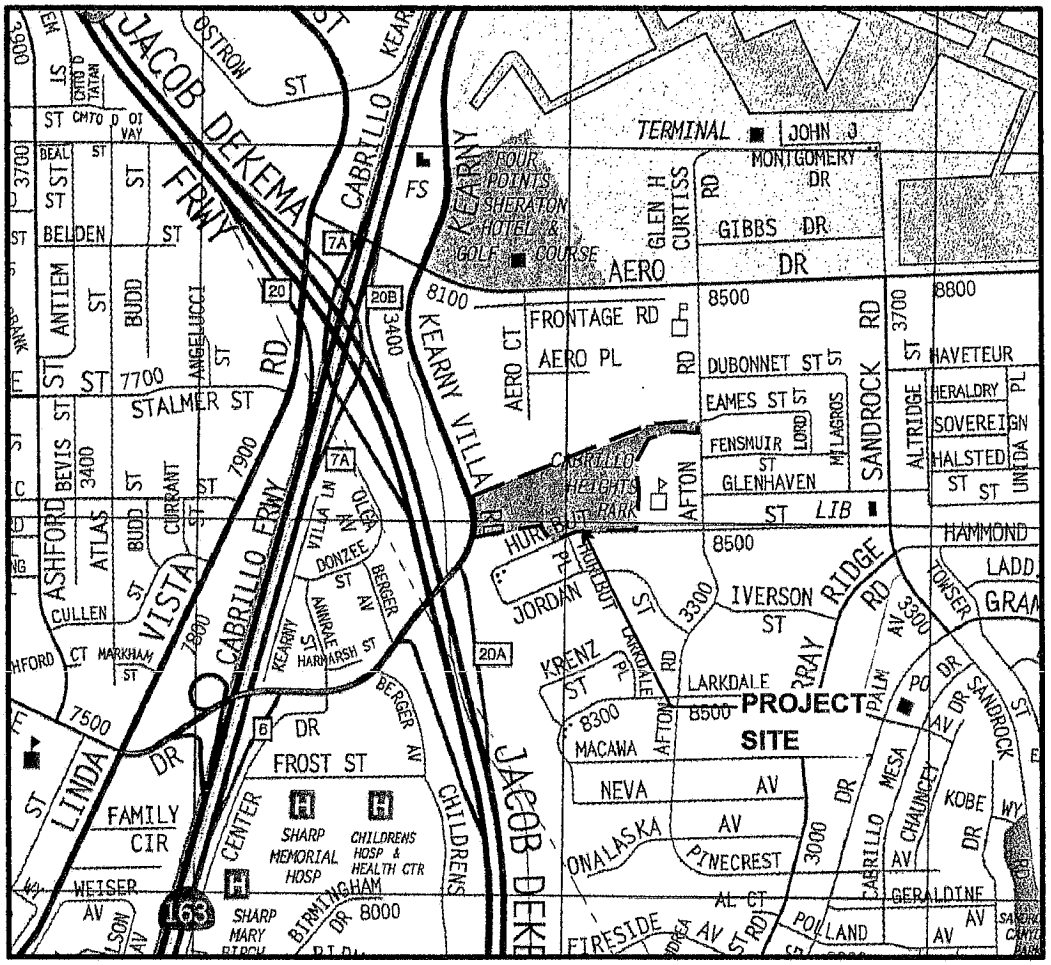
Aerial Photographs

Black and white aerial photographs Flight Nos. AXN-3M-190 & 191, dated May 2, 1953.

Topographic Maps

Topographical map provided by MWH Americas entitled "San Diego River Watershed Potential LID Implementation Site", undated.

FIGURES



N

NOT TO SCALE

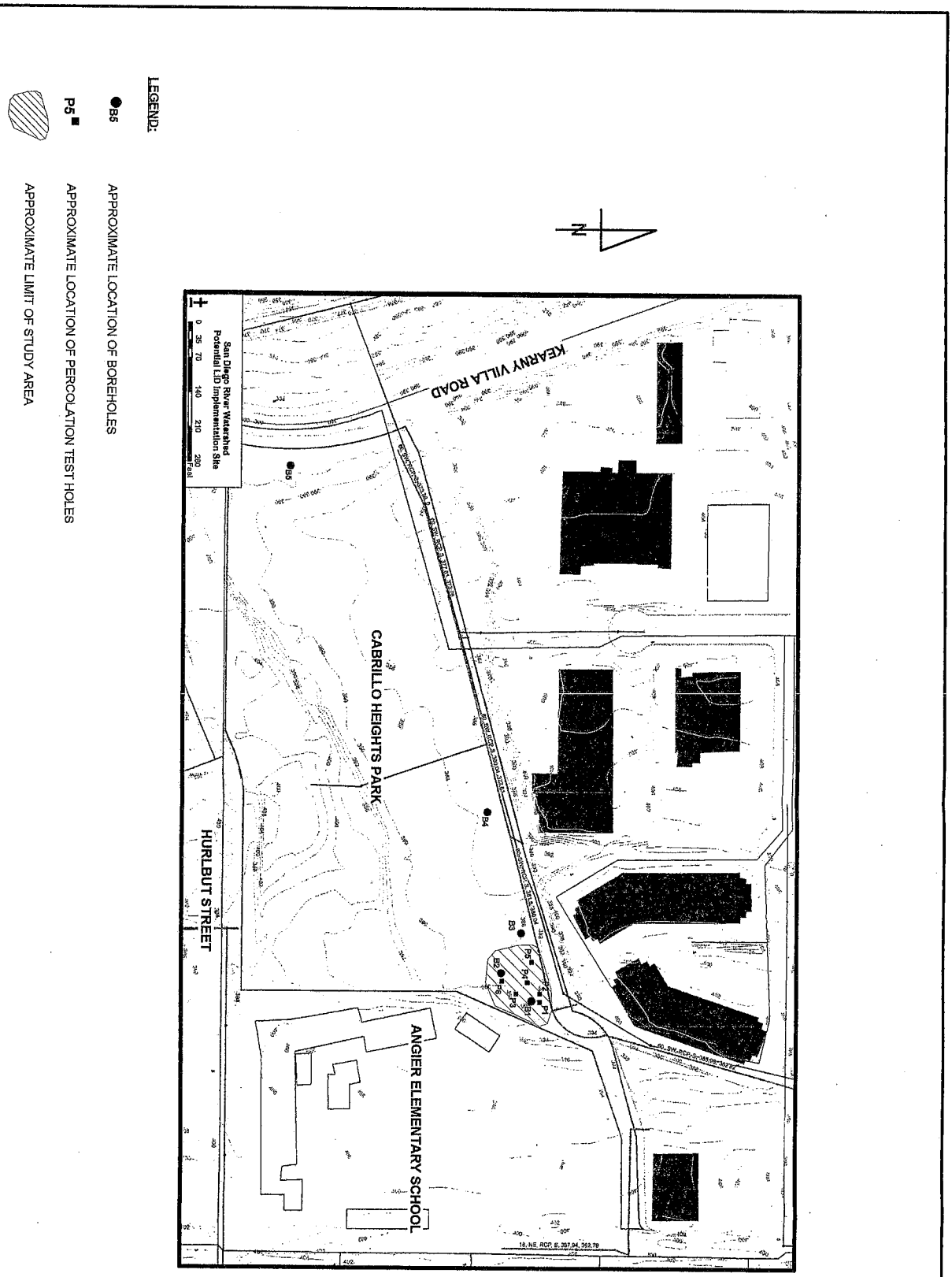
SOURCE:

SAN DIEGO & IMPERIAL COUNTY THOMAS GUIDE, 2005

VICINITY MAP

CABRILLO HEIGHTS PARK

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 1



SITE PLAN AND APPROXIMATE LOCATION OF BORINGS AND TEST HOLES
CABRILLO HEIGHTS PARK

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 2

APPENDIX A

DRILLING, SAMPLING AND TESTING ACTIVITIES

APPENDIX A

DRILLING, SAMPLING AND TESTING ACTIVITIES

The exploratory drilling and sampling activities for this project were performed on February 8, 2008. A total of five (5) soil borings and six (6) percolation test holes were advanced to depths on the order of 14 to 27 feet below the existing ground surface (bgs) and 3 to 8 feet bgs, respectively, at the approximate locations shown on the Site Plan (Figure 2). The borings and test holes were performed by Test America Drilling Corporation using hollow-stem auger drilling methods with a truck-mounted Canterra 850 drill rig.

The soils encountered in the borings were visually classified and logged by a personnel from our firm. A Key to Logs is presented on Figure Nos. A-1 and A-2, and logs of the borings are shown on Figures A-3 through A-7. The logs depict the various soil types encountered and indicate the depths at which samples were obtained for laboratory testing and analysis.

During drilling, Standard Penetration Tests (SPT) were performed at selected depth intervals. The SPT tests involve the use of a specially manufactured "split spoon" sampler which is driven 18 inches into the soils at the bottom of the borehole by dropping a 140-pound weight from a height of 30 inches. The number of blows required to penetrate each 6-inch increment was counted and recorded on the field logs, and have been used to evaluate the relative density and consistency of the materials.

Relatively undisturbed samples were obtained by driving a 3-inch (OD) diameter standard California sampler with a special cutting tip and inside lining of thin brass rings into the soils at the bottom of the borehole. The sampler is driven a distance of 18 inches into the soils at the bottom of the borehole by dropping a 140-pound weight from a height of 30 inches. A 6-inch long section of the soil samples that were retained in the brass rings were extracted from the sampling tube and transported to our laboratory in close-fitting, waterproof containers.

Percolation testing was performed in the 6 test holes on February 12 and 13, 2008. Prior to testing, the test holes were presoaked for a period of at least 24 hours and subsequently cleaned with a hand auger. An approximately 3- to 6-inch thick layer of pea gravel was then placed on the bottom of each test hole.

The testing procedure involved the placement of water to an approximate elevation of 6 inches above the top of the pea gravel in each test hole. As the water dissipated through the soil at the bottom of the test holes, measurements were then taken to evaluate the discharge rate over a period of 40 to 60 minutes. The percolation rate was calculated based on the average rate of discharge. A summary of the percolation test results is presented in Table A-1.

Following completion of the drilling, sampling and testing activities, all boreholes and test holes were backfilled with onsite soil materials mixed with bentonite chips. Boring B-5 which is located in the asphaltic-concrete paved parking lot was capped with 6-inch thick concrete plug. The remaining soil cuttings generated from the drilling operations were disposed on site.

TABLE A-1
SUMMARY OF PERCOLATION TEST RESULTS FOR
CABRILLO HEIGHTS PARK

Test Hole # P-1	Hole Depth: 36"	Test Date: February 11, 2008	Average Rate: 37 mpi

	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	21.0	12:16	22.0	12:56	23.0	13:34						
END	22.0	12:56	23.0	13:34	25.5	14:54						
DIFF.	1.0	40	1.0	38	2.5	80						
RATE (mpi)	40		38		32							

Test Hole # P-2	Hole Depth: 45"	Test Date: February 11, 2008	Average Rate: 87 mpi

	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	32.0	12:16	32.5	12:46	33.0	14:26						
END	32.5	12:46	33.0	14:26	33.5	15:26						
DIFF.	0.5	30	0.5	40	0.5	60						
RATE (mpi)	60		80		120							

Test Hole # P-3	Hole Depth: 57"	Test Date: February 11, 2005	Average Rate: Very low permeability

	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	44.0	12:30										
END	44.0	3:28										
DIFF.	0	178										
RATE (mpi)	Very low permeability											

Test Hole # P-3	Hole Depth: 57"	Test Date: February 13, 2005	Average Rate: Very low permeability

	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	42.0	11:50										
END	42.0	2:50										
DIFF.	0	180										
RATE (mpi)	Very low permeability											

TABLE A-1
SUMMARY OF PERCOLATION TEST RESULTS FOR
CABRILLO HEIGHTS PARK
(Continued)

Test Hole # P-4			Hole Depth: 74"				Test Date: February 11, 2008				Average Rate: 330 mpi	
	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	59.0	12:45										
END	59.5	15:30										
DIFF.	0.5	165										
RATE (mpi)	330											

Test Hole # P-4			Hole Depth: 74"				Test Date: February 13, 2008				Average Rate: 420 mpi	
	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	61.0	11:55										
END	61.5	15:25										
DIFF.	0.5	210										
RATE (mpi)	420											

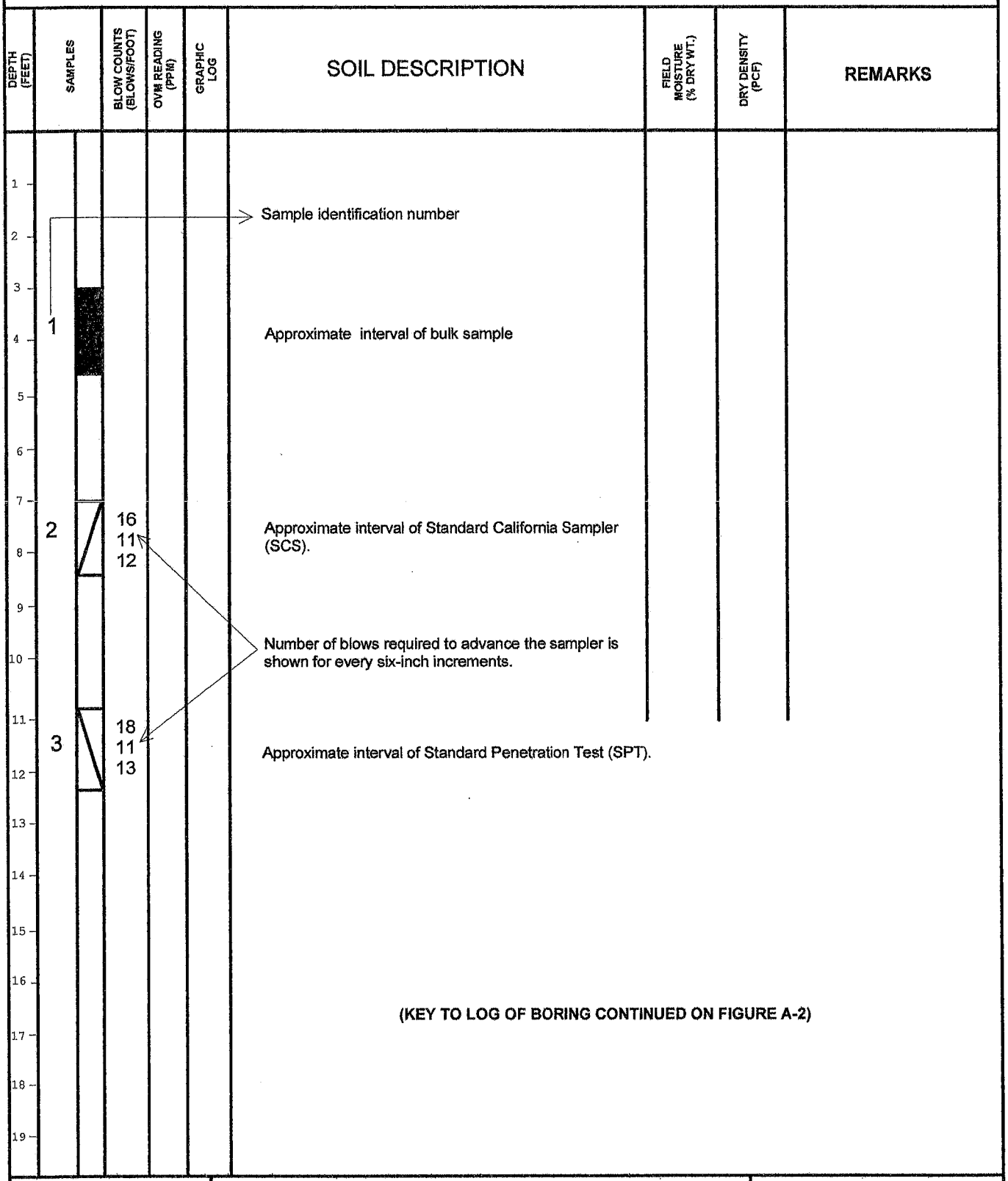
Test Hole # P-5			Hole Depth: 81"				Test Date: February 11, 2005				Average Rate: Very low permeability	
	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	69.0	13:12										
END	69.0	15:32										
DIFF.	0	140										
RATE (mpi)	Very low permeability											

Test Hole # P-5			Hole Depth: 81"				Test Date: February 13, 2005				Average Rate: Very low permeability	
	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	67.0	12:00										
END	67.0	13:30										
DIFF.	0	150										
RATE (mpi)	Very low permeability											

TABLE A-1
SUMMARY OF PERCOLATION TEST RESULTS FOR
CABRILLO HEIGHTS PARK
(Continued)

Test Hole # P-6			Hole Depth: 95"				Test Date: February 13, 2008				Average Rate: Very low permeability	
	1		2		3		4		5		6	
	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)	Reading (inch)	Time (min)
START	85	12:20										
END	85	15:50										
DIFF.	0	210										
RATE (mpi)	Very low permeability											

KEY TO LOG OF BORING



(KEY TO LOG OF BORING CONTINUED ON FIGURE A-2)

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-1

KEY TO LOG OF BORING (CONTINUED)

DEPTH (FEET)	SAMPLES	BLOW COUNTS (BLOWS/FOOT)	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE (% DRY WT.)	DRY DENSITY (PCF)	REMARKS
1					—?— —?— APPROXIMATE GEOLOGIC CONTACT			
2								
3					FILL			
4					SAND			
5					SILT			
6					CLAY			
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								

GENERAL NOTES

1. Approximate location and elevation of borings is based on topographical map provided by MWH Americas, Inc. entitled "San Diego River Watershed Potential LID Implementation Site", undated.
2. Soil descriptions are based on visual classification made during the field exploration and, where deemed appropriate, have been modified based on the results of laboratory tests.
3. Description on the boring logs apply only at the specific boring locations and at the time the borings were performed. They are not warranted to be representative of subsurface conditions at other locations or times.

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-2

BORING NO. B-1

DATE OF DRILLING: FEBRUARY 8, 2008	TOTAL BORING DEPTH: 27 FEET
GENERAL LOCATION: NORTHEASTERN CORNER OF OF STUDY AREA	
APPROXIMATE SURFACE ELEV.: + 390 FEET MSL	DRILLING CONTRACTOR: TEST AMERICA DRILLING CORPORATION
DRILLING METHOD: HSA	LOGGED BY: W. HAYES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
1–5	1				**FILL** Reddish brown to reddish orange, damp to moist, loose to dense silty fine to coarse sand (SM)			
5	2	50/6"	?		? ? ?	3.6		?
6–10	3				**MISSION VALLEY FORMATION** Gray, damp, very dense silty to clayey sand (SM- SC)			
10	4	50/2"			Whitish gray, damp, very hard sandy clay (CL)	12.3		
11–15	5							
15–16	6	16 14 43				21.2		
16–20					Yellowish brown to gray, damp to moist, soft sandy silt (ML)			
20–21	7	9 9 14				24.2		
21–25								Slow drilling rate (1ft/5 min.) at depth of 23.5'
25–26	8 9	50/4"				12.6		
26–27					Gray, damp to moist, very hard sandy silt (ML) with traces of clay			

NOTES:

Bottom of borehole at 27 feet

Seepage or groundwater not encountered at time of drilling

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-3

BORING NO. B-2

DATE OF DRILLING: FEBRUARY 8, 2008	TOTAL BORING DEPTH: 20 FEET
GENERAL LOCATION: SOUTHWEST CORNER OF STUDY AREA	
APPROXIMATE SURFACE ELEV.: + 390 FEET MSL	DRILLING CONTRACTOR: TEST AMERICA DRILLING CORPORATION
DRILLING METHOD: HSA	LOGGED BY: W. HAYES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
1–5	1				**FILL** Reddish orange, damp to moist, loose to medium dense silty sand (SM)			
6–8	2	11 15 23	?		**MISSION VALLEY FORMATION** Gray, damp, hard sandy silt (ML)	21.8		?
10–11	3	9 17 27				20.6		
15–16	4	9 14 16				18.5		
17–18	5				Gray to yellowish brown, damp to moist, hard sandy silt (ML)			
19–20	6	10 17 27				27.4		

NOTES:

Bottom of borehole at 20 feet

Seepage or groundwater not encountered at time of drilling

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-4

BORING NO. B-3

DATE OF DRILLING: FEBRUARY 8, 2008	TOTAL BORING DEPTH: 14 FEET
GENERAL LOCATION: NORTHEASTERN CORNER OF EAST SPORTS FIELD	
APPROXIMATE SURFACE ELEV.: + 388 FEET MSL	DRILLING CONTRACTOR: TEST AMERICA DRILLING CORPORATION
DRILLING METHOD: HSA	LOGGED BY: W. HAYES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
1–4					**FILL** Reddish brown, moist, loose to medium dense silty sand (SM) with cobble Increased cobble content at depth of 3'			
5	1	50/5"				4.0		
6–8	2				Gray, damp to moist, medium dense silty sand (SM) with gravel and cobble			
9			?		? ? ?			?
10	3	78/3"			**MISSION VALLEY FORMATION** Gray, damp, hard sandy silt (ML)			No sample recovery
11–14								

NOTES:

Refusal on rock at depth of 14' below the ground surface

Seepage or groundwater not encountered at time of drilling

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-5

BORING NO. B-4

DATE OF DRILLING: FEBRUARY 8, 2008	TOTAL BORING DEPTH: 20 FEET
GENERAL LOCATION: SOUTHWESTERN CORNER OF EAST SPORTS FIELD	
APPROXIMATE SURFACE ELEV.: + 388 FEET MSL	DRILLING CONTRACTOR: TEST AMERICA DRILLING CORPORATION
DRILLING METHOD: HSA	LOGGED BY: W. HAYES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
1–5					**FILL** Reddish orange, moist to wet, loose to medium dense silty sand (SM) with gravel and small asphaltic concrete fragments			
6–7	1	11 18 36			Reddish brown, wet, medium dense silty sand (SM) with gravel Cobble layer between depth of 6.5' to 9.5'	13.4		
10	2	30 50/3"	?		? ? ?	19.2	114.9	?
11–14					**MISSION VALLEY FORMATION** Gray, wet, hard sandy silt (ML)			
15–16	3	43 23 25				22.7		
17–18	4	50/4"			Abundant cobbles at depth of 17' to the maximum depth of exploration			No sample recovery
19–20								

NOTES:

Bottom of borehole at 20 feet

Minor seepage observed at approximate depth of 4 feet during the initial excavation with a hand-auger. Seepage no longer observed upon completion of the drilling operation. Groundwater not encountered at time of drilling.

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-6

BORING NO. B-5

DATE OF DRILLING: FEBRUARY 8, 2008	TOTAL BORING DEPTH: 20 FEET
GENERAL LOCATION: PARKING LOT ON WEST SIDE OF CABRILLO HEIGHTS PARK	
APPROXIMATE SURFACE ELEV.: + 392 FEET MSL	DRILLING CONTRACTOR: TEST AMERICA DRILLING CORPORATION
DRILLING METHOD: HSA	LOGGED BY: W. HAYES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
					PAVEMENT: 4" A.C. over 6" of indeterminate base			
1–7	1	45 50/3"	?		**FILL** Yellowish brown, damp to moist, loose to medium dense silty sand (SM) with gravel and occasional cobble Abundant cobbles at depth of 3.5' Yellowish brown, damp to moist, medium dense silty sand (SM) with gravel and occasional cobble Abundant cobbles at depth of 7.5'	6.8		
8–11	2	21 26			**MISSION VALLEY FORMATION** Yellowish brown to gray, damp, hard mottled sandy silt (ML)	19.6	100.9	
12–16	3	5 7 11			Yellowish brown to gray, damp to moist, soft sandy silt (ML)	25.1		
17–19	4	20 34			Ground becomes hard	16.3	103.2	
20								

NOTES:

Bottom of borehole at 20 feet

Seepage or groundwater not encountered at time of drilling

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-7

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

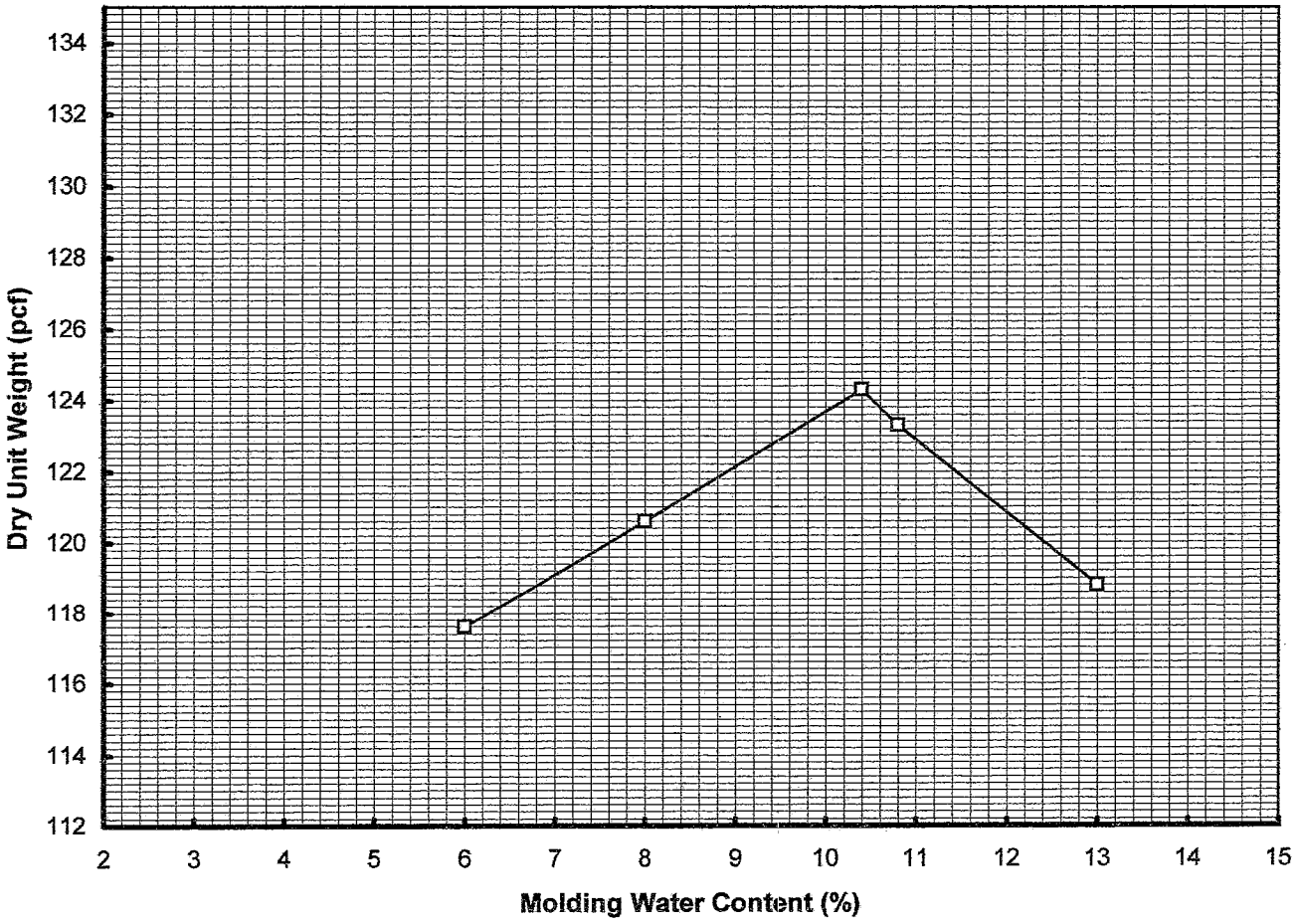
Selected soil samples were tested in the laboratory to verify visual field classifications and to evaluate certain engineering characteristics. The testing was performed in accordance with the American Society for Testing and Materials (ASTM) or other generally accepted test methods, and included the following:

- Determination of in-place dry density and moisture content (ASTM D2937) based on relatively undisturbed drive samples. The final test results are presented on the boring logs;
- Compaction Tests (ASTM D1557), and the test results are presented on Figures B-1 and B-2;
- Sieve and Hydrometer analyses (ASTM D422), and the final test results are plotted as gradation curves on Figures B-3 and B-4.

COMPACTION CURVE

Test Method: ASTM D 1557-00

Compaction Procedure: [A] Specimen Preparation Method: [X] Moist or [ ] Dry



Sample No.	Sample Type	Depth (ft)	OPT. WC (%)	MAX. DUW (pcf)	LL	PI	Description and/or Classification
1-1	BULK	2-4	10.4	124.3			Reddish orange silty sand (SM)

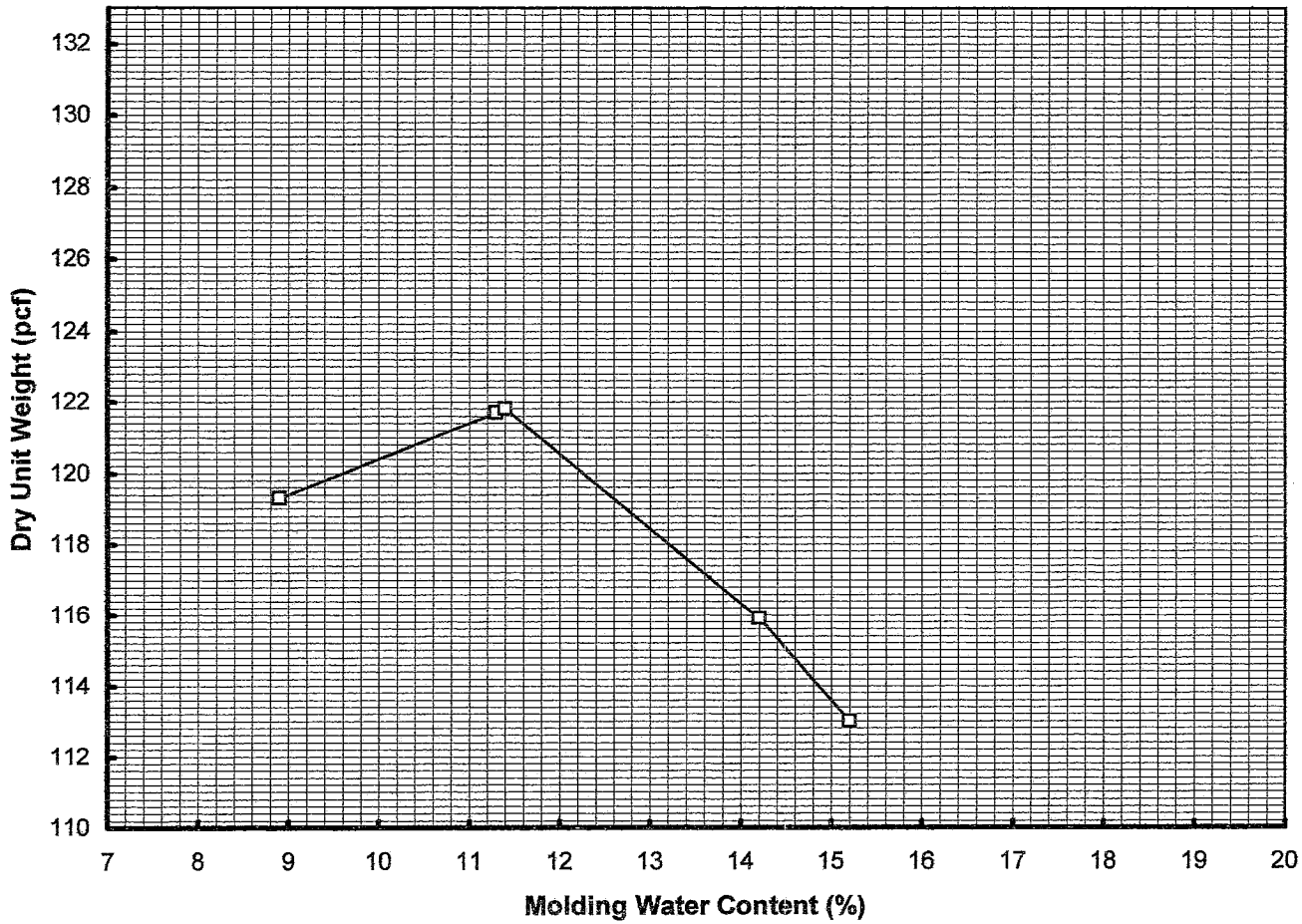
CITY OF SAN DIEGO LID PROJECT - CABRILLO HEIGHTS PARK
SAN DIEGO, CALIFORNIA

PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE B-1

COMPACTION CURVE

Test Method: ASTM D 1557-00

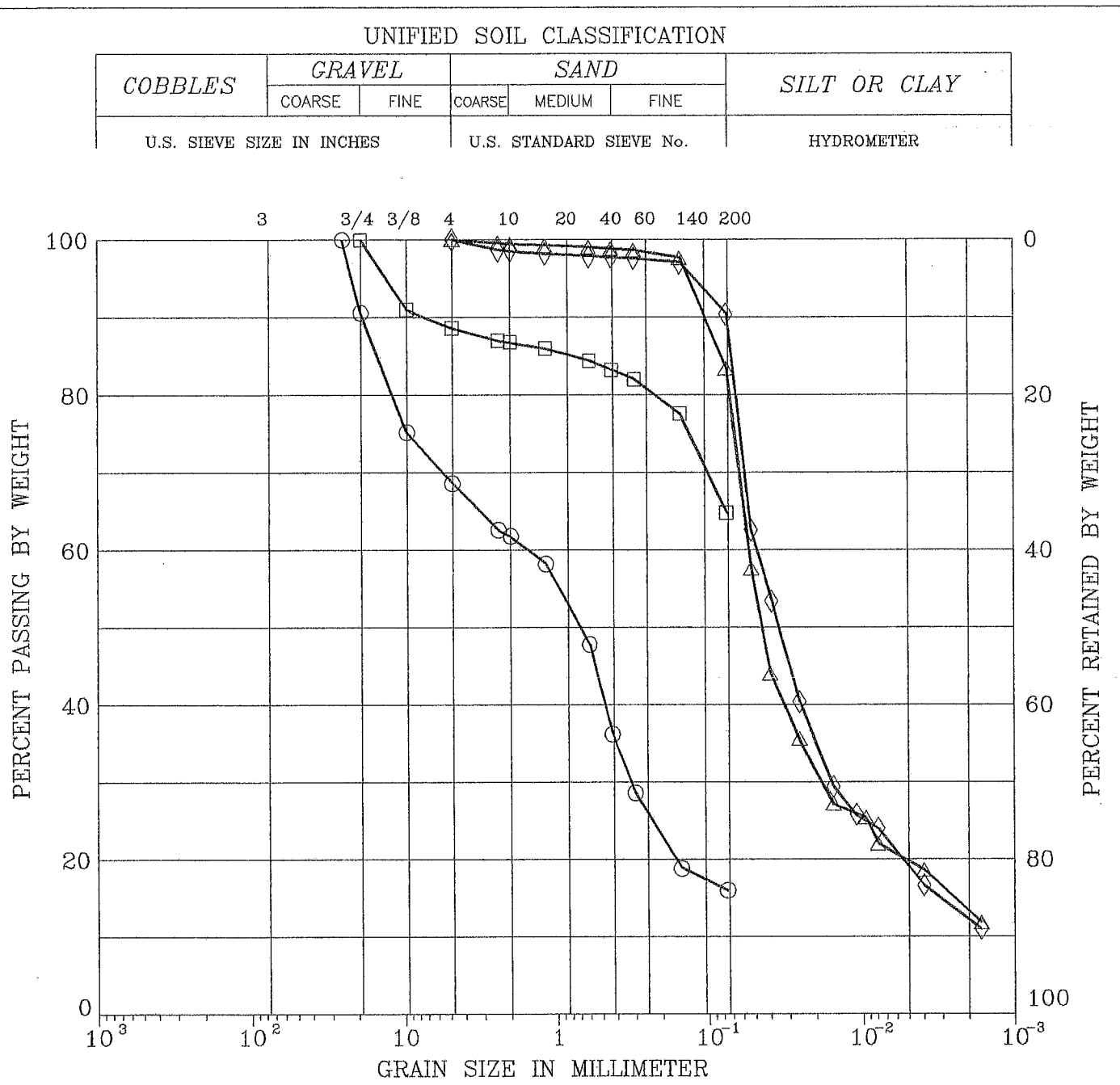
Compaction Procedure: [A] Specimen Preparation Method: [X] Moist or [ ] Dry



Sample No.	Sample Type	Depth (ft)	OPT. WC (%)	MAX. DUW (pcf)	LL	PI	Description and/or Classification
1-5	Bulk		11.4	121.8			Gray brown sandy silt

CITY OF SAN DIEGO LID PROJECT - CABRILLO HEIGHTS PARK
SAN DIEGO, CALIFORNIA

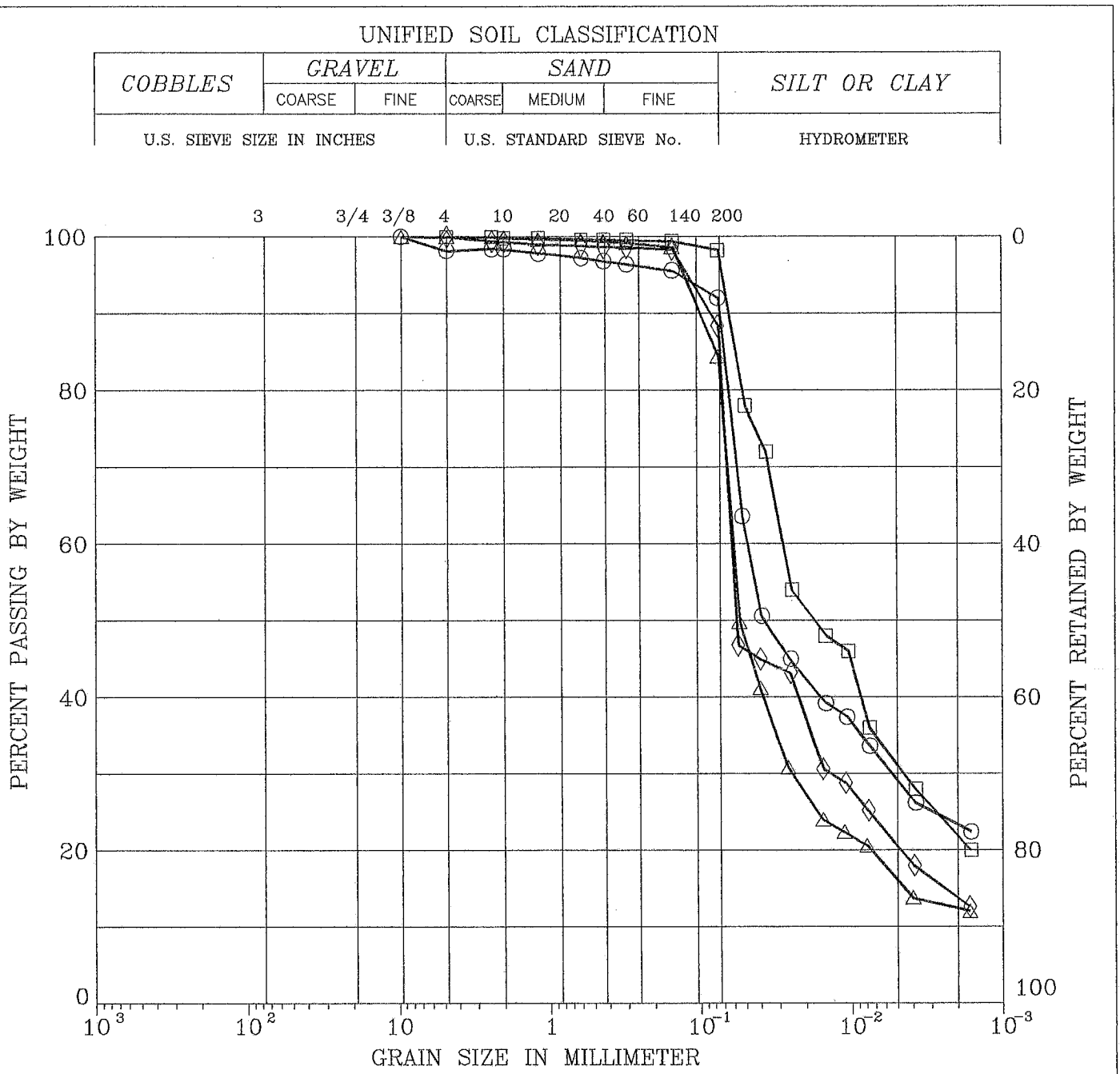
PROJECT NO. 109 GS-05-C	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE B-2



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	1–2	5–5.5			SILTY SAND (SM)
□	1–4	10–10.5			SANDY SILT (ML–CL)
△	1–6	15–16.5			SANDY SILT TO SANDY CLAY(ML–CL)
◇	1–7	20–21.5			SANDY TO SILTY CLAY (ML–CL)

Remark :

Project No.	CITY OF S.D. LID – CABRILLO HEIGHTS PARK
ALLIED GEOTECHNICAL ENGINEERS, INC.	GRAIN SIZE DISTRIBUTION Figure B–3



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	1–9	25			SANDY SILT TO CLAYEY SILT (ML–CL)
□	2–2	5–6.5			SANDY SILT TO CLAYEY SILT (ML–CL)
△	2–4	15–16.5			SANDY CLAY (ML)
◇	2–6	18–19.5			SANDY TO CLAYEY SILT (ML–CL)

Remark :

Project No.	CITY OF S.D. LID – CABRILLO HEIGHTS PARK
ALLIED GEOTECHNICAL ENGINEERS, INC.	GRAIN SIZE DISTRIBUTION Figure B–4

APPENDIX D

STRUCTURAL CALCULATIONS
FOR PRE-FABRICATED SHADE STRUCTURES
BY
BURKETT & WONG
DATED OCTOBER 24, 2012

BURKETT&WONG
ENGINEERS

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Engr: C. Cobb

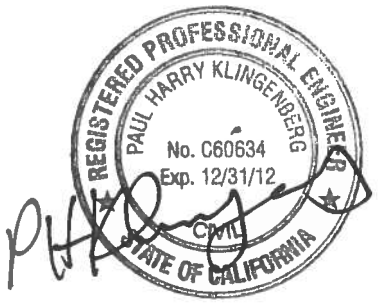
Date: October 24, 2012

Job No: 10655A

STRUCTURAL CALCULATIONS

FOR

Cabrillo Park – Footing Design
SAN DIEGO, CA



PREPARED FOR
KTUA
3916 Normal Street
San Diego, CA 92103

DATE 10/12
ENGR CC
PROJECT CAB. HTS.

BURKETT&WONG ENGINEERS

SHEET
JOB NO

DESIGN PARAMETERS

q = 1500 psf (SHALLOW FDNS)

lateral resistance = 200 pcf

SITE CLASS D

S_{DS} = 0.918 g I = 1.0 $V = \frac{0.918}{1.5} = 0.612$

EXP. C

OCC II

I = 1.0

V = 85 mph

$q_h = 0.00256(K_z)(k_d)(k_{zt})(V^2)(I)$

$= 0.00256(0.85)(0.85)(0.85)(85)^2$

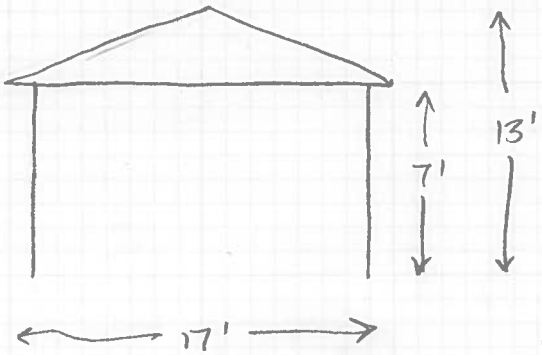
$= 11.359$ psf

LOADS

$F = q_z G C_f A_f$ (6-28, ASCE 7-05)

$= (11.359)(0.85)(2.0)$ ← CONSERVATIVE

$= 19.31$



$F = 19.31(6 \times 17 \times 1/2)$

$= 406$ lbs.

$M_o = 1.6(406)(13 \text{ ft})$

$= 8.45$ k-ft

M_o/FOOTING ~ 2.11 k-ft

USE 3.82 from MANUF.

UPLIFT = $19.31(17 \times 17) = 5.60$ k

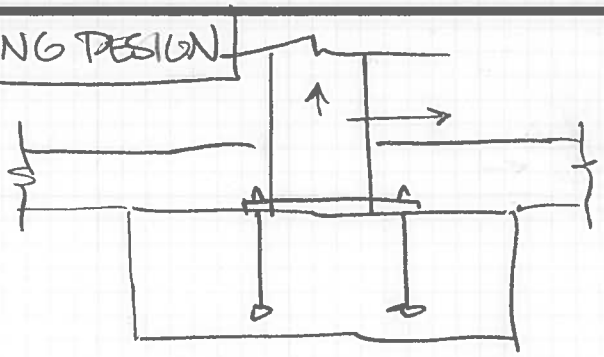
$M_o = 9.60(17/2) = 47{,}435$ lb-ft

DATE 10/12 | BURKETT&WONG ENGINEERS | SHEET

ENGR CL | JOB NO

PROJECT CAB. HTS

FOOTING DESIGN



UPLIFT = 2.81 k ASD

OVERTURN = 3.82 k·ft ASD

SHEAR = .400 ASD

$1.5M_O = 1.5(47,435) = 71,152$

$M_R = 0.15(3\times3\times16/12)(2)(17) + 0.15(3\times3\times4/12)(2)(17)$

$= 76.5$ k·ft

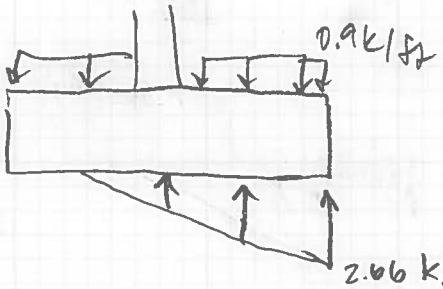
∴ USE 3'x3'x16"

$e = M/P = \dfrac{3.96/4}{(0.15\times3\times3\times1.06)+0.76} = 0.33$

$q = \dfrac{2P}{3a} = \dfrac{2(4.36)}{3(1.2)} = 2.43$ k·ft

$2.66/b = 2.66/A = 0.6666$ k/ft²

<1500 psf OK



$M_A = \dfrac{(2.66\times2^2)}{2} - \dfrac{(0.9\times2^2)}{2} - \dfrac{0.97\times2^2}{6}$

$= 2.87$

$\phi 1.4 M_A = 8.85$

$R = 43.7 \longrightarrow \rho =$ USE 0.0018

$A_{s,min} = 0.324$

USE 5 #5 EA WAY.

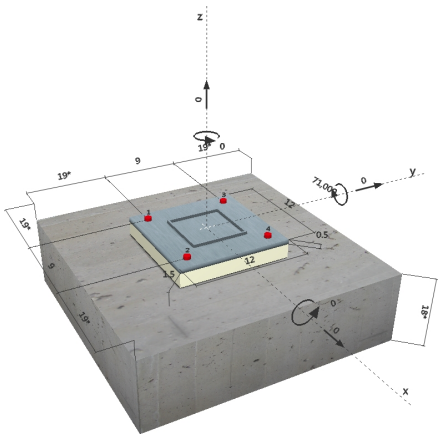
Company:		Page:	1
Specifier:		Project:	Anchor Bolts at Shelter
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/24/2012
E-Mail:			

Specifier's comments:

1 Input data

Anchor type and diameter:	**Hex Head ASTM F 1554 GR. 36 3/4**
Effective embedment depth:	h_{ef} = 9.000 in.
Material:	ASTM F 1554
Proof:	design method ACI 318 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.0; e_b = 1.500 in.; t = 0.500 in.
	Hilti Grout: CB-G EG, epoxy, $f_{c,Grout}$ = 14939 psi
Anchor plate:	l_x x l_y x t = 12.000 in. x 12.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Square HSS (AISC); (L x W x T) = 6.000 in. x 6.000 in. x 0.188 in.
Base material:	cracked concrete, 2500, f_c' = 2500 psi; h = 18.000 in.
Reinforcement:	tension: condition B, shear: condition B;
	edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	no

Geometry [in.] & Loading [lb, in.lb]



2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Pullout Strength	3665	9156	41 / -	OK
Shear	-	-	-	- / -	-

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	-	-	-	-	-

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Company:		Page:	2
Specifier:		Project:	Anchor Bolts at Shelter
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/24/2012
E-Mail:			

Fastening meets the design criteria!

4 Remarks; Your Cooperation Duties

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this office and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass. Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction. Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved.

7.1.6. Utility Trench Backfill

Based on our subsurface evaluation, the onsite earth materials should be generally suitable for re-use as trench backfill provided they are free of organic material, clay lumps, debris, and rocks greater than approximately 3 inches in diameter. We recommend that trench backfill materials be in conformance with the "Greenbook" (Standard Specifications for Public Works) specifications for structure backfill. Fill should be moisture-conditioned to generally above the laboratory optimum. Trench backfill should be compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557 except for the upper 12 inches of the backfill that should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

7.2. FOUNDATION RECOMMENDATIONS

Based on our understanding of the project it is anticipated that the proposed shade shelter will be supported on conventional spread footings founded entirely on compacted fill materials. The following foundation design parameters are provided based on our preliminary analysis and may be modified based on the results of the field investigation and geotechnical laboratory testing currently underway.

7.2.1. Shallow Foundations

The proposed structures may be founded on conventional spread footings using an allowable bearing capacity of 1,500 pounds per square foot (psf). This allowable bearing capacity may be increased by one-third when considering loads of a short duration such as wind or seismic forces. Thickness and reinforcement of the mat foundation should be in accordance with the recommendations of a structural engineer.

Foundations should have an embedment depth of 18 inches or more below the lowest adjacent grade. Continuous footings should be 15 or more inches wide and spread foundations should be 24 or more inches square. Footings should be reinforced in accordance with the structural engineer's recommendations. From a geotechnical standpoint, we recommend that footings founded in low expansive granular materials be reinforced with four No. 4 or larger reinforcing bars, two placed near the top and two near the bottom of the footings.

7.2.2. Foundation Lateral Resistance

For resistance of foundations to lateral loads, we recommend an allowable passive pressure exerted by an equivalent fluid weight of 200 pounds per cubic foot (pcf) with a value up to 2,000 psf be used. This value assumes that the ground is horizontal for a distance of 10 feet or more, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil and concrete. If passive pressure and frictional resistance are to be used in combination, we recommend that the friction coefficient be reduced by two-thirds. The passive pressure values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

7.2.3. Settlement

We estimate that the proposed structure, designed and constructed as recommended herein, will undergo total settlements of less than approximately 1 inch. Differential settlements are typically less than about one-half of the total settlement.

7.3. Seismic Design Parameters

Design of the proposed improvements should comply with design for structures located in Seismic Zone 4 and should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the preliminary seismic design parameters for the site in accordance to CBC (2010) and mapped spectral acceleration parameters (United States Geological Survey [USGS], 2009).

Table 2 – 2010 California Building Code Seismic Design Criteria

Factors	Values
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Mapped Short Period Spectral Acceleration, S_S	1.376g
Mapped One-Second Period Spectral Acceleration, S_1	0.505g
Short Period Spectral Acceleration Adjusted For Site Class, S_{MS}	1.376g
One-Second Period Spectral Acceleration Adjusted For Site Class, S_{M1}	0.757g
Design Short Period Spectral Acceleration, S_{DS}	0.918g
Design One-Second Period Spectral Acceleration, S_{D1}	0.505g

7.4. Concrete Flatwork

Exterior concrete flatwork should be 4 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 24 inches on-center both ways. No vapor retarder is needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the structural engineer. Exterior slabs should be underlain by 4 inches of clean sand. The subgrade soils should be scarified to a depth of 12 inches, moisture conditioned to generally above the laboratory optimum moisture content, and compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Positive drainage should be established and maintained adjacent to flatwork.

7.5. Corrosion

Laboratory testing was performed on a representative sample of the onsite earth materials to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with California Test (CT) 643 and the sulfate and chloride content tests were performed in accordance with CT 417 and CT 422, respectively. These laboratory test results are presented in Appendix B.

The results of the corrosivity testing indicated an electrical resistivity value of 4,600 ohm-cm, soil pH of 7.8, chloride content of 21 parts per million (ppm) and a sulfate content of 0.002 percent (i.e., 21 ppm). Based on Caltrans (2003) corrosion criteria, the onsite soils would not be classified as corrosive, which is defined as soils with more than 500 ppm chlorides, more than 0.2 percent sulfates, or a pH less than 5.5. We recommend that the corrosivity of site soils be further evaluated by a corrosion engineer.

DATE 10/12

ENGR CC

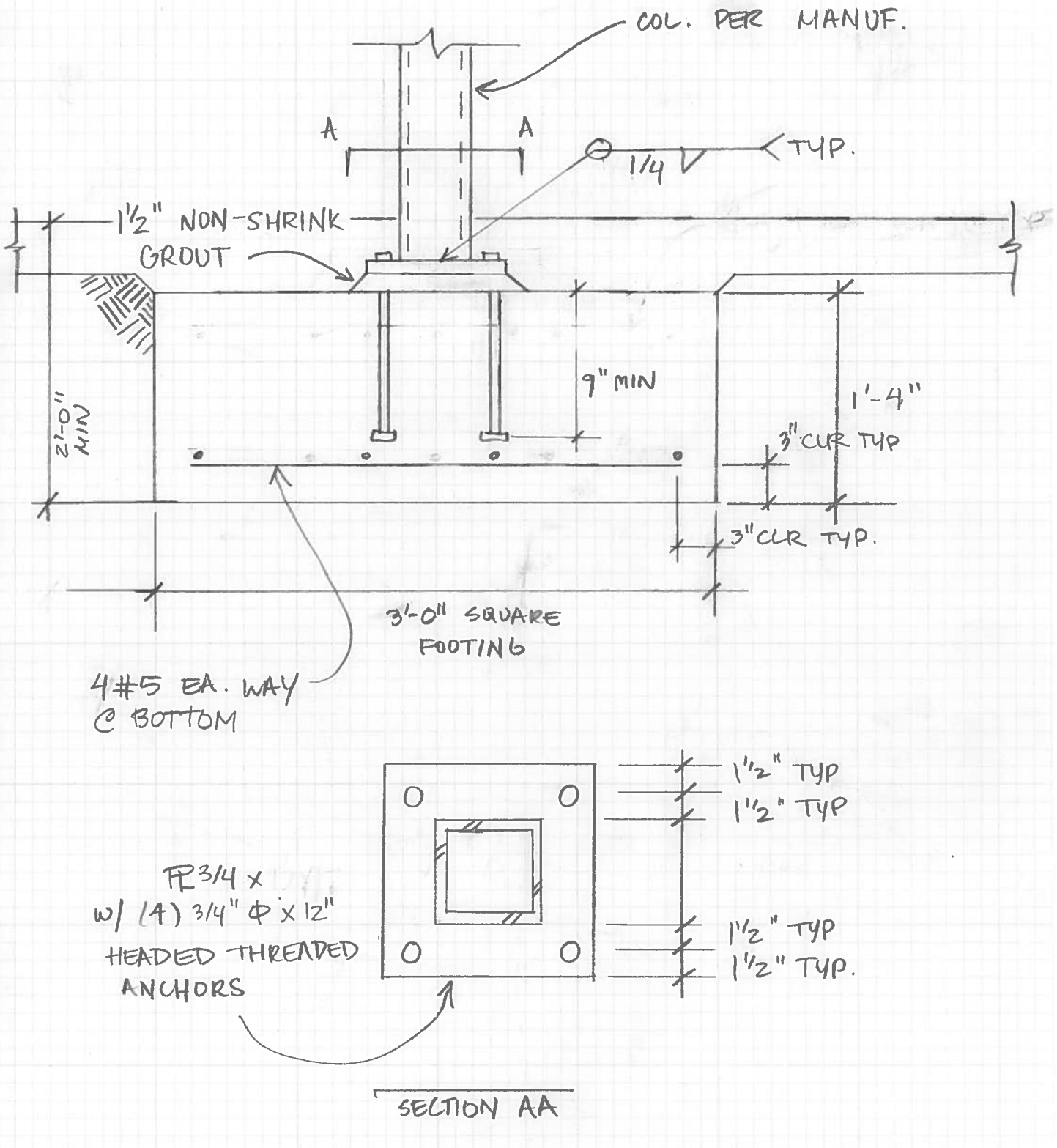
PROJECT CAB. HTS.

BURKETT&WONG ENGINEERS

SHEET

JOB NO

ICON SHELTER SYSTEM FOUNDATION



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Engr: C. Cobb

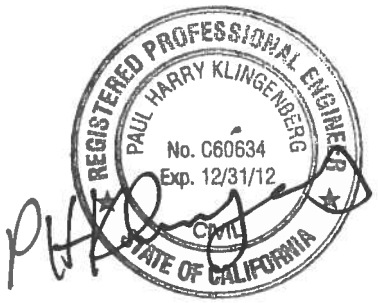
Date: October 24, 2012

Job No: 10655A

STRUCTURAL CALCULATIONS

FOR

Cabrillo Park – Footing Design
SAN DIEGO, CA



PREPARED FOR
KTUA
3916 Normal Street
San Diego, CA 92103

DESIGN PARAMETERS

q = 1500 psf (SHALLOW FDNS)

lateral resistance = 200 pcf

SITE CLASS D

S_{DS} = 0.918 g I = 1.0 $V = \frac{0.918}{1.5} = 0.612$

EXP. C

OCC II

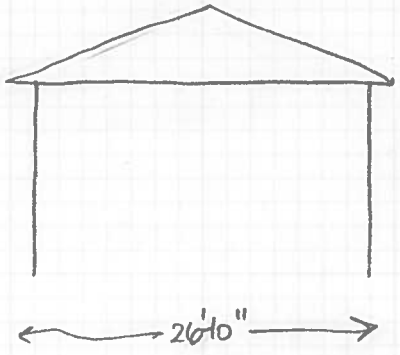
I = 1.0

V = 85 mph

$$q_h = 0.00256(K_z)(k_d)(k_{zt})(V^2)(I)$$
$$= 0.00256(0.85)(0.85)(0.85)(85)^2$$
$$= 11.359 \text{ psf}$$

LOADS

$$F = q_z G C_f A_f \quad \text{(6-28, ASCE 7-05)}$$
$$= (11.359)(0.85)(2.0) \leftarrow \text{CONSERVATIVE}$$
$$= 19.31$$



$F = 19.31(26 \times 7x'1/2)(2)$
$= 3{,}514$ lbs.

$M_o = 3.514(8)$
$= 28.1$ k·ft

$1.5M_o = 42.15$

$M_R = 2(4x4x2 \times 0.15)(20) = 192$ ft·k OK

∴ 4x4x1½ OK @ 20' SHELTER

UPLIFT $= 19.31(26 \times 26)(1.3) = 16.97$

4 FTGS $= (4 \times 4 \times 2)(0.15)(4 \text{ FTGS}) = 19.2$ k

UPLIFT OK

DATE 10/12

ENGR CC

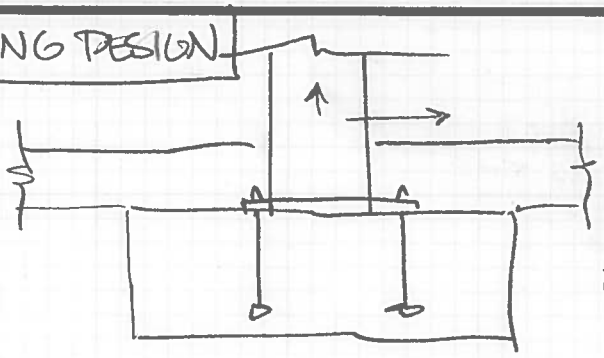
PROJECT CAB. HTS

BURKETT&WONG ENGINEERS

SHEET

JOB NO

FOOTING DESIGN



~~UPLIFT = 2.81 k ASD~~

~~OVERTURN = 9.82 K-FT ASD~~

~~SHEAR = .100 ASD~~

$F = 19.31\,(17 \times 7 \times 1/2)(2)$

$= 2298\ \#$

$M_O = 2298(8) = 18383$ lb-ft

$1.5M_O = 27.6$ k-ft

$M_R = (2)(3 \times 3 \times 16/12)(0.15)(17)$

$M_R = 61.2$ k-ft

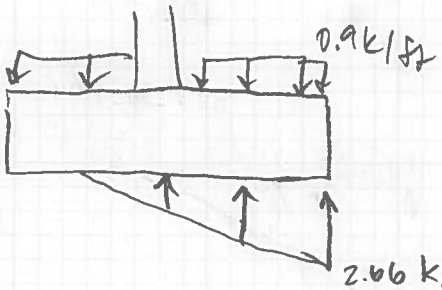
$\therefore$ USE 3'x3'x16" @ 17' SHELTER

$e = M/P = \dfrac{3.96/4}{(0.15 \times 3 \times 3 \times 1.66) + 0.76} = 0.33$

$q = \dfrac{2P}{3a} = \dfrac{2(4.36)}{3(1.2)} = 2.43$ k-ft

$2.66/b = 2.66/A = 0.6666$ k/ft^2

<1500 psf OK



$M_A = \dfrac{(2.66 \times 2^2)}{2} - \dfrac{(0.9 \times 2^2)}{2} - \dfrac{0.97 \times 2^2}{6}$

$= 2.87$

$\phi 1.4 M_A = 8.85$

$R = 43.7 \longrightarrow \rho =$ USE 0.0018

$A_{s,min} = 0.324$

USE 5 #5 EA WAY.

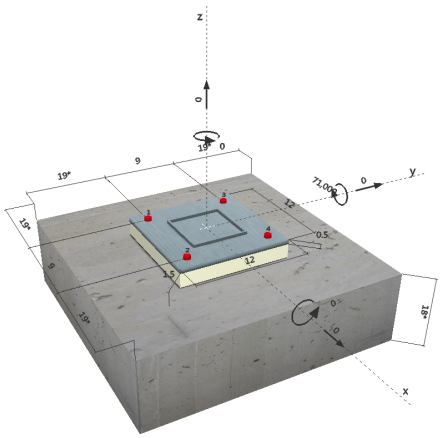
Company:		Page:	1
Specifier:		Project:	Anchor Bolts at Shelter
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/24/2012
E-Mail:			

Specifier's comments:

1 Input data

Anchor type and diameter:	**Hex Head ASTM F 1554 GR. 36 3/4**
Effective embedment depth:	h_{ef} = 9.000 in.
Material:	ASTM F 1554
Proof:	design method ACI 318 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.0; e_b = 1.500 in.; t = 0.500 in.
	Hilti Grout: CB-G EG, epoxy, $f_{c,Grout}$ = 14939 psi
Anchor plate:	l_x x l_y x t = 12.000 in. x 12.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Square HSS (AISC); (L x W x T) = 6.000 in. x 6.000 in. x 0.188 in.
Base material:	cracked concrete, 2500, f_c' = 2500 psi; h = 18.000 in.
Reinforcement:	tension: condition B, shear: condition B;
	edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	no

Geometry [in.] & Loading [lb, in.lb]



2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Pullout Strength	3665	9156	41 / -	OK
Shear	-	-	-	- / -	-

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	-	-	-	-	-

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Company:		Page:	2
Specifier:		Project:	Anchor Bolts at Shelter
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/24/2012
E-Mail:			

Fastening meets the design criteria!

4 Remarks; Your Cooperation Duties

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

this office and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass. Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction. Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved.

7.1.6. Utility Trench Backfill

Based on our subsurface evaluation, the onsite earth materials should be generally suitable for re-use as trench backfill provided they are free of organic material, clay lumps, debris, and rocks greater than approximately 3 inches in diameter. We recommend that trench backfill materials be in conformance with the "Greenbook" (Standard Specifications for Public Works) specifications for structure backfill. Fill should be moisture-conditioned to generally above the laboratory optimum. Trench backfill should be compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557 except for the upper 12 inches of the backfill that should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

7.2. FOUNDATION RECOMMENDATIONS

Based on our understanding of the project it is anticipated that the proposed shade shelter will be supported on conventional spread footings founded entirely on compacted fill materials. The following foundation design parameters are provided based on our preliminary analysis and may be modified based on the results of the field investigation and geotechnical laboratory testing currently underway.

7.2.1. Shallow Foundations

The proposed structures may be founded on conventional spread footings using an allowable bearing capacity of 1,500 pounds per square foot (psf). This allowable bearing capacity may be increased by one-third when considering loads of a short duration such as wind or seismic forces. Thickness and reinforcement of the mat foundation should be in accordance with the recommendations of a structural engineer.

Foundations should have an embedment depth of 18 inches or more below the lowest adjacent grade. Continuous footings should be 15 or more inches wide and spread foundations should be 24 or more inches square. Footings should be reinforced in accordance with the structural engineer's recommendations. From a geotechnical standpoint, we recommend that footings founded in low expansive granular materials be reinforced with four No. 4 or larger reinforcing bars, two placed near the top and two near the bottom of the footings.

7.2.2. Foundation Lateral Resistance

For resistance of foundations to lateral loads, we recommend an allowable passive pressure exerted by an equivalent fluid weight of 200 pounds per cubic foot (pcf) with a value up to 2,000 psf be used. This value assumes that the ground is horizontal for a distance of 10 feet or more, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil and concrete. If passive pressure and frictional resistance are to be used in combination, we recommend that the friction coefficient be reduced by two-thirds. The passive pressure values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

7.2.3. Settlement

We estimate that the proposed structure, designed and constructed as recommended herein, will undergo total settlements of less than approximately 1 inch. Differential settlements are typically less than about one-half of the total settlement.

7.3. Seismic Design Parameters

Design of the proposed improvements should comply with design for structures located in Seismic Zone 4 and should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the preliminary seismic design parameters for the site in accordance to CBC (2010) and mapped spectral acceleration parameters (United States Geological Survey [USGS], 2009).

Table 2 – 2010 California Building Code Seismic Design Criteria

Factors	Values
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Mapped Short Period Spectral Acceleration, S_S	1.376g
Mapped One-Second Period Spectral Acceleration, S_1	0.505g
Short Period Spectral Acceleration Adjusted For Site Class, S_{MS}	1.376g
One-Second Period Spectral Acceleration Adjusted For Site Class, S_{M1}	0.757g
Design Short Period Spectral Acceleration, S_{DS}	0.918g
Design One-Second Period Spectral Acceleration, S_{D1}	0.505g

7.4. Concrete Flatwork

Exterior concrete flatwork should be 4 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 24 inches on-center both ways. No vapor retarder is needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the structural engineer. Exterior slabs should be underlain by 4 inches of clean sand. The subgrade soils should be scarified to a depth of 12 inches, moisture conditioned to generally above the laboratory optimum moisture content, and compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Positive drainage should be established and maintained adjacent to flatwork.

7.5. Corrosion

Laboratory testing was performed on a representative sample of the onsite earth materials to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with California Test (CT) 643 and the sulfate and chloride content tests were performed in accordance with CT 417 and CT 422, respectively. These laboratory test results are presented in Appendix B.

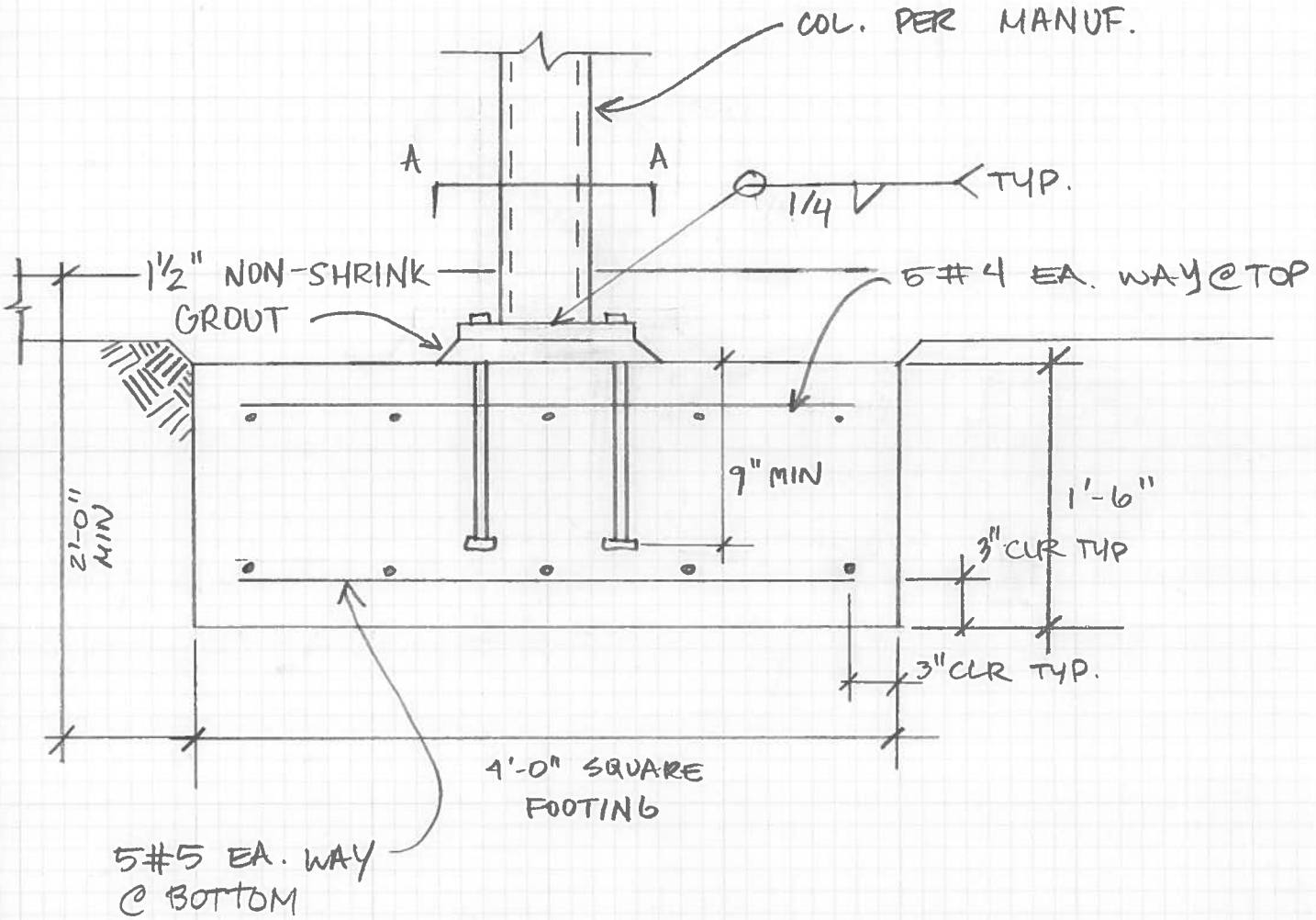
The results of the corrosivity testing indicated an electrical resistivity value of 4,600 ohm-cm, soil pH of 7.8, chloride content of 21 parts per million (ppm) and a sulfate content of 0.002 percent (i.e., 21 ppm). Based on Caltrans (2003) corrosion criteria, the onsite soils would not be classified as corrosive, which is defined as soils with more than 500 ppm chlorides, more than 0.2 percent sulfates, or a pH less than 5.5. We recommend that the corrosivity of site soils be further evaluated by a corrosion engineer.

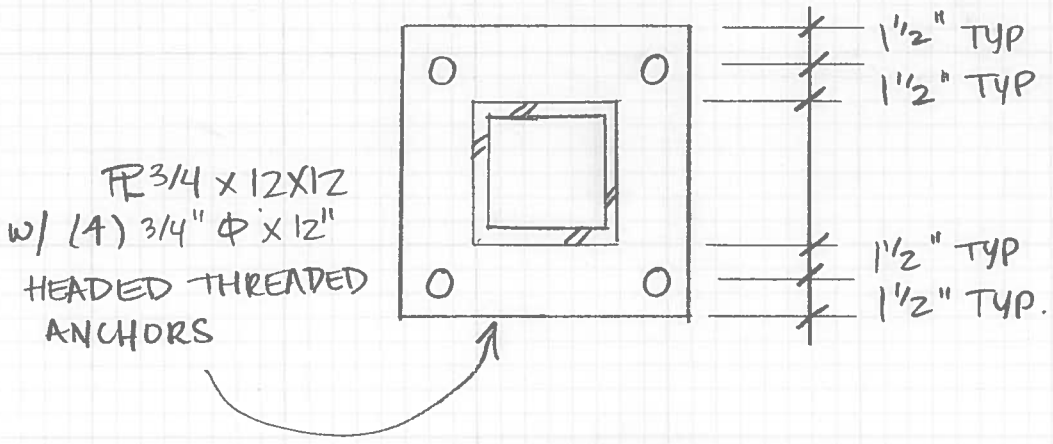
DATE 10/12
ENGR CC
PROJECT CAB. HTS.

BURKETT&WONG ENGINEERS

SHEET
JOB NO

ICON SHELTER SYSTEM FOUNDATION





SECTION AA

APPENDIX E

LIMITED GEOTECHNICAL EVALUATION
CABRILLO HEIGHTS NEIGHBORHOOD PARK
BY
NOVA ENGINEERING AND ENVIRONMENTAL
DATED FEBRUARY 18, 2011

LIMITED GEOTECHNICAL EVALUATION
IMPROVEMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

PREPARED FOR:
KTU+A Landscape Architects
3916 Normal Street
San Diego, California

PREPARED BY:
NOVA Engineering and Environmental
4373 Viewridge Ave, Ste. B
San Diego, California 92123

February 18, 2011
Project No. 10125-2010066.000

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Mr. Kurt Carlson
KTU+A Landscape Architects
3916 Normal Street
San Diego, California

February 18, 2011
Project No. 10125-2010066.000

Subject: Limited Geotechnical Evaluation
Cabrillo Heights Neighborhood Park Improvements and Rain Gardens
City of San Diego, California

References: See Appendix A

Dear Mr. Carlson,

Pursuant to your request, NOVA Engineering and Environmental, LLC (NOVA) has prepared this limited geotechnical evaluation for the proposed improvements and rain gardens at the Cabrillo Heights Neighborhood Park in San Diego, California. This report presents our geotechnical findings, conclusions, and recommendations regarding the proposed development.

We appreciate the opportunity to be of service in this project. Should you have any questions please do not hesitate to contact the undersigned.

Respectfully submitted,
NOVA Engineering and Environmental

Bryan Miller-Hicks, CEG1323
Engineering Geologist

Andres Bernal, GE 2715
Principal Geotechnical Engineer

Cristian A. Liang
Staff Engineer

Distribution: (3) Addressee

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Appendices

1. INTRODUCTION

In accordance with your request, NOVA Engineering and Environmental, LLC's (NOVA) has performed a limited geotechnical evaluation for the proposed improvements and rain gardens at the Cabrillo Heights Neighborhood Park. The subject site is located at 8303 Hurlbut Street, in the City of San Diego, California as shown in Figure 1, Site Location Map.

2. SCOPE OF WORK

NOVA's scope of work for this limited geotechnical evaluation included the following:

- Reviewing background information including available geotechnical reports and geologic maps.
- Excavating, logging and sampling of three test pits at the areas of proposed improvements.
- Performing two percolation tests at the proposed rain garden locations.
- Laboratory testing of bulk samples of onsite materials. Testing included sieve analysis, direct shear, and chemical/resistivity analysis.
- Preparing earthwork guidelines.
- Providing design recommendations for shallow foundation systems.
- Preparing this limited geotechnical investigation report presenting the results of our background review, subsurface evaluation, geotechnical laboratory testing, and preliminary recommendations for design and construction of the proposed project

3. SITE AND PROJECT DESCRIPTION

The Cabrillo Neighborhood Park is located in an approximately 13-acre site bordered by Kearny Villa Road to the west, Hurlbut Street to the south, apartment buildings and a church to the north and Angier Elementary School to the east. Currently the site is occupied by a baseball field, restroom buildings and maintenance facilities, concrete and unpaved walkways, and paved parking areas. Vegetation consists of grass and isolated trees. Site topography is mildly undulating with elevations ranging from approximate El. 389 to 407 feet above mean sea level (msl).

Based on our discussions with the design team and review of the concept plan (KTU+A, 2011), we understand that the proposed improvements at the Cabrillo Heights Neighborhood Park will include two new rain garden locations at the northeast and southwest corners of the site and the construction of a large shade shelter structure in the south central area of the park. It is anticipated that the shade structure will be lightly loaded with column loads not exceeding 10 kips.

4. FIELD INVESTIGATION AND LABORATORY TESTING

Our subsurface exploration at the subject site was conducted between January 13 and 14, 2011. The exploratory work consisted of manually excavating three test pits labeled TP-1 through TP-3 at the approximate locations shown in Figure 2, Exploration Location Map.

The test pits extended to depths of approximately 3 feet below existing ground surface (bgs). Groundwater was not encountered during our exploration. Bulk soil samples were obtained at various depths in the exploratory test pits. The samples were examined and classified according to the Unified Soil Classification System (USCS). Logs of the subsurface conditions encountered were recorded by a NOVA representative. The test pit logs are presented in Appendix B.

The recovered soil samples were transported to our laboratory for analysis and testing. Geotechnical laboratory testing included gradation (sieve) analysis, and chemical analyses to determine soluble sulfate, chloride, pH and resistivity for evaluation of the soil corrosivity on construction materials. The laboratory test results are presented in Appendix C.

5. SITE GEOLOGY

Geologic units encountered during our subsurface evaluation include undocumented artificial fill and Mission Valley Formation materials. Detailed descriptions of the earth units encountered are provided in Appendix A and generalized descriptions are provided in the subsequent sections.

5.1. Artificial Fill – Undocumented

During our subsurface exploration, undocumented fill was observed extending to a depth of 2 feet bgs at test pit locations TP-1 and TP-2 and to the depth explored of 3 feet bgs in test pit TP-3. The extent of fill materials at location TP-3 may be established through additional field exploration with an excavator or drilling equipment. The undocumented fill generally consisted of brown to grayish brown, moist, silty to clayey sand with trace cobble.

5.2. Mission Valley Formation

Mission Valley Formation materials consisting of reddish brown, moist, silty sand with trace clay and cobble were encountered underlying fill materials at test pit locations TP-1 and TP-2. Based on exploratory data from Allied Geotechnical Engineers (AGE, 2008), sandstones and siltstones with localized conglomeratic beds and cemented lenses associated with the Mission Valley Formation underlie the reddish brown silty sand throughout the park site.

5.3. Groundwater

Groundwater was not encountered during our exploratory work. We anticipate that the groundwater table is in excess of 50 feet below the existing surface grades. Fluctuations in the groundwater level and local perched conditions may occur due to variations in ground surface topography, subsurface geologic conditions and structure, rainfall, irrigation, and other factors.

6. PERCOLATION TESTING

Percolation testing was performed within test pits TP-1 and TP-2 at the proposed rain garden locations. Testing was conducted in accordance with County of San Diego (2010) guidelines to evaluate the percolation rates of existing subgrade soils for use in rain garden design. The test holes were pre-soaked after excavation on January 13, 2011. Testing was performed by NOVA representatives on January 14, 2011. The excavations were backfilled with soil cuttings after completion. The results of the tests are summarized on Table 1. Detailed information regarding the percolation tests is presented in Appendix D.

Table 1 - Summary of Percolation Test Results

Test Location	Soil Description	Depth Below Existing Grade (feet)	Average Percolation Rate minutes per inch (mpi)
TP-1	Reddish brown silty SAND (SM)	3	42
TP-2	Reddish brown silty SAND (SM)	3	27

Percolation testing was performed previously by AGE (2008) at six locations and various depths in the vicinity of test pit TP-2. Their test results indicate soil percolation rates ranging from 37 to 87 mpi in sandy materials and 330 to 420 mpi in sandstones and siltstones of the Mission Valley Formation.

7. RECOMMENDATIONS

Based on our understanding of the project, the following recommendations are provided for the design and construction of the improvements at Cabrillo Neighborhood Park. Site improvements should be constructed in accordance with the requirements of the applicable governing agencies.

7.1. Earthwork

In general, earthwork should be performed in accordance with the recommendations presented in this report.

7.1.1. Site Preparation

Site preparation should begin with the removal, utility lines, asphalt, concrete, and other deleterious debris from areas to be graded. Clearing and grubbing should extend to the outside of the proposed excavation and fill areas. The debris and unsuitable material generated during clearing and grubbing should be removed from areas to be graded and disposed of at a legal dumpsite away from the project area.

7.1.2. Excavation Characteristics

The results of our field exploration program indicate that the project site, as presently proposed, is underlain by fill, and Mission Valley Formation materials. These materials should be generally excavatable with heavy-duty earth moving equipment in good working

condition. Conglomeratic beds and cemented zones within the Mission Valley Formation may require heavy ripping or breaking equipment.

7.1.3. Remedial Grading

The upper portion of existing fill materials is considered compressible and not suitable for structural support in their present condition. Due to the potential for excessive settlement, we recommend removal of existing fill to depths equal to the proposed footing width of but not less than 2 feet below bottom of footing elevations. The extent and depths of removals should be evaluated by NOVA's representative in the field based on the materials exposed. If undocumented fill materials remain after the removals have been completed, future settlement of the proposed structures may occur.

7.1.4. Materials for Fill

Onsite soils with an organic content of less than approximately 3 percent by volume (or 1 percent by weight) are suitable for use as fill. In general, fill material should not contain rocks or lumps over approximately 4 inches in diameter, and not more than approximately 40 percent larger than ¾-inch.

Utility trench backfill material should not contain rocks or lumps over approximately 3 inches in general. Soils classified as silts or clays should not be used for backfill in the pipe zone. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or disposed of offsite.

Imported fill material, if needed for the project, should generally be granular soils with a very low to low expansion potential (i.e., an expansion index [EI] of 50 or less as evaluated by American Society for Testing and Materials (ASTM) test method D 4829. Import material should also be non-corrosive in accordance with the Caltrans (2003) corrosion guidelines. Materials for use as fill should be evaluated by NOVA prior to filling or importing.

7.1.5. Compacted Fill

Prior to placement of compacted fill, the contractor should request an evaluation of the exposed ground surface by NOVA. Unless otherwise recommended, the exposed ground surface should then be scarified to a depth of approximately 8 inches and watered or dried, as needed, to achieve moisture contents generally above the optimum moisture content. The scarified materials should then be compacted to a relative compaction of 90 percent as evaluated in accordance with the ASTM D 1557. The evaluation of compaction by the geotechnical consultant should not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify

this office and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass. Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction. Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved.

7.1.6. Utility Trench Backfill

Based on our subsurface evaluation, the onsite earth materials should be generally suitable for re-use as trench backfill provided they are free of organic material, clay lumps, debris, and rocks greater than approximately 3 inches in diameter. We recommend that trench backfill materials be in conformance with the "Greenbook" (Standard Specifications for Public Works) specifications for structure backfill. Fill should be moisture-conditioned to generally above the laboratory optimum. Trench backfill should be compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557 except for the upper 12 inches of the backfill that should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

7.2. FOUNDATION RECOMMENDATIONS

Based on our understanding of the project it is anticipated that the proposed shade shelter will be supported on conventional spread footings founded entirely on compacted fill materials. The following foundation design parameters are provided based on our preliminary analysis and may be modified based on the results of the field investigation and geotechnical laboratory testing currently underway.

7.2.1. Shallow Foundations

The proposed structures may be founded on conventional spread footings using an allowable bearing capacity of 1,500 pounds per square foot (psf). This allowable bearing capacity may be increased by one-third when considering loads of a short duration such as wind or seismic forces. Thickness and reinforcement of the mat foundation should be in accordance with the recommendations of a structural engineer.

Foundations should have an embedment depth of 18 inches or more below the lowest adjacent grade. Continuous footings should be 15 or more inches wide and spread foundations should be 24 or more inches square. Footings should be reinforced in accordance with the structural engineer's recommendations. From a geotechnical standpoint, we recommend that footings founded in low expansive granular materials be reinforced with four No. 4 or larger reinforcing bars, two placed near the top and two near the bottom of the footings.

7.2.2. Foundation Lateral Resistance

For resistance of foundations to lateral loads, we recommend an allowable passive pressure exerted by an equivalent fluid weight of 200 pounds per cubic foot (pcf) with a value up to 2,000 psf be used. This value assumes that the ground is horizontal for a distance of 10 feet or more, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil and concrete. If passive pressure and frictional resistance are to be used in combination, we recommend that the friction coefficient be reduced by two-thirds. The passive pressure values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

7.2.3. Settlement

We estimate that the proposed structure, designed and constructed as recommended herein, will undergo total settlements of less than approximately 1 inch. Differential settlements are typically less than about one-half of the total settlement.

7.3. Seismic Design Parameters

Design of the proposed improvements should comply with design for structures located in Seismic Zone 4 and should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the preliminary seismic design parameters for the site in accordance to CBC (2010) and mapped spectral acceleration parameters (United States Geological Survey [USGS], 2009).

Table 2 – 2010 California Building Code Seismic Design Criteria

Factors	Values
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Mapped Short Period Spectral Acceleration, S_S	1.376g
Mapped One-Second Period Spectral Acceleration, S_1	0.505g
Short Period Spectral Acceleration Adjusted For Site Class, S_{MS}	1.376g
One-Second Period Spectral Acceleration Adjusted For Site Class, S_{M1}	0.757g
Design Short Period Spectral Acceleration, S_{DS}	0.918g
Design One-Second Period Spectral Acceleration, S_{D1}	0.505g

7.4. Concrete Flatwork

Exterior concrete flatwork should be 4 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 24 inches on-center both ways. No vapor retarder is needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the structural engineer. Exterior slabs should be underlain by 4 inches of clean sand. The subgrade soils should be scarified to a depth of 12 inches, moisture conditioned to generally above the laboratory optimum moisture content, and compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Positive drainage should be established and maintained adjacent to flatwork.

7.5. Corrosion

Laboratory testing was performed on a representative sample of the onsite earth materials to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with California Test (CT) 643 and the sulfate and chloride content tests were performed in accordance with CT 417 and CT 422, respectively. These laboratory test results are presented in Appendix B.

The results of the corrosivity testing indicated an electrical resistivity value of 4,600 ohm-cm, soil pH of 7.8, chloride content of 21 parts per million (ppm) and a sulfate content of 0.002 percent (i.e., 21 ppm). Based on Caltrans (2003) corrosion criteria, the onsite soils would not be classified as corrosive, which is defined as soils with more than 500 ppm chlorides, more than 0.2 percent sulfates, or a pH less than 5.5. We recommend that the corrosivity of site soils be further evaluated by a corrosion engineer.

7.6. Concrete

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Laboratory testing indicated a sulfate content of 0.001 percent for the tested sample, which is considered to represent a negligible potential for sulfate attack (ACI, 2005). Although the results of the sulfate tests were not significantly high, due to the variability in the onsite soils and the potential future use of reclaimed water at the site, we recommend that Type II/V cement be used for concrete structures in contact with soil or the formational materials. In addition, we recommend a water-to-cement ratio of no more than 0.45. We also recommend that 3 inches of concrete cover be provided over reinforcing steel for cast-in-place structures in contact with the onsite earth materials.

7.7. Pre-Construction Conference

We recommend that a pre-construction meeting be held prior to commencement of grading. The owner or his representative, the agency representatives, the architect, the civil engineer, NOVA, and the contractor should attend to discuss the plans, the project, and the proposed construction schedule.

7.8. Plan Review and Construction Observation

Project plans were not available at the time of our evaluation and we understand development plans for the site are preliminary at this time. After site plans are developed, our office should review those plans to provide additional recommendations, if needed. Depending on the type and extent of the proposed development, additional subsurface evaluation may be recommended.

The conclusions and recommendations presented in this report are based on analysis of observed conditions in three exploratory test pits. If conditions are found to vary from those described in this report, NOVA should be notified, and additional recommendations will be provided upon request. NOVA should review the final project drawings and specifications prior to the commencement of construction. NOVA should perform the needed observation and testing services during construction operations. In addition, per guidelines by the City of San Diego, NOVA needs to be retained to observed subsurface excavations in order to confirm our opinion regarding the absence of active or potentially active faulting at the site.

The recommendations provided in this report are based on the assumption that NOVA will provide geotechnical observation and testing services during construction. In the event that it is decided not to utilize the services of NOVA during construction, we request that the selected consultant provide the client with a letter (with a copy to NOVA) indicating that they fully understand NOVA's recommendations, and that they are in full agreement with the design parameters and recommendations contained in this report. Construction of proposed

improvements should be performed by qualified subcontractors utilizing appropriate techniques and construction materials.

8. LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. NOVA should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites.

9. REFERENCES

Allied Geotechnical Engineers (AGE), Inc., 2008, Feasibility Study Report for the City of San Diego Low Impact Development (LID) Concept Study, Cabrillo Heights Park, San Diego, California, dated April 28.

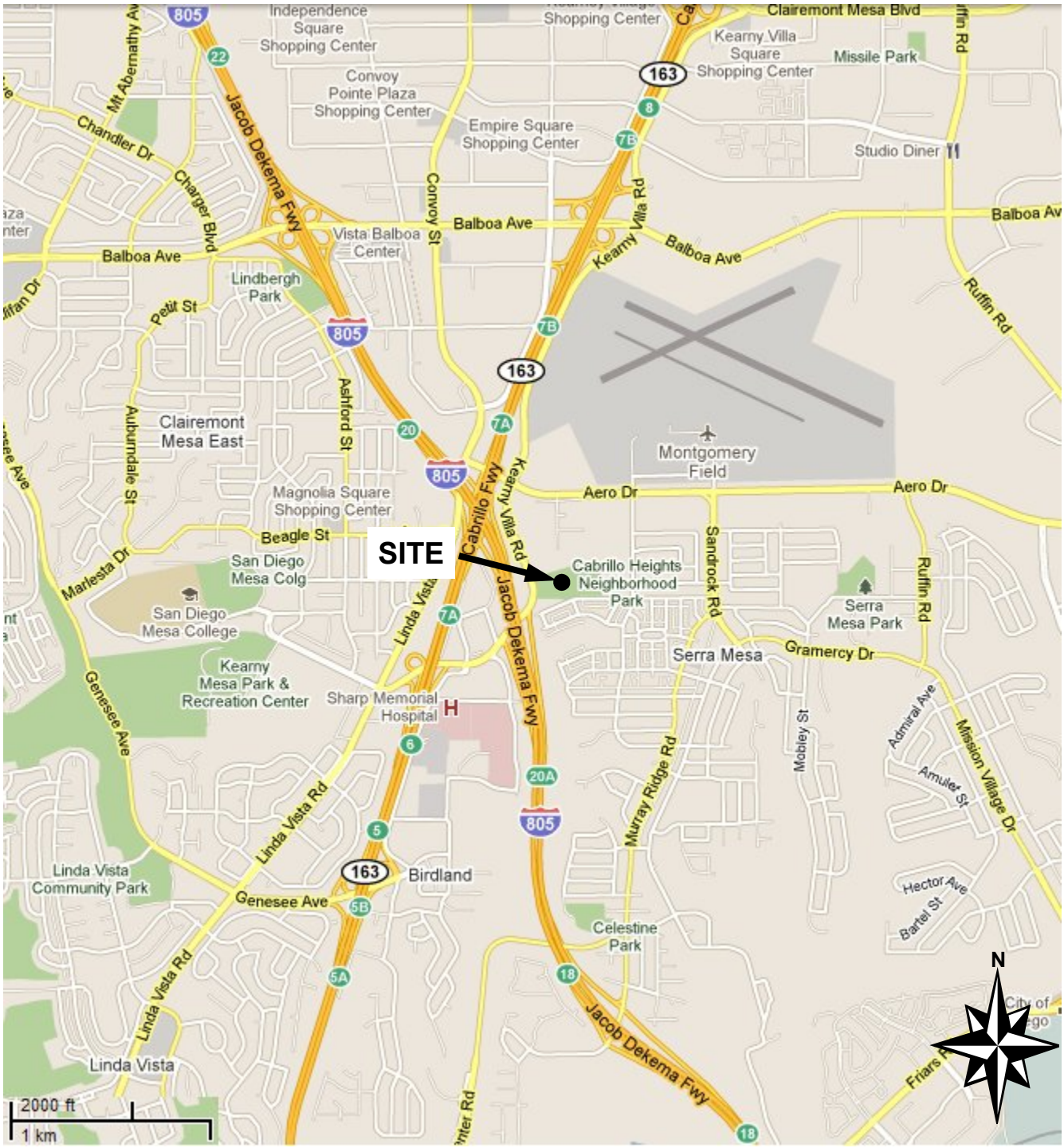
California Building Standards Commission, 2010, California Building Code, Title 24, Part 2, Volumes 1 and 2.

County of San Diego, 2010, Design Manual for Onsite Wastewater Treatment Systems, Department of Environmental Health, Land and Water Quality Division, dated March 22.

Kennedy, M.P. and Tan, S.S, 2005, Geology of the San Diego 30' X 60' Quadrangle, California: Preliminary Geologic Maps - Southern Region, Scale 1:100,000.

KTU+A, 2011, Cabrillo Heights Neighborhood Park, General Development Plan, Concept: dated January 13.

United States Geological Survey, 2009 Ground Motion Parameter Calculator v. 5.0.9a, World Wide Web, http://earthquake.usgs.gov/research/hazmaps/design/.



NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

SOURCE: GOOGLE MAPS, 2011.

NOVA ENGINEERING AND ENVIRONMENTAL

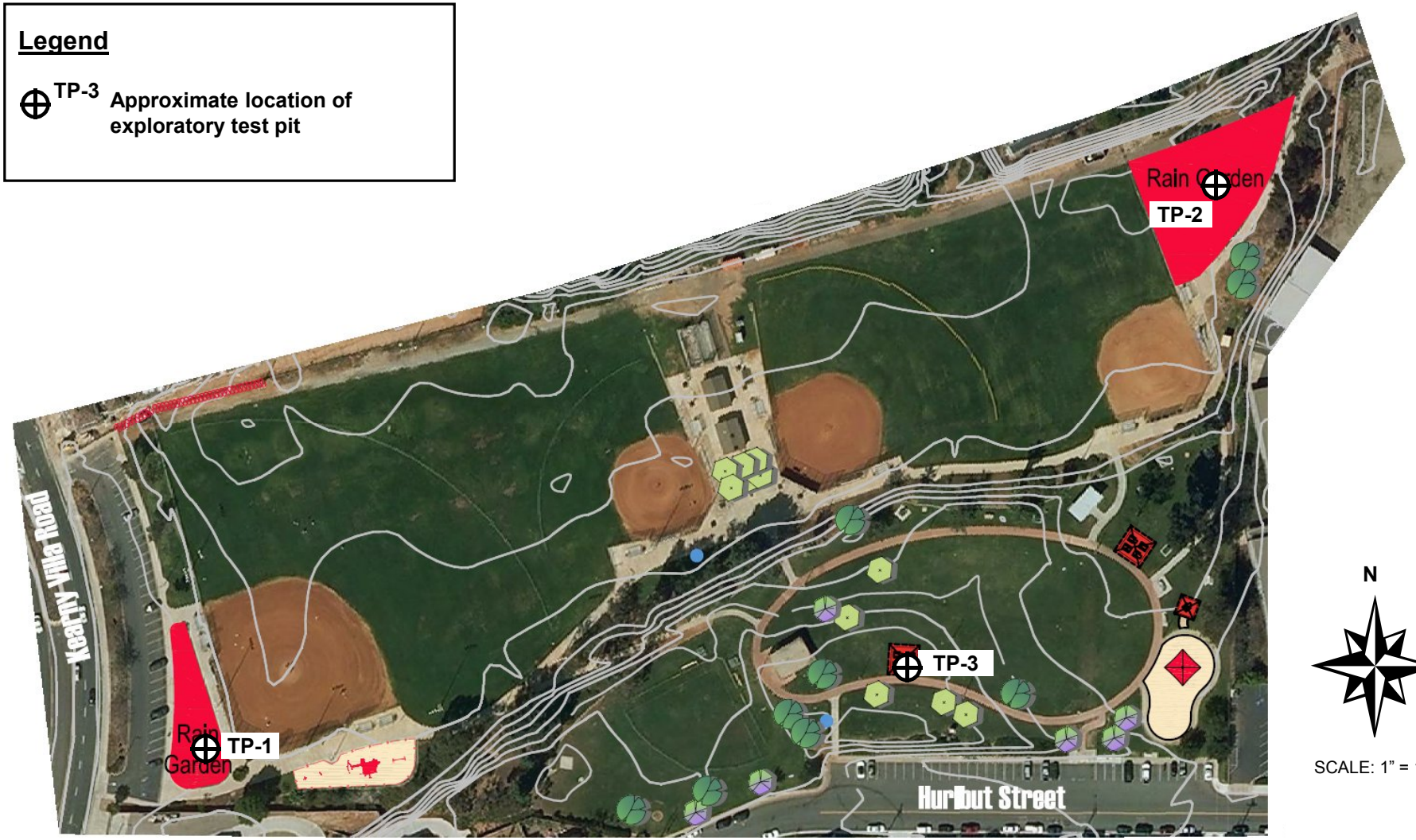
SITE LOCATION MAP

IMPROVEMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE:	PROJECT No.:	FIGURE
2/11	10125-2010066.000	1

Legend

⊕ TP-3 **Approximate location of exploratory test pit**



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SCALE: 1" = 150'

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: KTU+A, 2011, CABRILLO HEIGHTS NEIGHBORHOOD PARK, GENERAL DEVELOPMENT PLAN.

NOVA ENGINEERING AND ENVIRONMENTAL

EXPLORATION LOCATION MAP

IMPROVEMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE:	PROJECT No.:	FIGURE
2/11	10125-2010066.000	**2**

APPENDIX A
TEST PIT LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following method.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory boring. The samples were bagged and transported to the laboratory for testing.

PROJECT NO.:	10125-2010066.000	**EQUIPMENT:**	Hand Auger
PROJECT NAME:	Cabrillo Heights Neighborhood Park	**DATE:**	1/13/2011
CLIENT:	KTU□A	**LOGGED BY:**	CAL/BMH
LOCATION:	See Figure 2	**REVIEWED BY:**	AB
ELEVATION:	394 Feet □(MSL)		

Depth (ft)	Sample Type□	Percolation Test Interval	USCS Symbol	Test Pit TP-1 MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (□)	Dry Density (pcf)	Others
1	☒		SM/SC	**ARTIFICIAL FILL:** Brown, moist, silty to clayey SAND; trace cobble			
2	☒		SM	**MISSION VALLEY FORMATION:**			
3		☒		Reddish brown, moist, silty SAND; trace clay and cobble			
4				Total Depth = 3 feet. Groundwater not encountered. Test Pit backfilled with excavated soil.			
5							

LOCATION:	See Figure 2	**LOGGED BY:**	CAL/BMH
ELEVATION:	392 Feet □(MSL)	**REVIEWED BY:**	AB

Depth (ft)	Sample Type□	Percolation Test Interval	USCS Symbol	Test Pit TP-2 MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (□)	Dry Density (pcf)	Others
1			SM	**ARTIFICIAL FILL:** Grayish brown, moist, silty SAND; trace cobble			
2		☒					
3	☒		SM	**MISSION VALLEY FORMATION:** Reddish brown, moist, silty SAND; trace cobble			
4				Total Depth = 3 feet. Groundwater not encountered. Test Pit backfilled with excavated soil.			
5							

LEGEND

Sample Type: ▭ --- Small Plastic Bag ☒ --- Bulk Sample ▽ ---Water Table

Laboratory Testing: AL = Atterberg Limits; EI = Expansion Index; MD = Maximum Density; SA = Sieve Analysis; SR = Sulfate/Resistivity Test; SH = Shear Testing; R□ = R-□alue Test; CO = Consolidation

PROJECT NO.:	10125-2010066.000	**EQUIPMENT:**	Hand Auger
PROJECT NAME:	Cabrillo Heights Neighborhood Park	**DATE:**	1/13/2011
CLIENT:	KTU□A	**LOGGED BY:**	CAL/BMH
LOCATION:	See Figure 2	**REVIEWED BY:**	AB
ELEVATION:	40□ Feet □(MSL)		

Depth (ft)	Sample Type□	Percolation Test Interval	USCS Symbol	Test Pit TP-3 **MATERIAL DESCRIPTION AND COMMENTS**	Laboratory Testing: Water Content (□)	Dry Density (pcf)	Others
1 2 3	☒		SM	**ARTIFICIAL FILL:** Brown, moist, silty SAND; trace cobble			
4 5				Total Depth = 3 feet. Groundwater not encountered. Test Pit backfilled with excavated soil.			

LEGEND

Sample Type: ▭ --- Small Plastic Bag ☒ --- Bulk Sample ▽---Water Table

Laboratory Testing: AL = Atterberg Limits; EI = Expansion Index; MD = Maximum Density; SA = Sieve Analysis; SR = Sulfate/Resistivity Test; SH = Shear Testing; R□ = R-□alue Test; CO = Consolidation

APPENDIX B
LABORATORY TESTING

Classification

Soil and bedrock materials were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488-00. Soil and bedrock classifications are indicated on the logs of test pits in Appendix A.

Gradation Analysis

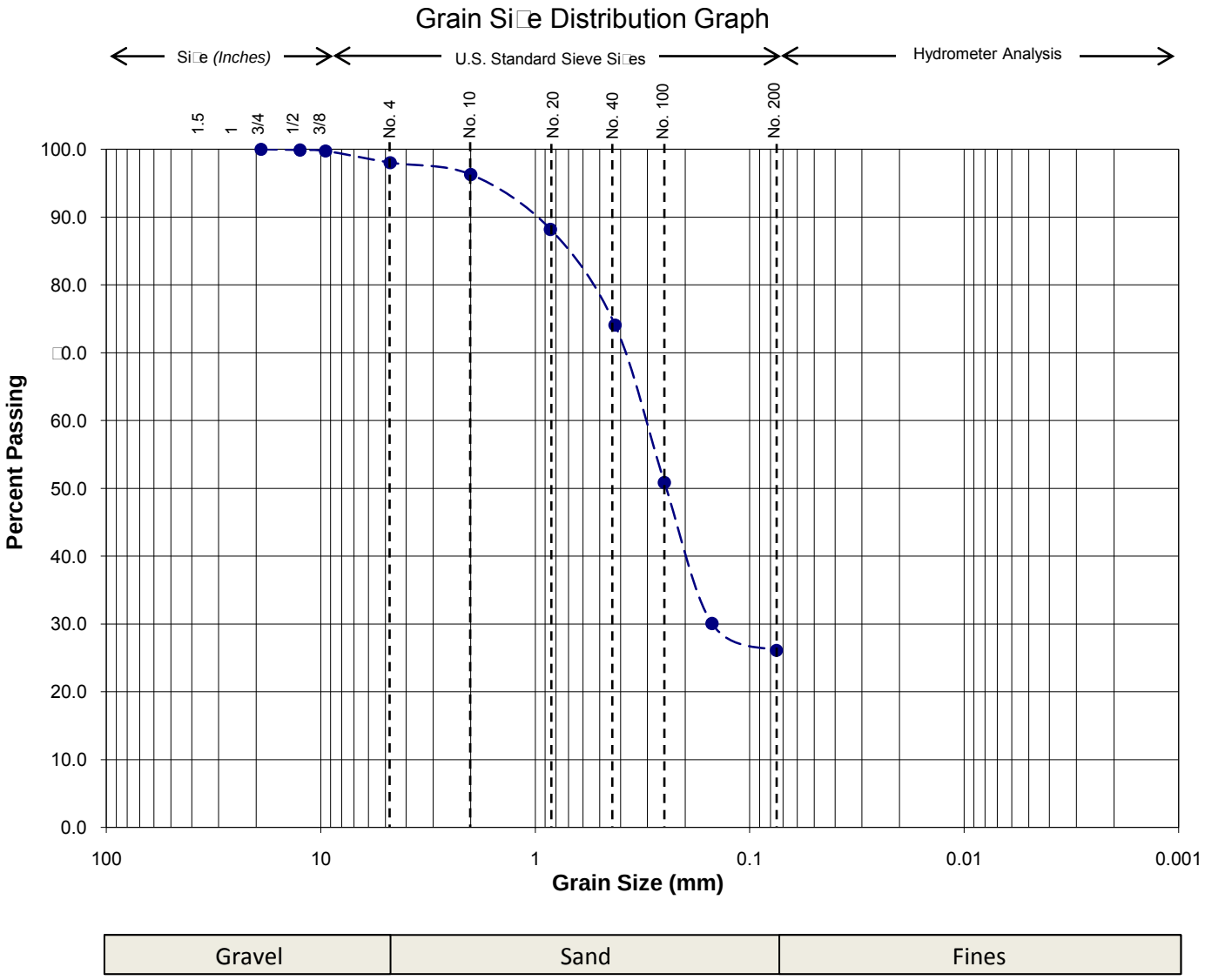
Gradation analysis test was performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curve is shown on Figure B-1. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Direct Shear Test

Direct shear tests were performed on remolded soil samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected earth materials. The samples were inundated during shearing to represent adverse field conditions. The test results are presented on Figures B-2.

Corrosivity Tests

The pH and resistivity tests were performed on a representative sample in general accordance with California Test (CT) 643. The sulfate and chloride contents of a selected sample were evaluated in general accordance with CT 417 and CT 422, respectively. Test results are presented on Figure B-3.



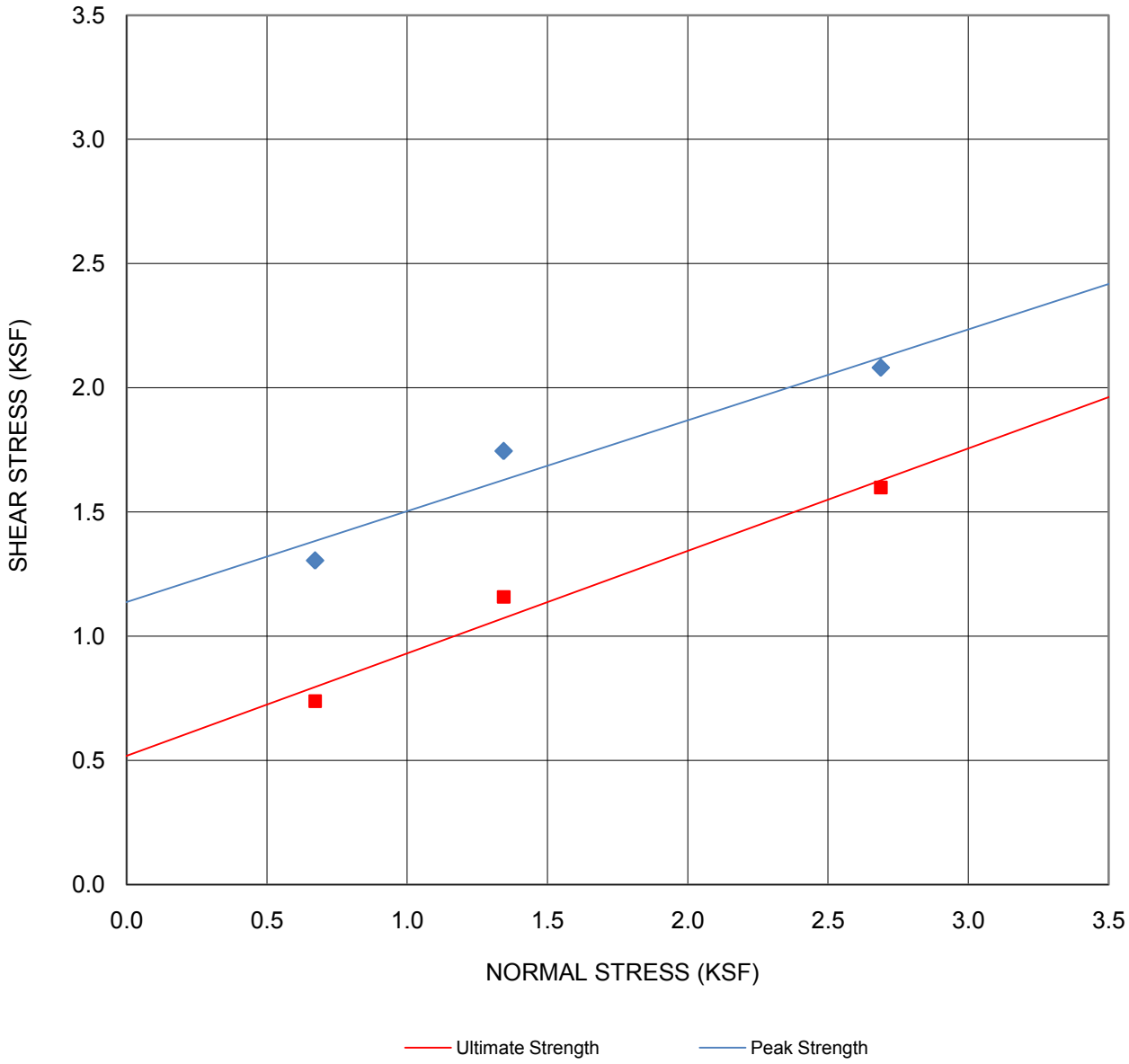
Sample Location:	TP-2
Depth (ft):	2.0 - 3.0
USCS Soil Type:	SM
Passing No. 200 (□):	26

NOVA ENGINEERING AND ENVIRONMENTAL

GRADATION ANALYSIS TEST RESULTS

IMPRO□EMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE	PRO□ECT NO.	FIGURE
2/11	10125-2010066.000	**B-1**



Apparent Cohesion (C):	500 psf	1,150 psf
Friction Angle (Φ):	22 °	20 °

Note: Sample remolded to 90□ relative compaction.

Sample Location:	TP-2
Sample Depth (ft.):	2.0 - 3.0
USCS Soil Type:	SM

NOVA ENGINEERING AND ENVIRONMENTAL

DIRECT SHEAR TEST RESULTS

IMPRO□EMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE	PRO□ECT NO.	FIGURE
2/11	10125-2010066.000	**B-2**

Sample Location	Sample Depth (ft)	pH	Resistivity (Ohm-cm)	Sulfate Content (ppm)	(□)	Chloride Content (ppm)	(□)
TP-2	2.0 - 3.0	□8	3,000	21	0.002	21	0.002

NOVA ENGINEERING AND ENVIRONMENTAL

CORROSIVITY TEST RESULTS

IMPRO□EMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE	PRO□ECT NO.	FIGURE
2/11	10125-2010066.000	**B-3**

APPENDIX C
PERCOLATION TESTING

Percolation testing was conducted in accordance with the procedures presented in the Design Manual for Onsite Wastewater Treatment Systems (County of San Diego, 2010). Test holes were pre-soaked for a period of 24 hours prior to testing. An approximately 3- to 6-inch layer of gravel was placed at the bottom of each test hole. The testing procedure involved the placement of water to an approximate elevation of 6 inches above the top of the gravel in each test hole. As the water infiltrated through the underlying soils, measurements were taken over periods of 30 minutes. The percolation rate was calculated based on the average rate of discharge. The results of these tests are presented in Figure C-1.

Test Location: TP-1
Material type: Formation - Silty SAND
Date: 1/14/11

Test hole depth: 36 in.
Test hole diameter: 6 in.
Test performed by: CAL

t_1 (min)	d_1 (inches)	t_2 (min)	d_2 (inches)	Δt (min)	Δd (inches)	Rate (R, mpi)	Adjusted Rate (R, mpi)
9:30	7.63	10:00	5.75	30	-1.88	16	27
10:00	6.00	10:30	5.81	30	-0.19	160	268
10:30	6.00	11:00	5.50	30	-0.50	60	100
11:00	5.50	11:30	4.63	30	-0.88	34	57
11:30	6.06	12:00	4.81	30	-1.25	24	40
12:00	6.00	12:30	4.87	30	-1.13	27	44
12:30	6.00	13:00	4.81	30	-1.19	25	42

Test Location: TP-2
Material type: Formation - Silty SAND
Date: 1/14/11

Test hole depth: 36 in.
Test hole diameter: 6 in.
Test performed by: CAL

t_1 (min)	d_1 (inches)	t_2 (min)	d_2 (inches)	Δt (min)	Δd (inches)	Rate (R, mpi)	Adjusted Rate (R, mpi)
9:45	5.88	10:15	4.69	30	-1.19	25	42
10:15	6.06	10:45	4.19	30	-1.88	16	27
10:45	6.13	11:15	4.56	30	-1.56	19	32
11:15	6.00	11:45	4.06	30	-1.94	15	26
11:45	6.06	12:15	4.24	30	-1.82	16	28
12:15	6.00	12:45	4.09	30	-1.91	16	26
12:45	6.00	13:15	4.11	30	-1.89	16	27

Notes:

t_1 = initial time when filling or refilling is completed in hours
d_1 = initial depth of water in hole in inches
t_2 = final time in hours
d_2 = final depth of water in hole in inches
Δt = change in time in hours
Δd = change in depth in inches
mpi = minutes per inch

NOVA ENGINEERING AND ENVIRONMENTAL

PERCOLATION TEST RESULTS

IMPRO□EMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

DATE	PRO□ECT NO.	FIGURE
2/11	10125-2010066.000	C-1

APPENDIX F

NOTICE OF EXEMPTION

NOTICE OF EXEMPTION

(Check one or both)

TO: __X__ RECORDER/COUNTY CLERK
P.O. BOX 1750, MS A-33
1600 PACIFIC HWY, ROOM 260
SAN DIEGO, CA 92101-2422

_____ OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET, ROOM 121
SACRAMENTO, CA 95814

FROM: CITY OF SAN DIEGO
DEVELOPMENT SERVICES DEPARTMENT
1222 FIRST AVENUE, MS 501
SAN DIEGO, CA 92101

PROJECT NO.: N/A PROJECT TITLE: **CABRILLO HEIGHTS NEIGHBORHOOD PARK WATERSHED PROTECTION AND PARK IMPROVEMENTS**

PROJECT LOCATION-SPECIFIC: The proposed project is located at 3401 Kearny Villa Road, in the Serra Mesa Community Planning area.

PROJECT LOCATION-CITY/COUNTY: San Diego/San Diego

DESCRIPTION OF NATURE AND PURPOSE OF THE PROJECT: **Cabrillo Heights Neighborhood Park Watershed Protection and Park Improvements:** The project proposes to install two rain gardens, four catch basins with inserts and PVC storm water pipes connecting the BMP's to the existing storm drain system in order to meet the Municipal Permit requirements as requested by the Storm Water Department within the existing park. Also proposed are park improvements to include five shade structures, picnic tables, children's play equipment, and perimeter fencing.

NAME OF PUBLIC AGENCY APPROVING PROJECT: City of San Diego

NAME OF PERSON OR AGENCY CARRYING OUT PROJECT: Sheila Bose
Engineering and Capital Projects Department
600B Street, San Diego, CA 92101
Phone: 619-533-4698.

EXEMPT STATUS: (CHECK ONE)

( ) MINISTERIAL (SEC. 21080(b)(1); 15268);
( ) DECLARED EMERGENCY (SEC. 21080(b)(3); 15269(a));
( ) EMERGENCY PROJECT (SEC. 21080(b)(4); 15269 (b)(c))
(X) CATEGORICAL EXEMPTION: 15301- Existing Facilities, 15303- New construction of small structures, 15304- Minor alteration to land,
( ) STATUTORY EXEMPTIONS:

REASONS WHY PROJECT IS EXEMPT: The City of San Diego conducted an Initial Study which determined that since the project provide for watershed protection devices "rain gardens" and park improvements to include picnic tables, shade structures, play equipment and trees, the action would not result in impacts to any resources. Furthermore the project meets the criteria set forth in CEQA Section 15301 which allows for the operation, repair, maintenance, or minor alteration of existing public or private structures, facilities, 15302 which allows for the new construction of small structures, 15304 which allows for minor alterations to land where the surface is restored and where the exceptions listed in CEQA Section 15300.2 would not apply.

LEAD AGENCY CONTACT PERSON: Herrmann TELEPHONE: (619) 446-5372

IF FILED BY APPLICANT:

1. ATTACH CERTIFIED DOCUMENT OF EXEMPTION FINDING.
2. HAS A NOTICE OF EXEMPTION BEEN FILED BY THE PUBLIC AGENCY APPROVING THE PROJECT?
   ( ) YES ( ) NO

IT IS HEREBY CERTIFIED THAT THE CITY OF SAN DIEGO HAS DETERMINED THE ABOVE ACTIVITY TO BE EXEMPT FROM CEQA

Myra Herrmann, Senior Planner
SIGNATURE/TITLE

7/16/10
DATE

CHECK ONE:
(X) SIGNED BY LEAD AGENCY
( ) SIGNED BY APPLICANT

DATE RECEIVED FOR FILING WITH COUNTY CLERK OR OPR:

APPENDIX G

FIRE HYDRANT METER PROGRAM

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 1OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

1. **PURPOSE**

1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

2.1 All authorities and references shall be current versions and revisions.

2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15

2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986

2.4 California Code of Regulations, Titles 17 and 22

2.5 California State Penal Code, Section 498B.0

2.6 State of California Water Code, Section 110, 500-6, and 520-23

2.7 Water Department Director

Reference

2.8 State of California Guidance Manual for Cross Connection Programs

2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention

2.10 American Water Works Association Standards for Water Meters

2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

3.2 **Temporary Water Use:** Water provided to the customer for no longer than twelve (12) months.

3.3 **Backflow Preventor:** A Reduced Pressure Principal Assembly connected to the outlet side of a Fire Hydrant Meter.

4. POLICY

4.1 The Water Department shall collect a deposit from every customer requiring a fire hydrant meter and appurtenances prior to providing the meter and appurtenances (see Section 7.1 regarding the Fees and Deposit Schedule). The deposit is refundable upon the termination of use and return of equipment and appurtenances in good working condition.

4.2 Fire hydrant meters will have a 2 ½" swivel connection between the meter and fire hydrant. The meter shall not be connected to the 4" port on the hydrant. All Fire Hydrant Meters issued shall have a Reduced Pressure Principle Assembly (RP) as part of the installation. Spanner wrenches are the only tool allowed to turn on water at the fire hydrant.

4.3 The use of private hydrant meters on City hydrants is prohibited, with exceptions as noted below. All private fire hydrant meters are to be phased out of the City of San Diego. All customers who wish to continue to use their own fire hydrant meters must adhere to the following conditions:

a. Meters shall meet all City specifications and American Water Works Association (AWWA) standards.

b. Customers currently using private fire hydrant meters in the City of San Diego water system will be allowed to continue using the meter under the following conditions:

1. The customer must submit a current certificate of accuracy and calibration results for private meters and private backflows annually to the City of San Diego, Water Department, Meter Shop.

2. The meter must be properly identifiable with a clearly labeled serial number on the body of the fire hydrant meter. The serial number shall be plainly stamped on the register lid and the main casing. Serial numbers shall be visible from the top of the meter casing and the numbers shall be stamped on the top of the inlet casing flange.

3. All meters shall be locked to the fire hydrant by the Water Department, Meter Section (see Section 4.7).

4. All meters shall be read by the Water Department, Meter Section (see Section 4.7).

5. All meters shall be relocated by the Water Department, Meter Section (see Section 4.7).

6. These meters shall be tested on the anniversary of the original test date and proof of testing will be submitted to the Water Department, Meter Shop, on a yearly basis. If not tested, the meter will not be allowed for use in the City of San Diego.

7. All private fire hydrant meters shall have backflow devices attached when installed.

8. The customer must maintain and repair their own private meters and private backflows.

9. The customer must provide current test and calibration results to the Water Department, Meter Shop after any repairs.

10. When private meters are damaged beyond repair, these private meters will be replaced by City owned fire hydrant meters.

11. When a private meter malfunctions, the customer will be notified and the meter will be removed by the City and returned to the customer for repairs. Testing and calibration results shall be given to the City prior to any re-installation.

12. The register shall be hermetically sealed straight reading and shall be readable from the inlet side. Registration shall be in hundred cubic feet.

13. The outlet shall have a 2 ½ "National Standards Tested (NST) fire hydrant male coupling.

14. Private fire hydrant meters shall not be transferable from one contracting company to another (i.e. if a company goes out of business or is bought out by another company).

4.4 All fire hydrant meters and appurtenances shall be installed, relocated and removed by the City of San Diego, Water Department. All City owned fire hydrant meters and appurtenances shall be maintained by the City of San Diego, Water Department, Meter Services.

4.5 If any fire hydrant meter is used in violation of this Department Instruction, the violation will be reported to the Code Compliance Section for investigation and appropriate action. Any customer using a fire hydrant meter in violation of the requirements set forth above is subject to fines or penalties pursuant to the Municipal Code, Section 67.15 and Section 67.37.

4.6 **Conditions and Processes for Issuance of a Fire Hydrant Meter**

Process for Issuance

a. Fire hydrant meters shall only be used for the following purposes:

1. Temporary irrigation purposes not to exceed one year.

2. Construction and maintenance related activities (see Tab 2).

b. No customer inside or outside the boundaries of the City of San Diego Water Department shall resell any portion of the water delivered through a fire hydrant by the City of San Diego Water Department.

c. The City of San Diego allows for the issuance of a temporary fire hydrant meter for a period not to exceed 12 months (365 days). An extension can only be granted in writing from the Water Department Director for up to 90 additional days. A written request for an extension by the consumer must be submitted at least 30 days prior to the 12 month period ending. No extension shall be granted to any customer with a delinquent account with the Water Department. No further extensions shall be granted.

d. Any customer requesting the issuance of a fire hydrant meter shall file an application with the Meter Section. The customer must complete a "Fire Hydrant Meter Application" (Tab 1) which includes the name of the company, the party responsible for payment, Social Security number and/or California ID, requested location of the meter (a detailed map signifying an exact location), local contact person, local phone number, a contractor's license (or a business license), description of specific water use, duration of use at the site and full name and address of the person responsible for payment.

e. At the time of the application the customer will pay their fees according to the schedule set forth in the Rate Book of Fees and Charges, located in the City Clerk's Office. All fees must be paid by check, money order or cashiers check, made payable to the City Treasurer. Cash will not be accepted.

f. No fire hydrant meters shall be furnished or relocated for any customer with a delinquent account with the Water Department.

g. After the fees have been paid and an account has been created, the

meter shall be installed within 48 hours (by the second business day). For an additional fee, at overtime rates, meters can be installed within 24 hours (within one business day).

4.7 **Relocation of Existing Fire Hydrant Meters**

a. The customer shall call the Fire Hydrant Meter Hotline (herein referred to as "Hotline"), a minimum of 24 hours in advance, to request the relocation of a meter. A fee will be charged to the existing account, which must be current before a work order is generated for the meter's relocation.

b. The customer will supply in writing the address where the meter is to be relocated (map page, cross street, etc). The customer must update the original Fire Hydrant Meter Application with any changes as it applies to the new location.

c. Fire hydrant meters shall be read on a monthly basis. While fire hydrant meters and backflow devices are in service, commodity, base fee and damage charges, if applicable, will be billed to the customer on a monthly basis. If the account becomes delinquent, the meter will be removed.

4.8 **Disconnection of Fire Hydrant Meter**

a. After ten (10) months a "Notice of Discontinuation of Service" (Tab 3) will be issued to the site and the address of record to notify the customer of the date of discontinuance of service. An extension can only be granted in writing from the Water Department Director for up to 90 additional days (as stated in Section 4.6C) and a copy of the extension shall be forwarded to the Meter Shop Supervisor. If an extension has not been approved, the meter will be removed after twelve (12) months of use.

b. Upon completion of the project the customer will notify the Meter Services office via the Hotline to request the removal of the fire hydrant meter and appurtenances. A work order will be generated

for removal of the meter.

c. Meter Section staff will remove the meter and backflow prevention assembly and return it to the Meter Shop. Once returned to the Meter Shop the meter and backflow will be tested for accuracy and functionality.

d. Meter Section Staff will contact and notify Customer Services of the final read and any charges resulting from damages to the meter and backflow or its appurtenance. These charges will be added on the customer's final bill and will be sent to the address of record. Any customer who has an outstanding balance will not receive additional meters.

e. Outstanding balances due may be deducted from deposits and any balances refunded to the customer. Any outstanding balances will be turned over to the City Treasurer for collection. Outstanding balances may also be transferred to any other existing accounts.

5. EXCEPTIONS

5.1 Any request for exceptions to this policy shall be presented, in writing, to the Customer Support Deputy Director, or his/her designee for consideration.

6. MOBILE METER

6.1 Mobile meters will be allowed on a case by case basis. All mobile meters will be protected by an approved backflow assembly and the minimum requirement will be a Reduced Pressure Principal Assembly. The two types of Mobile Meters are vehicle mounted and floating meters. Each style of meters has separate guidelines that shall be followed for the customer to retain service and are described below:

a) **Vehicle Mounted Meters**: Customer applies for and receives a City owned Fire Hydrant Meter from the Meter Shop. The customer mounts the meter on the vehicle and brings it to the Meter Shop for

inspection. After installation is approved by the Meter Shop the vehicle and meter shall be brought to the Meter Shop on a monthly basis for meter reading and on a quarterly basis for testing of the backflow assembly. Meters mounted at the owner's expense shall have the one year contract expiration waived and shall have meter or backflow changed if either fails.

b) **Floating Meters**: Floating Meters are meters that are not mounted to a vehicle. **(Note: All floating meters shall have an approved backflow assembly attached.)** The customer shall submit an application and a letter explaining the need for a floating meter to the Meter Shop. The Fire Hydrant Meter Administrator, after a thorough review of the needs of the customer, (i.e. number of jobsites per day, City contract work, lack of mounting area on work vehicle, etc.), may issue a floating meter. At the time of issue, it will be necessary for the customer to complete and sign the "Floating Fire Hydrant Meter Agreement" which states the following:

    1) The meter will be brought to the Meter Shop at 2797 Caminito Chollas, San Diego on the third week of each month for the monthly read by Meter Shop personnel.

    2) Every other month the meter will be read and the backflow will be tested. This date will be determined by the start date of the agreement.

If any of the conditions stated above are not met the Meter Shop has the right to cancel the contract for floating meter use and close the account associated with the meter. The Meter Shop will also exercise the right to refuse the issuance of another floating meter to the company in question.

Any Fire Hydrant Meter using reclaimed water shall not be allowed use again with any potable water supply. The customer shall incur the cost of replacing the meter and backflow device in this instance.

7. FEE AND DEPOSIT SCHEDULES

7.1 **Fees and Deposit Schedules:** The fees and deposits, as listed in the Rate Book of Fees and Charges, on file with the Office of the City Clerk, are based on actual reimbursement of costs of services performed, equipment and materials. Theses deposits and fees will be amended, as needed, based on actual costs. Deposits, will be refunded at the end of the use of the fire hydrant meter, upon return of equipment in good working condition and all outstanding balances on account are paid. Deposits can also be used to cover outstanding balances.

All fees for equipment, installation, testing, relocation and other costs related to this program are subject to change without prior notification. The Mayor and Council will be notified of any future changes.

8. UNAUTHORIZED USE OF WATER FROM A HYDRANT

8.1 Use of water from any fire hydrant without a properly issued and installed fire hydrant meter is theft of City property. Customers who use water for unauthorized purposes or without a City of San Diego issued meter will be prosecuted.

8.2 If any unauthorized connection, disconnection or relocation of a fire hydrant meter, or other connection device is made by anyone other than authorized Water Department personnel, the person making the connection will be prosecuted for a violation of San Diego Municipal Code, Section 67.15. In the case of a second offense, the customer's fire hydrant meter shall be confiscated and/or the deposit will be forfeited.

8.3 Unauthorized water use shall be billed to the responsible party. Water use charges shall be based on meter readings, or estimates when meter readings are not available.

8.4 In case of unauthorized water use, the customer shall be billed for all applicable charges as if proper authorization for the water use had been obtained, including but not limited to bi-monthly service charges, installation charges and removal charges.

8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

Water Department Director

Tabs: 1. Fire Hydrant Meter Application
2. Construction & Maintenance Related Activities With No Return To Sewer
3. Notice of Discontinuation of Service

APPENDIX

Administering Division: Customer Support Division

Subject Index:
Construction Meters
Fire Hydrant
Fire Hydrant Meter Program
Meters, Floating or Vehicle Mounted
Mobile Meter
Program, Fire Hydrant Meter

Distribution: DI Manual Holders

City of San Diego **Water Department**

Application For Fire Hydrant Meter

(EXHIBIT A)

For Office Use Only	
NS Rec:	FAC #:
Date:	By:

2797 Caminito Chollas • San Diego, California 92105-5097 METER SHOP 619 527 7449 FAX 619 527 3125

Meter Information

Application Date:	Requested Install Date:

Fire Hydrant Location: (Attach detailed map, Thomas Bros. map location or construction drawing.)

Specific Use of Water:

Any return to Sewer or Storm Drain, if so, explain:

Estimated Duration of Meter Use: ☐ ☐ Check Box if Reclaimed Water

Company Information

Company Name:			
Mailing Address			
City:	State:	Zip Code:	Phone: ( )
*Business License #:		*Contractor License #:	

*A copy of the Contractor's License and/or Business License is required at the time of meter issuance.

Name and Title of Agent:	Phone: ( )
Site Contact Name and Title:	Phone: ( )
Pager #:	Cell : ( )
Responsible Party Name:	Title:
Social Security or Cal ID #:	Phone: ( )

Signature: Date:

Guarantees payment of all charges resulting from the use of this meter. Insures that employees of this organization understand the proper use of Fire Hydrant Meter.

Fire Hydrant Meter Removal Request

☐ Check Box to Request Removal of Above Meter | Requested Removal Date:

Provide current Meter location if different from above:

Signature:	Title:	Date:
Phone: ( )	Pager: ( )	

For Office Use Only

☐ City Meter ☐ Private Meter

CIS Account #:	Deposit Amount: $	Fees Amount: $
Meter Serial #:	Meter Size:	Meter Make & Style:
Backflow #:	Backflow Size:	Meter Make & Style:
Name:	Signature:	Date:

$1,108.45 - FOR 24 HR INSTALLATION
$1,052.26 - FOR 48 HR INSTALLATION

FHM App Created: 11/2/00-htp

"Exhibit B"

CONSTRUCTION AND MAINTENANCE RELATED ACTIVITIES WITH NO RETURN TO SEWER:

Auto Detailing
Backfilling
Combination Cleaners (Vactors)
Compaction
Concrete Cutters
Construction Trailers
Cross Connection Testing
Dust Control
Flushing Water Mains
Hydro blasting
Hydro Seeding
Irrigation (for establishing irrigation only; not continuing irrigation)
Mixing Concrete
Mobile Car Washing
Special Events
Street Sweeping
Water Tanks
Water Trucks
Window Washing

Note: If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charged.

"Exhibit C"

Date

Name of Responsible Party
Company Name and address
Account Number: _____

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter #_____, located at (Meter location address) ends in 60 days and will be removed on or after (Date authorization expires). Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please refer to the Water Departments', Department Instruction (D.I.) 55.27 for further information and procedure.

Mail your request for an extension to :

City of San Diego, Water Department
Attn: Meter Services
2797 Caminito Chollas
San Diego, Ca. 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant "Hot Line" at: (xxx) xxx-xxxx.

Sincerely,

City of San Diego Water Department

City of San Diego Water Department

Fire Hydrant Meter Relocate/Removal Request

(EXHIBIT D)

For Office Use Only	
NS Req:	FHM Fac #:
Date	By

Date:

Instruction: Complete pertinent information then FAX both form and map to (xxx) xxx-xxxx, mail, or hand-deliver to the City of San Diego, Water Deparmtnet/Meter Shop at: 2707 Caminito Chollas San Diego, CA 92105

Meter Information

Billing Account #:	Requested Move Date:
Current Fire Hydrant Meter Location:	
New Meter Location: (Attach a detailed map, Thomas Bros map location or construction drawing.)	

Company Information

Company Name:			
Mailing Address			
City:	State:	Zip Code:	Phone: ( )
Name and Title of Requestor:			Phone: ( )
Site Contact Name and Title			Phone: ( )
Pager #:			Cell : ( )
Responsible Party Name authorizing relocation fee:			
Signature:	Title:		Date:

Fire Hydrant Meter Removal Request

☐ Check Box to Request Removal of Above Meter	Requested Removal Date:
Provide current Meter location if different from above:	

Signature:	Title:	Date:
Phone: ( )	Pager: ( )	

For Office Use Only

CIS Account #:	Fees Amount: $		
Meter Serial #:	Size:	Make/Style	
Backflow #:	Size:	Make/Style	
Name:	Signature:		Date:

FHM Relocate_Removal Form

FHM App Created: 11/2/00-htp

APPENDIX H

SAMPLE CITY INVOICE

City of San Diego, Field Engineering Div., 9485 Aero Drive, SD CA 92123						Contractor's Name:					
Project Name:						Contractor's Address:					
SAP No. (WBS/IO/CC)											
City Purchase Order No.						Contractor's Phone #:				Invoice No.	
Resident Engineer (RE):						Contractor's Fax #:				Invoice Date:	
RE Phone#:		RE Fax#:				Contact Name:			Billing Period:		
Item #	Item Description	Contract Authorization				Previous Estimate		This Estimate		Totals to Date	
		Unit	Qty	Price	Extension	%/QTY	Amount	% / QTY	Amount	% / QTY	Amount
1	2 Parallel 4" PVC C900	LF	1,380	$34.00	$46,920.00						
2	48" Primary Steel Casing	LF	500	$1,000.00	$500,000.00						
3	2 Parallel 12" Secondary Steel	LF	1,120	$53.00	$59,360.00						
4	Construction and Rehab of PS 49	LS	1	$150,000.00	$150,000.00						
5	Demo	LS	1	$14,000.00	$14,000.00						
6	Install 6' High Chain Link Fence	LS	1	$5,600.00	$5,600.00						
7	General Site Restoration	LS	1	$3,700.00	$3,700.00						
8	10" Gravity Sewer	LF	10	$292.00	$2,920.00						
9	4" Blow Off Valves	EA	2	$9,800.00	$19,600.00						
10	Bonds	LS	1	$16,000.00	$16,000.00						
11	Field Orders	AL	1	80,000	$80,000.00						
11.1	**Field Order 1**	**LS**	**5,500**	**$1.00**	$5,500.00						
11.2	**Field Order 2**	**LS**	**7,500**	**$1.00**	$7,500.00						
11.3	**Field Order 3**	**LS**	**10,000**	**$1.00**	$10,000.00						
11.4	**Field Order 4**	**LS**	**6,500**	**$1.00**	$6,500.00						
12	**Certified Payroll**	**LS**	**1**	**$1,400.00**	$1,400.00						
CHANGE ORDERS											
Change Order 1		**4,890**									
Items 1-4					**$11,250.00**						
Item 5-Deduct Bid Item 3		**LF**	**120**	**-$53.00**	**($6,360.00)**						
Change Order 2		**160,480**									
Items 1-3					**$95,000.00**						
Item 4 Deduct Bid Item 1		**LF**	**380**	**-$340.00**	**($12,920.00)**						
Item 5-Encrease bid Item 9		**LF**	**8**	**$9,800.00**	**$78,400.00**						
Change Order 3 (Close Out)		**-121,500**									
Item 1 Deduct Bid Item 3			**53**	**-500.00**	**($26,500.00)**						
Item 2 Deduct Bid Item 4		**LS**	**-1**	**45,000.00**	**($45,000.00)**						
Items 3-9			**1**	**-50,500.00**	**($50,500.00)**						
SUMMARY								Total This	$ -	**Total Billed**	$0.00
A. Original Contract Amount							**Retention and/or Escrow Payment Schedule**				
B. Approved Change Order 1 Thru 3							Total Retention Required as of this billing				
C. Total Authorized Amount (A+B)							Previous Retention Withheld in PO or in Escrow				
D. Total Billed to Date							Add'l Amt to Withhold in PO/Transfer in Escrow:				
E. Less Total Retention (5% of D)							Amt to Release to Contractor from PO/Escrow:				
F. Less Total Previous Payments											
G. Payment Due Less Retention						**Contractor Signature and Date:**					
H. Remaining Authorized Amount											

City of San Diego

CITY CONTACT: **CLEMENTINA GIORDANO** - Contract Specialist, Email: **cgiordano@sandiego.gov**
Phone No. **(619) 533-3481** - Fax No. **(619) 533-3633**

ADDENDUM "A"

FOR

CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

BID NO.:	**K-13-5784-DBB-3**
SAP NO. (WBS/IO/CC):	**S-00763 / B-10025**
CLIENT DEPARTMENT:	**1714 / 2114**
COUNCIL DISTRICT:	**6**
PROJECT TYPE:	**GB / CC**

BID DUE DATE:

2:00 PM
MAY 28, 2013
CITY OF SAN DIEGO
PUBLIC WORKS DEPARTMENT
1010 SECOND AVENUE, SUITE 1400, MS 614C
SAN DIEGO, CA 92101

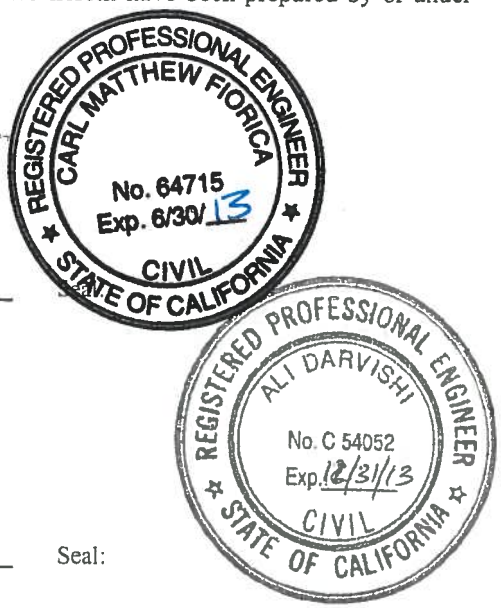
ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

1) Registered Engineer _____ Date 5/24/13

2) For City Engineer _____ Date 5/24/13

Seal:



A. CHANGES TO CONTRACT DOCUMENTS

The following changes to the Contract Documents are hereby made effective as though originally issued with the bid package. Bidders are reminded that all previous requirements to this solicitation remain in full force and effect.

B. PLANS

1. To DRAWING NUMBER 36497-2-D, GRADING + GEOTECHNICAL SPECIFICATIONS notes 1 through 6 and SPECIAL notes 1 through 13, **DELETE** in their entirety.

2. To DRAWING NUMBER 36497-4-D, LYSIMETER DETAIL, the call out: "Monoflex Porous Cup Lysimeter System or Approved Equal", **DELETE** in its entirety and **SUBSTITUTE** with the following:

   "Monoflex Porous Cup Lysimeter System (or approved equal) to be installed per manufacturer's recommendations."

Tony Heinrichs, Director
Public Works Department

Dated: *May 24, 2013*
San Diego, California

TH/nb/cg/les

5/30/13 CW

City of San Diego

CONTRACTOR'S NAME: NEW CENTURY CONSTRUCTION, INC.
ADDRESS: 9119 EMERALD GROVE AVE. LAKESIDE, CA 92040
TELEPHONE NO.: 619-390-3300 FAX NO.: 619-390 3316
CITY CONTACT: CLEMENTINA GIORDANO - Contract Specialist, Email: cgiordano@sandiego.gov
Ph. No. (619) 533-3481 - Fax No. (619) 533-3633
S BOSE / NB / LS

CONTRACT DOCUMENTS

FOR

CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION

VOLUME 2 OF 2

BID NO.:	**K-13-5784-DBB-3**
SAP NO. (WBS/IO/CC):	**S-00763 / B-10025**
CLIENT DEPARTMENT:	**1714 / 2114**
COUNCIL DISTRICT:	**6**
PROJECT TYPE:	**GB / CC**

THIS CONTRACT IS SUBJECT TO THE FOLLOWING:

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM.

THIS BIDDING DOCUMENT TO BE SUBMITTED IN ITS ENTIRETY
REFER TO VOLUME 1 COVER PAGE FOR TIME, DATE, AND LOCATION

TABLE OF CONTENTS

Volume 2 - Bidding Documents

The following forms must be completed in their entirety and submitted with the Bid. Include the form(s) even if the information does not apply. Where the information does not apply write in N/A. Failure to include any of the forms may cause the Bid to be deemed **non-responsive.** If you are uncertain or have any questions about any required information, contact the City no later than 14 days prior to Bid due date.

PROPOSAL

Bidder's General Information

To the City of San Diego:

Pursuant to "Notice Inviting Bids", specifications, and requirements on file with the City Clerk, and subject to all provisions of the Charter and Ordinances of the City of San Diego and applicable laws and regulations of the United States and the State of California, the undersigned hereby proposes to furnish to the City of San Diego, complete at the prices stated herein, the items or services hereinafter mentioned. The undersigned further warrants that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

The undersigned bidder(s) further warrants that bidder(s) has thoroughly examined and understands the entire Contract Documents (plans and specifications) and the Bidding Documents therefore, and that by submitting said Bidding Documents as its bid proposal, bidder(s) acknowledges and is bound by the entire Contract Documents, including any addenda issued thereto, as such Contract Documents incorporated by reference in the Bidding Documents.

IF A SOLE OWNER OR SOLE CONTRACTOR SIGN HERE:

(1) Name under which business is conducted _____

(2) Signature (Given and surname) of proprietor _____

(3) Place of Business (Street & Number) _____

(4) City and State _____ Zip Code _____

(5) Telephone No. _____ Facsimile No. _____

IF A PARTNERSHIP, SIGN HERE:

(1) Name under which business is conducted _____

(2) Name of each member of partnership, indicate character of each partner, general or special (limited):

_____

_____

(3) Signature (Note: Signature must be made by a general partner)

_____

Full Name and Character of partner

_____

_____

(4) Place of Business (Street & Number) _____

(5) City and State _____ Zip Code _____

(6) Telephone No. _____ Facsimile No. _____

IF A CORPORATION, SIGN HERE:

(1) Name under which business is conducted NEW CENTURY CONSTRUCTION, INC.

(2) Signature, with official title of officer authorized to sign for the corporation:

_____
(Signature)

LEE P. SHELLBERG, II
(Printed Name)

PRESIDENT
(Title of Officer)

(Impress Corporate Seal Here)

(3) Incorporated under the laws of the State of CALIFORNIA

(4) Place of Business (Street & Number) 9119 EMERALD GROVE AVE.

(5) City and State LAKESIDE, CA Zip Code 92040

(6) Telephone No. 619. 390. 3300 Facsimile No. 619 390 3311

BIDDING DOCUMENTS

THE FOLLOWING SECTIONS MUST BE FILLED IN BY ALL PROPOSERS:

In accordance with the "**NOTICE INVITING BIDS**", the bidder holds a California State Contractor's license for the following classification(s) to perform the work described in these specifications:

LICENSE CLASSIFICATION A, B

LICENSE NO. 614517 EXPIRES 9/30/2014

This license classification must also be shown on the front of the bid envelope. Failure to show license classification on the bid envelope may cause return of the bid unopened.

TAX IDENTIFICATION NUMBER (TIN): [redacted]

E-Mail Address: newcenturyconstruction@yahoo.com

THIS PROPOSAL MUST BE NOTARIZED BELOW:

I certify, under penalty of perjury, that the representations made herein regarding my State Contractor's license number, classification and expiration date are true and correct.

Signature Lee P Shurtleff Title PRESIDENT

SUBSCRIBED AND SWORN TO BEFORE ME, THIS 28 DAY OF May, 2013.

Susan Leggitt
Notary Public in and for the County of SAN DIEGO, State of CALIF.

(NOTARIAL SEAL)

SUSAN LEGGITT
COMM. #1927499
Notary Public - California
San Diego County
My Comm. Expires Mar. 29, 2015

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That New Century Construction, Inc. as Principal, and

SureTec Insurance Company as Surety, are held and firmly bound unto The City of San Diego hereinafter called "OWNER," in the sum of **10% OF THE TOTAL BID AMOUNT** for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled

Cabrillo Heights Neighborhood Park Improvements and Cabrillo Heights Watershed Protection

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" enters into a written Agreement on the form of agreement bound with said Contract Documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Surety shall pay all costs incurred by said OWNER in such suit, including a reasonable attorney's fee to be fixed by the court.

SIGNED AND SEALED, this 22nd day of May, 20 13

New Century Construction, Inc. (SEAL)
(Principal)

By: Lee P. Shelberg
(Signature) LEE P. SHELBERG, II
PRESIDENT

SureTec Insurance Company (SEAL)
(Surety)

By:
(Signature) Dwight Reilly
Attorney-in-Fact

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

ACKNOWLEDGMENT

State of California
County of Orange)

On May 22, 2013 before me, Karen L. Ritto, Notary Public
(insert name and title of the officer)

personally appeared Dwight Reilly,
who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)
Karen L. Ritto

KAREN L. RITTO
COMM. #1965188
Notary Public-California
ORANGE COUNTY
My Comm. Expires Dec 30, 2015

FRS3

POA #: 510023

Bond No. NEWCE-231

SureTec Insurance Company

LIMITED POWER OF ATTORNEY

Know All Men by These Presents, That SURETEC INSURANCE COMPANY (the "Company"), a corporation duly organized and existing under the laws of the State of Texas, and having its principal office in Houston, Harris County, Texas, does by these presents make, constitute and appoint

Arturo Ayala, Daniel Huckabay, Dwight Reilly

its true and lawful Attorney-in-fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include waivers to the conditions of contracts and consents of surety for:

Five Million and 00/100 Dollars ($5,000,000.00)

and to bind the Company thereby as fully and to the same extent as if such bond were signed by the President, sealed with the corporate seal of the Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney-in-Fact may do in the premises. Said appointment shall continue in force until 10/31/2013 and is made under and by authority of the following resolutions of the Board of Directors of the SureTec Insurance Company:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and of behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached. *(Adopted at a meeting held on 20th of April, 1999.)*

In Witness Whereof, SURETEC INSURANCE COMPANY has caused these presents to be signed by its President, and its corporate seal to be hereto affixed this 3rd day of September, A.D. 2010.

SURETEC INSURANCE COMPANY

By: _____

John Knox Jr., President

State of Texas ss:
County of Harris

On this 3rd day of September, A.D. 2010 before me personally came John Knox Jr., to me known, who, being by me duly sworn, did depose and say, that he resides in Houston, Texas, that he is President of SURETEC INSURANCE COMPANY, the company described in and which executed the above instrument; that he knows the seal of said Company; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Company; and that he signed his name thereto by like order.

JACQUELYN MALDONADO
Notary Public, State of Texas
My Commission Expires
May 18, 2013

Jacquelyn Maldonado, Notary Public
My commission expires May 18, 2013

I, M. Brent Beaty, Assistant Secretary of SURETEC INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Company, which is still in full force and effect; and furthermore, the resolutions of the Board of Directors, set out in the Power of Attorney are in full force and effect.

Given under my hand and the seal of said Company at Houston, Texas this 22nd day of May, 2013, A.D.

M. Brent Beaty, Assistant Secretary

Any instrument issued in excess of the penalty stated above is totally void and without any validity.
For verification of the authority of this power you may call (713) 812-0800 any business day between 8:00 am and 5:00 pm CST.

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID UNDER 23 UNITED STATES CODE 112 AND PUBLIC CONTRACT CODE 7106

State of California)
) ss.
County of SAN DIEGO)

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

Signed: Lee P. Smenberg

Title: PRESIDENT

Subscribed and sworn to before me this 28 day of May, 2013

Susan Leggitt
Notary Public

(SEAL)

SUSAN LEGGITT
COMM. #1927499
Notary Public - California
San Diego County
My Comm. Expires Mar. 29, 2015

CONTRACTORS CERTIFICATION OF PENDING ACTIONS

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past ten years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

CHECK ONE BOX ONLY.

☑ The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.

☐ The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

Date of Claim	Location	Description of Claim	Litigation (Y/N)	Status	Resolution/Remedial Action Taken
	N/A				

Contractor Name: NEW CENTURY CONSTRUCTION, INC

Certified By LEE P. SHELLBERG, II Title PRESIDENT

Name

Signature Date 5/28/13

USE ADDITIONAL FORMS AS NECESSARY

EQUAL BENEFITS ORDINANCE CERTIFICATION OF COMPLIANCE

For additional information, contact:
CITY OF SAN DIEGO
EQUAL BENEFITS PROGRAM
202 C Street, MS 9A, San Diego, CA 92101
Phone (619) 533-3948 Fax (619) 533-3220

COMPANY INFORMATION

Company Name: NEW CENTURY CONST. INC. Contact Name: LEE P. SHELLBERG

Company Address: 9119 EMERALD GROVE AVE. Contact Phone: 619-390-3300

LAKESIDE, CA 92040 Contact Email: newcenturyconstruction@yahoo.c

CONTRACT INFORMATION

Contract Title: CABRILLO HEIGHTS Start Date:

Contract Number (if no number, state location): K135084 End Date:

SUMMARY OF EQUAL BENEFITS ORDINANCE REQUIREMENTS

The Equal Benefits Ordinance [EBO] requires the City to enter into contracts only with contractors who certify they will provide and maintain equal benefits as defined in SDMC §22.4302 for the duration of the contract. To comply:

- Contractor shall offer equal benefits to employees with spouses and employees with domestic partners.
  - Benefits include health, dental, vision insurance; pension/401(k) plans; bereavement, family, parental leave; discounts, child care; travel/relocation expenses; employee assistance programs; credit union membership; or any other benefit.
  - Any benefit not offer an employee with a spouse, is not required to be offered to an employee with a domestic partner.
- Contractor shall post notice of firm's equal benefits policy in the workplace and notify employees at time of hire and during open enrollment periods.
- Contractor shall allow City access to records, when requested, to confirm compliance with EBO requirements.
- Contractor shall submit *EBO Certification of Compliance*, signed under penalty of perjury, prior to award of contract.

NOTE: This summary is provided for convenience. Full text of the EBO and Rules Implementing the EBO are available at *www.sandiego.gov/administration.*

CONTRACTOR EQUAL BENEFITS ORDINANCE CERTIFICATION

Please indicate your firm's compliance status with the EBO. The City may request supporting documentation.

☑ I affirm **compliance** with the EBO because my firm *(contractor must select one reason):*

- ☐ Provides equal benefits to spouses and domestic partners.
- ☑ Provides no benefits to spouses or domestic partners.
- ☐ Has no employees.
- ☐ Has collective bargaining agreement(s) in place prior to January 1, 2011, that has not been renewed or expired.

☐ I request the City's approval to pay affected employees a cash equivalent in lieu of equal benefits and verify my firm made a reasonable effort but is not able to provide equal benefits upon contract award. I agree to notify employees of the availability of a cash equivalent for benefits available to spouses but not domestic partners and to continue to make every reasonable effort to extend all available benefits to domestic partners.

It is unlawful for any contractor to knowingly submit any false information to the City regarding equal benefits or cash equivalent associated with the execution, award, amendment, or administration of any contract. [San Diego Municipal Code §22.4307(a)]

Under penalty of perjury under laws of the State of California, I certify the above information is true and correct. I further certify that my firm understands the requirements of the Equal Benefits Ordinance and will provide and maintain equal benefits for the duration of the contract or pay a cash equivalent if authorized by the City.

LEE P. SHELLBERG PRES	Lee P. Shellberg	5/28/13
Name/Title of Signatory	Signature	Date

FOR OFFICIAL CITY USE ONLY

Receipt Date: EBO Analyst: ☐ Approved ☐ Not Approved – Reason:

(Rev 02/15/2011)

PROPOSAL (BID)

The Bidder agrees to the construction of **CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS AND CABRILLO HEIGHTS WATERSHED PROTECTION**, for the City of San Diego, in accordance with these contract documents for the prices listed below. The Bidder guarantees the Contract Price for a period of 120 days (90 days for federally funded contracts and contracts valued at $500,000 or less) from the date of Bid opening to Award of the Contract. The duration of the Contract Price guarantee shall be extended by the number of days required for the City to obtain all items necessary to fulfill all conditions precedent e.g., bond and insurance.

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
Park Improvements, BASE BID, Drawing 36496-1-D through 36496-31-D							
1	1	LS	237990	2-4.1	Bonds (Payment and Performance)		$ 5,000.-
2	1	LS	237990	801-9.4	Water Pollution Control Program Development and Implementation		$ 1,000.-
3	1	LS	237990	9-3.1	Field Construction of Play Area Drainage, Accessible Parking and Accessible Path of Travel		$ 194,000.-
4	1	LS	238990	9-3.1	Field Construction of Play Equipment, Play Area Surfacing and Site Furnishings		$ 85,000.-
5	1	AL		9-3.5	Field Orders-Type II Allowance		$70,000.00
					ESTIMATED TOTAL PARK IMPROVEMENTS BASE BID		$ 355,000.-
Rain Garden Improvements, Drawing 36497-1-D through 20-D							
1	1	LS	237990	2-4.1	Bonds (Payment and Performance)		$ 6,000.-
2	1	LS	237990	9-3.1	Field Construction of two Rain Gardens including Associated Drainage and Signage Improvements		$ 345,000.-
3	1	LS	561730	9-3.1	Field Construction of Landscape and Irrigation		$ 99,000.-

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
4	1	LS	237990	801-9.4	Water Pollution Control Program Development and Implementation		$ 2,000.-
5	1	AL		9-3.5	Field Orders -Type II Allowance		$50,000.00
					ESTIMATED TOTAL RAIN GARDEN IMPROVEMENTS BASE BID		$ 493,000.-
ADDITIVE ALTERANTE "A" - Park Improvements							
1	1	LS	238110	9-3.1	Net Barrier Fencing, See 36496-15-D for Bid Alternate Legend		$ 45,000.-
2	1	AL	237990	7-5	Development Services Department Permit Fees for Net Barrier Fencing, see Section 7-5		$5,000.00
					ESTIMATED TOTAL FOR ADDITIVE ALTERNATE "A"		$ 50,000.-
ADDITIVE ALTERNATE "B" - Park Improvements							
1	1	LS	561730	9-3.1	Tree Planting and Irrigation, See 36496-15-D for Bid Alternate Legend		$ 18,000.-
					ESTIMATED TOTAL FOR ADDITIVE ALTERNATE "B"		$ 18,000.-
ADDITIVE ALTERNATE "C" - Park Improvements							
1	1	LS	237990	9-3.1	Field Construction of Concrete Flatwork, Access Upgrades, Drinking Fountain and Stairs, See F536496-15-D for Bid Alternate Legend		$ 15,000.-
2	1	LS	238990	9-3.1	Field Construction of Large Picnic Shelter and Picnic Tables, See F536496-15-D for Bid Alternate Legend		$ 40,000.-

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
3	1	AL	237990	7-5	Development Services Department Permit Fees for Large Shade Shelter, see Section 7-5+F42		$5,000.00
					ESTIMATED TOTAL FOR ADDITIVE ALTERNATE "C"		$ 60,000.-
ADDITIVE ALTERNATE "D" - Park Improvements							
1	1	LS	237990	9-3.1	Field Construction of Concrete Flatwork, Access Upgrades to Drinking Fountain and Stairs, See 36496-15-D for Bid Alternate Legend		$ 13,000.-
2	1	LS	238990	9-3.1	Field Construction of Small Picnic Shelter and Picnic Table, See 36496-15-D for Bid Alternate Legend		$ 20,000.-
3	1	AL	237990	7-5	Development Services Department Permit Fees for Small Shade Shelter, see Section 7-5		$5,000.00
					ESTIMATED TOTAL FOR ADDITIVE ALTERNATE "D"		$ 38,000.-
ADDITIVE ALTERNATE "E" - Park Improvements							
1	1	LS	237990	9-3.1	Field Construction of Concrete Flatwork, See 36496-15-D for Bid Alternate Legend		$25,000.00
2	1	LS	238990	9-3.1	Field Construction of Large Picnic Shelter and Picnic Tables, See 36496-15-D for Bid Alternate Legend		$40,000.00
3	1	AL	237990	7-5	Development Services Department Permit Fees for Large Shade Shelter, see Section 7-5		$5,000.00
					ESTIMATED TOTAL FOR ADDITIVE ALTERNATE "E"		$70,000.-
					ESTIMATED TOTAL BASE BID PLUS ADDITIVE ALTERNATES "A", "B", "C", "D" and "E"		$ 1,034,000.-

TOTAL BID PRICE FOR BID (Park Improvements, Items 1 through 5, Rain Garden, Items 1 through 5, PLUS Additive Alternate "A",. Items 1 through 2, Additive Alternate "B", Item 1, Additive Alternate "C", Items 1 through 3, Additive Alternate "D", Items 1 through 3 and Additive Alternate "E", Items 1 through 3 inclusive) amount written in words:

ONE MILLION, EIGHTY FOUR THOUSAND DOLLARS AND ZERO CENTS

The Bid shall contain an acknowledgment of receipt of all addenda, the numbers of which shall be filled in on the Bid form. If an addendum or addenda has been issued by the City and not noted as being received by the Bidder, this proposal shall be rejected as being **non-responsive**. The following addenda have been received and are acknowledged in this bid: A

The names of all persons interested in the foregoing proposal as principals are as follows:

LEE P. SHELBERG, JR
PRESIDENT (HOLDS ALL OFFICES)

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Bidder or other interested person is an individual, state first and last names in full.

Bidder: NEW CENTURY CONSTRUCTION, INC.

Title: PRESIDENT

Business Address: 9119 EMERALD GROVE AVE.

Place of Business: LAKESIDE, CA 92040

Place of Residence: LAKESIDE, CA

Signature:

NOTES:

A. The City shall determine the low Bid based on the Base Bid PLUS Additive Alternates **A, B, C, D and E.**

B. After the low Bid has been determined, the City may award the Contract for the Base Bid alone or if applicable, for the Base Bid plus any combination of alternates selected in the City's sole discretion.

C. Prices and notations shall be in ink or typewritten. All corrections (which have been initiated by the Bidder using erasures, strike out, line out, or "white-out") shall be typed or written in with ink adjacent thereto, and shall be initialed in ink by the person signing the bid proposal.

D. Failure to initial all corrections made in the bidding documents shall cause the Bid to be rejected as **non-responsive** and ineligible for further consideration.

E. Blank spaces must be filled in, using figures. Bidder's failure to submit a price for any Bid item that requires the Bidder to submit a price shall render the Bid **non-responsive** and shall be cause for its rejection.

F. Unit prices shall be entered for all unit price items. Unit prices shall not exceed two (2) decimal places. If the Unit prices entered exceed two (2) decimal places, the City will only use the first two digits after the decimal points without rounding up or down.

G. All extensions of the unit prices bid will be subject to verification by the City. In the case of inconsistency or conflict between the product of the Quantity x Unit Price and the Extension, the product shall govern.

H. In the case of inconsistency or conflict, between the sums of the Extensions with the estimated total Bid, the sum of the Extensions shall govern.

I. Bids shall not contain any recapitulation of the Work. Conditional Bids will be rejected as being **non-responsive.** Alternative proposals will not be considered unless called for.

LIST OF SUBCONTRACTORS

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also list below the portion of the work which will be done by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed shall be stated for all subcontractors listed. Failure to comply with this requirement shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, which stipulates the percent of the Work to be performed with the Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED②	CHECK IF JOINT VENTURE PARTNERSHIP
Name: Century Pacific Landscape Address: 135 Norton Ave. City: N. City State: CA Zip: 91950 Phone: 619-474-3601	Const.	Landscaping	85,970.			
Name: Quality fence Inc. Address: 14929 Garfield Ave. City: Paramount State: CA Zip: 90723 Phone: 323-595-8575	Const.	~~fencing~~	~~41,408~~ GPS 46,408	GPS		
Name: J & J Const Address: 30724 Benton Rd. City: Winchester State: CA Zip: 92596 Phone: 562-381-4733	Const.	playground (inst) (Shelter ~~inst~~ install)	GPS ~~3C~~ 7,500			

① As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

Certified Minority Business Enterprise	MBE	Certified Woman Business Enterprise	WBE
Certified Disadvantaged Business Enterprise	DBE	Certified Disabled Veteran Business Enterprise	DVBE
Other Business Enterprise	OBE	Certified Emerging Local Business Enterprise	ELBE
Certified Small Local Business Enterprise	SLBE	Small Disadvantaged Business	SDB
Woman-Owned Small Business	WoSB	HUBZone Business	HUBZone
Service-Disabled Veteran Owned Small Business	SDVOSB		

② As appropriate, Bidder shall indicate if Subcontractor is certified by:

City of San Diego	CITY	State of California Department of Transportation	CALTRANS
California Public Utilities Commission	CPUC	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

0.1044 GPS

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

LIST OF SUBCONTRACTORS

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also list below the portion of the work which will be done by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed shall be stated for all subcontractors listed. Failure to comply with this requirement shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, which stipulates the percent of the Work to be performed with the Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED②	CHECK IF JOINT VENTURE PARTNERSHIP
Name: Spectra Turf Address: 500 E. Rincon City: Corona State: CA Zip: 92879 Phone: 951-875-5488	Const.	Playground surface	19,700.-			
Name: Address: City: State: Zip: Phone:						
Name: Address: City: State: Zip: Phone:						

① As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

Certified Minority Business Enterprise	MBE	Certified Woman Business Enterprise	WBE
Certified Disadvantaged Business Enterprise	DBE	Certified Disabled Veteran Business Enterprise	DVBE
Other Business Enterprise	OBE	Certified Emerging Local Business Enterprise	ELBE
Certified Small Local Business Enterprise	SLBE	Small Disadvantaged Business	SDB
Woman-Owned Small Business	WoSB	HUBZone Business	HUBZone
Service-Disabled Veteran Owned Small Business	SDVOSB		

② As appropriate, Bidder shall indicate if Subcontractor is certified by:

City of San Diego	CITY	State of California Department of Transportation	CALTRANS
California Public Utilities Commission	CPUC	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

NAMED EQUIPMENT/MATERIAL SUPPLIER LIST

The Bidder seeking the recognition of equipment, materials, or supplies obtained from Suppliers towards achieving any mandatory, voluntary, or both subcontracting participation percentages shall list the Supplier(s) on the Named Equipment/Material Supplier List. The Named Equipment/Material Supplier List, at a minimum, shall have the name, locations (City) and the **DOLLAR VALUE** of the Suppliers. The Bidder will be credited up to 60% of the amount to be paid to the Suppliers for such materials and supplies unless vendor manufactures or substantially alters materials and supplies in which case 100% will be credited. The Bidder is to indicate (Yes/No) whether listed firm is a supplier or manufacturer. In calculating the subcontractor participation percentages, vendors/suppliers will receive 60% credit of the listed **DOLLAR VALUE**, whereas manufacturers will receive 100% credit. If no indication provided, listed firm will be credited at 60% of the listed dollar value for purposes of calculating the Subcontractor Participation Percentage, Suppliers will receive 60% credit of the listed **DOLLAR VALUE**, whereas manufacturers will receive 100% credit. If no indication provided, listed firm will be credited at 60% of the listed **DOLLAR VALUE** for purposes of calculating the subcontractor participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF VENDOR/SUPPLIER	MATERIALS OR SUPPLIES	DOLLAR VALUE OF MATERIAL OR SUPPLIES	SUPPLIER (Yes/No)	MANUFACTURER (Yes/No)	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED②
Name:_____ Address:_____ City:_____ State:_____ Zip:_____ Phone:_____						
Name:_____ Address:_____ City:_____ State:_____ Zip:_____ Phone:_____						
Name:_____ Address:_____ City:_____ State:_____ Zip:_____ Phone:_____						

① As appropriate, Bidder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

Certified Minority Business Enterprise	MBE	Certified Woman Business Enterprise	WBE
Certified Disadvantaged Business Enterprise	DBE	Certified Disabled Veteran Business Enterprise	DVBE
Other Business Enterprise	OBE	Certified Emerging Local Business Enterprise	ELBE
Certified Small Local Business Enterprise	SLBE	Small Disadvantaged Business	SDB
Woman-Owned Small Business	WoSB	HUBZone Business	HUBZone
Service-Disabled Veteran Owned Small Business	SDVOSB		

② As appropriate, Bidder shall indicate if Vendor/Supplier is certified by:

City of San Diego	CITY	State of California Department of Transportation	CALTRANS
California Public Utilities Commission	CPUC	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATE
(USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

Bidder shall list all Subcontractors described in the Bidder's *Base Bid* whose percentage of work will increase or decrease if alternates are selected for award. Bidder shall also list additional Subcontractors not described in the Bidder's *Base Bid* who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%.. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/ DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED②	CHECK IF JOINT VENTURE PARTNERSHIP
B-E	Name: Century Pacific Landscape Address: 135 N. Ave City: National City State: CA Zip: 91950 Phone: 619-474-3601	Const.	Landscape	32,000			
A	Name: Quality Fence, Inc Address: 14929 Garfield Ave City: Paramount State: CA Zip: 90723 Phone: 323-585-1585	Const	Fencing	41,408			
C, D	Name: J & J Const Address: 30724 Benton Rd. City: Winchester State: CA Zip: ~~92596~~ 92596 Phone: 562 381-4733	Const.	Playground shelter equip	23,100.-			
	Name: Address: City: State: Zip: Phone:						

① As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

Certified Minority Business Enterprise	MBE	Certified Woman Business Enterprise	WBE
Certified Disadvantaged Business Enterprise	DBE	Certified Disabled Veteran Business Enterprise	DVBE
Other Business Enterprise	OBE	Certified Emerging Local Business Enterprise	ELBE
Certified Small Local Business Enterprise	SLBE	Small Disadvantaged Business	SDB
Woman-Owned Small Business	WoSB	HUBZone Business	HUBZone
Service-Disabled Veteran Owned Small Business	SDVOSB		

② As appropriate, Bidder shall indicate if Subcontractor is certified by:

City of San Diego	CITY	State of California Department of Transportation	CALTRANS
California Public Utilities Commission	CPUC	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

The Bidder will not receive any subcontracting participations percentages if the Bidder fails to submit the required proof of certification.

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDENS

UNDERGROUND UTILITIES

AT LEAST THREE (3) WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL REQUEST A MARKOUT OF UNDERGROUND UTILITIES BY CALLING THE BELOW LISTED REGIONAL NOTIFICATION CENTER FOR AN INQUIRY IDENTIFICATION NUMBER:
UNDERGROUND SERVICE ALERT (U.S.A.) 1-800-422-4133

CONTRACTOR'S RESPONSIBILITIES

1. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING: SAFETY OF ALL PERSONS AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
2. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AROUND AREAS OF DISTURBANCE DURING CONSTRUCTION. INSTALLATION OF TEMPORARY FENCING SHALL NOT DETER OR HINDER ACCESS TO EXISTING AND NEW FIRE HYDRANTS. FENCING SHALL BE MAINTAINED IN A GOOD CONDITION AND IF DAMAGED, THE CONTRACTOR SHALL REPAIR IMMEDIATELY. CONTRACTOR SHALL REMOVE FENCING UPON THE COMPLETION OF THE WORK AND REPAIR DAMAGE CAUSE BY THE INSTALLATION OF TEMPORARY FENCING.

WATER POLLUTION CONTROL NOTES:

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS NOTED IN THE GREENBOOK 2009 CITY SUPPLEMENT SEC 801 - WATER POLLUTION CONTROL.

REFERENCE DRAWINGS:

CABRILLO HEIGHTS NEIGHBORHOOD PARK AS-BUILT PLANS	23590-1-D TO 23590-1-23590-1-D
CANYON SEWER - CABRILLO HEIGHTS PARK	12807-26-D
IMPROVEMENT PLANS FOR KEARNY VILLA ROAD	19413-1-D
PLANS FOR THE CONSTRUCTION OF SANITARY SEWER TO SERVE RESEARCH PARK	4414-D
PLANS FOR CONSTRUCTION OF CABRILLO HEIGHTS NEIGHBORHOOD PARK AREA	9776-2,3-D
PLANS FOR CONSTRUCTION OF CABRILLO HEIGHTS NEIGHBORHOOD PARK STORM DRAIN	22746-1,2-D
PLANS FOR THE IMPROVEMENTS OF :8" WATER MAIN	21669-2-D
IMPROVEMENT PLAN FOR NAVY HOUSING AT CABRILLO HEIGHTS	32509-9,10-D
SEWER AND WATER PLANS	1936-D
PLANS FOR THE INSTILLATION OF TELEPHONE CONDUITS	30133-6-D
AFTON D. & MILAGROS ST. IN CABRILLO VILLAGE UNIT	34715-D
CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS	23590-3,4-D

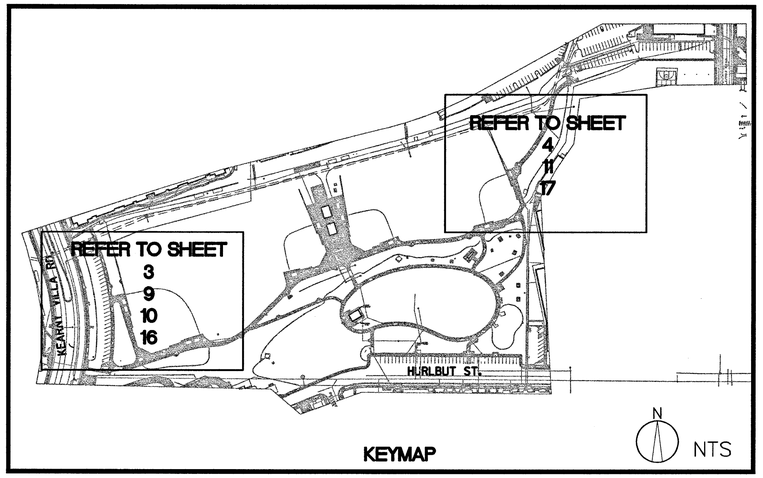
PARK CONSTRUCTION INSPECTION STAGES AND INSPECTION TEAM

PARK INSPECTION TEAM:

1. SITE SUPERINTENDENT (CONTRACTOR/ DEVELOPER'S REPRESENTATIVE)
2. CONTRACTOR(S)
3. RESIDENT ENGINEER FROM FIELD ENGINEERING DEPARTMENT
4. CITY PROJECT MANAGER
5. DESIGN CONSULTANT
6. PARK AND RECREATION DISTRICT MANAGER
7. PARK AND RECREATION ASSET MANAGER
8. STORM WATER REPRESENTITIVE

PARKCONSTRUCTION INSPECTION STAGES: (MINIMUM)

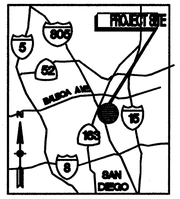
1. PRE-CONSTRUCTION MEETING.
2. ROUGH GRADING AND DRAINAGE.
3. IRRIGATION MAINLINE PRESSURE TEST.
4. IRRIGATION LATERAL LINE PRESSURE TEST.
5. WIRING PRIOR TO BACKFILLING TRENCHES.
6. HARDSCAPE AT TIME OF FINISHED STAKING AND LAYOUT.
7. FINISH GRADING AND SOIL PREPARATION.
8. IRRIGATION COVERAGE TEST.
9. PLANT MATERIAL (WHEN DELIVERED) AND PLACEMENT APPROVAL.
10. PROJECT CONSTRUCTION 90 PERCENT COMPLETE (DEVELOP PUNCH LIST AND SUBMIT RED-LINE AS-BUILTS).
11. 120 DAY PLANT MAINTENANCE PERIOD (THIS INSPECTION IS TO BE HELD WHEN THE PUNCH LIST ITEMS ARE COMPLETE).
12. FINAL WALK-THROUGH, ACCEPTANCE BY THE CITY. CONTRACTOR TO SUBMIT FINAL APPROVED AS-BUILT DRAWINGS TO THE CITY.



KEYMAP

STORM WATER PROTECTION NOTES

1. THIS PROJECT IS SUBJECT TO MUNICIPAL STORM WATER PERMIT ORDER NO._____: AND RISK LEVEL/TYPE: CHECK ONE BELOW
   - ☒ WPCP
   - ☐ CGP RISK LEVEL 1 — CGP LUP TYPE 1
   - ☐ CGP RISK LEVEL 2 — CGP LUP TYPE 2
   - ☐ CGP RISK LEVEL 3 — CGP LUP TYPE 3
2. CHECK ONE
   - ☐ THIS PROJECT WILL EXCEED THE MAXIMUM DISTURBED AREA LIMIT, THEREFORE A WEATHER TRIGGERED ACTION PLAN (WTAP) IS REQUIRED.
   - ☐ THIS PROJECT WILL FOLLOW PHASED GRADING NOT TO EXCEED FIVE (5) ACRES PER PHASE.
   - ☒ NOT APPLICABLE
3. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE WPCP OR SWPPP AS APPLICABLE.



VICINITY MAP
NOT TO SCALE

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE LANDSCAPE ARCHITECT OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IN CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF THE PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS LANDSCAPE ARCHITECT OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

Kurt W. Carlson

KURT W. CARLSON - LICENSE NUMBER 2342 - 2/28/13
KTU+A 15
3916 NORMAL STREET
SAN DIEGO, CA 92103
P: (619) 294-4477
F: (619) 294-9965
KURT@KTUA.COM

SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE
1	G-1	TITLE SHEET
2	C-1	NOTES SHEET
3	C-2	DEMOLITION PLAN
4	C-3	WEST GARDEN GRADING PLAN
5	C-4	EAST GARDEN GRADING PLAN
6	C-5	WEST GARDEN STORM DRAIN PROFILES
7	C-6	EAST GARDEN STORM DRAIN PROFILES
8	C-7	EROSION CONTROL PLAN
9	IP-1	IRRIGATION PLAN
10	IP-2	IRRIGATION PLAN
11	IP-3	IRRIGATION PLAN
12	IP-4	IRRIGATION PLAN
13	IP-5	IRRIGATION NOTES AND LEGEND
14	IP-6	IRRIGATION DETAILS
15	IP-7	IRRIGATION DETAILS
16	LP-1	PLANTING PLAN
17	LP-2	PLANTING PLAN
18	LP-3	PLANTING LEGEND AND NOTES
19	LP-4	PLANTING DETAILS
20	LP-5	CONSTRUCTION DETAILS AND SCHEDULE

WORK TO BE DONE

PLANS, NOTES, SPECIFICATIONS, AND DETAILS FOR THE DEVELOPMENT OF CABRILLO HEIGHTS NEIGHBORHOOD PARK RAIN GARDENS ARE ENCLOSED IN THIS IMPROVEMENT PACKAGE. IMPROVEMENTS SHALL INCLUDE GRADING, CONCRETE WORK, PLANTING, AND IRRIGATION.

PROJECT DIRECTORY

OWNER:
CITY OF SAN DIEGO
ENGINEERING AND CAPITAL PROJECTS
600 B STREET,
SUITE 800, MS 908A
SAN DIEGO, CA 92101-4502
P: (619) 533-4698
CONTACT: MS. SHEILA BOSE
SBOSE@SANDIEGO.GOV

CIVIL ENGINEER:
BURKET AND WONG
3434 4TH AVENUE
SAN DIEGO, CA 92103
P: (619) 299-5550
CONTACT: CARL FIORICA
CFIORICA@BURKETT-WONG.COM

PRIME CONSULTANT:
KTU+A
3916 NORMAL STREET,
SAN DIEGO, CA 93102
P: (619) 294-4477
F: (619) 294-9965
CONTACT:
CHERI BLATNER - SENIOR ASSOCIATE
CHERI@KTUA.COM, EXT. 119
BROOKE PIETZ, PROJECT MANAGER
BROOKE@KTUA.COM, EXT. 151

G-1

PLANS FOR THE CONSTRUCTION OF:
CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN
TITLE SHEET

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

TEMPORARY BMP SITE STORM WATER PRIORITY - X - LOW

CONSULTANT

KTU+A
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax • 619.294.9965

SPEC NUMBER: 5784

REGISTERED LANDSCAPE ARCHITECT CARL W. CARLSON No. 2342 Exp. 2/28/13 STATE OF CALIFORNIA

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 01 OF 20 SHEETS

APPROVED: [signature] 3/14/13
FOR CITY ENGINEER — DATE

WBS B-10025

APPROVED BY: KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE: PROJECT MANAGER
232-1723 CCDES' COORDINATE
1868-6284 CCDES COORDINATE
36497-1-D

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER DOES NOT AUTHORIZE ANY WORK TO BE PERFORMED UNTIL *A PERMIT/ *A NOTICE TO PROCEED HAS BEEN ISSUED.

2. THE APPROVAL OF THIS PLAN OR ISSUANCE OF A PERMIT BY THE CITY OF SAN DIEGO DOES NOT AUTHORIZE THE SUBDIVIDER AND OWNER TO VIOLATE ANY FEDERAL, STATE OR CITY LAWS, ORDINANCES, REGULATIONS, OR POLICIES, INCLUDING, BUT NOT LIMITED TO, THE FEDERAL ENDANGERED SPECIES ACT OF 1973 AND AMENDMENTS THERETO (16 USC SECTION 1531 ET.SEQ.).

3. "PUBLIC IMPROVEMENT SUBJECT TO DESUETUDE OR DAMAGE." IF REPAIR OR REPLACEMENT OF SUCH PUBLIC IMPROVEMENTS IS REQUIRED, THE OWNER SHALL OBTAIN THE REQUIRED PERMITS FOR WORK IN THE PUBLIC RIGHT-OF-WAY, SATISFACTORY TO THE PERMIT- ISSUING AUTHORITY.

4. ALL EXISTING AND/OR PROPOSED PUBLIC UTILITY SYSTEM AND SERVICE FACILITIES SHALL BE INSTALLED UNDERGROUND IN ACCORDANCE WITH SECTION 144.0240 OF THE MUNICIPAL CODE.

5. DEVIATIONS FROM THESE SIGNED PLANS WILL NOT BE ALLOWED UNLESS A CONSTRUCTION CHANGE IS APPROVED BY THE CITY ENGINEER OR THE CHANGE IS REQUIRED BY THE CITY INSPECTOR.

6. REDLINE DRAWINGS MUST BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO ACCEPTANCE OF THIS PROJECT BY THE CITY OF SAN DIEGO.

7. AN AS-GRADED GEOTECHNICAL REPORT AND A SET OF THE REDLINE GRADING PLANS SHALL BE SUBMITTED AT AREA 3 ON THE THIRD FLOOR OF DEVELOPMENT SERVICES WITHIN 30 CALENDAR DAYS OF THE COMPLETION OF GRADING. AN ADDITIONAL SET SHALL BE PROVIDED TO THE RESIDENT ENGINEER OF THE FIELD ENGINEERING DIVISION AT 9485 AERO DR.

8. THE AREA WHICH IS DEFINED AS A NON GRADING AREA AND WHICH IS NOT TO BE DISTURBED SHALL BE STAKED PRIOR TO START OF THE WORK. THE PERMIT APPLICANT AND ALL OF THEIR REPRESENTATIVES OR CONTRACTORS SHALL COMPLY WITH THE REQUIREMENTS FOR PROTECTION OF THIS AREA AS REQUIRED BY ANY APPLICABLE AGENCY. ISSUANCE OF THE CITY'S GRADING PERMIT SHALL NOT RELIEVE THE APPLICANT OR ANY OF THEIR REPRESENTATIVES OR CONTRACTORS FROM COMPLYING WITH ANY STATE OR FEDERAL REQUIREMENTS BY AGENCIES INCLUDING BUT NOT LIMITED TO CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CALIFORNIA DEPARTMENT OF FISH AND GAME. COMPLIANCE MAY INCLUDE OBTAINING PERMITS, OTHER AUTHORIZATIONS, OR COMPLIANCE WITH MANDATES BY ANY APPLICABLE STATE OR FEDERAL AGENCY.

9. CONTRACTOR SHALL REMOVE AND REPLACE ALL UTILITY BOXES SERVING AS HANDHOLES THAT ARE NOT IN "AS-NEW" CONDITION IN PROPOSED SIDEWALK. DAMAGED BOXES, OR THOSE THAT ARE NOT IN COMPLIANCE WITH CURRENT CODE SHALL BE REMOVED AND REPLACED WITH NEW BOXES, INCLUDING WATER, SEWER, TRAFFIC SIGNALS, STREET LIGHTS, DRY UTILITIES-SDG&E, COX, ETC. ALL NEW METAL LIDS SHALL BE SLIP RESISTANT (FRICTION FACTOR >/= 0.50) AND INSTALLED FLUSH WITH PROPOSED SIDEWALK GRADE. IF A SLIP RESISTANT METAL LID IS NOT COMMERCIALLY AVAILABLE FOR THAT USE, NEW BOXES AND LIDS SHALL BE INSTALLED.

GRADING NOTES

1. GRADING AS SHOWN ON THESE PLANS SHALL BE IN CONFORMANCE WITH CURRENT STANDARD SPECIFICATIONS AND CHAPTER 14, ARTICLE 2, DIVISION 1, OF THE SAN DIEGO MUNICIPAL CODE.

2. PLANT AND IRRIGATE ALL CUT AND FILL SLOPES AS REQUIRED BY ARTICLE 2, DIVISION 4, SECTION 142.0411 OF THE SAN DIEGO LAND DEVELOPMENT CODE AND ACCORDING TO SECTION IV OR THE LAND DEVELOPMENT MANUAL LANDSCAPE STANDARDS.

3. GRADED, DISTURBED, OR ERODED AREAS THAT WILL NOT BE PERMANENTLY PAVED, COVERED BY STRUCTURE, OR PLANTED FOR A PERIOD OVER 90 DAYS SHALL BE TEMPORARILY RE-VEGETATED WITH A NON-IRRIGATED HYDROSEED MIX, GROUND COVER, OR EQUIVALENT MATERIAL.

GRADING + GEOTECHNICAL SPECIFICATIONS

1. ALL GRADING SHALL BE DONE UNDER OBSERVATION AND TESTING BY A QUALIFIED CIVIL ENGINEER OR GEOTECHNICAL ENGINEER AND, IF REQUIRED, BOTH A QUALIFIED CIVIL ENGINEER OR GEOTECHNICAL ENGINEER AND AN ENGINEERING GEOLOGIST. ALL GRADING MUST BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY ORDINANCE AND THE RECOMMENDATIONS AND SPECIFICATIONS SET FORTH IN THE SOILS REPORT OR GEOLOGICAL/GEOTECHNICAL INVESTIGATION ENTITLED

LIMITED GEOTECHNICAL EVALUATION, IMPROVEMENTS AND RAIN GARDENS
CABRILLO HEIGHTS NEIGHBORHOOD PARK
SAN DIEGO, CALIFORNIA

2. ALL FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MOST RECENT VERSION OF A.S.T.M. D-1557 OR AN APPROVED ALTERNATIVE STANDARD.

3. AT THE COMPLETION OF THE GRADING OPERATIONS FOR THE EARTHWORK SHOWN ON THIS PLAN, AN AS-GRADED SOILS REPORT, OR IF REQUIRED, AN AS-GRADED GEOTECHNICAL REPORT WILL BE PREPARED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE CITY OF SAN DIEGO TECHNICAL GUIDELINES FOR GEOTECHNICAL REPORTS. THE FINAL "AS-GRADED" GEOTECHNICAL REPORT WILL BE SUBMITTED TO THE FIELD ENGINEERING SECTION OF ENGINEERING AND CAPITAL PROJECTS DEPARTMENT. WHERE GEOLOGIC INSPECTION IS INDICATED IN THE PERMIT OR PROJECT PLANS, REPORTS OR SPECIFICATIONS, THE FINAL REPORT MUST ALSO BE REVIEWED AND SIGNED BY A CALIFORNIA CERTIFIED ENGINEERING GEOLOGIST.

4. IF THE GEOTECHNICAL CONSULTANT OF RECORD IS CHANGED FOR THE PROJECT, THE WORK SHALL BE STOPPED UNTIL THE REPLACEMENT HAS AGREED IN WRITING TO ACCEPT THE RESPONSIBILITY WITHIN THE AREA OF THEIR TECHNICAL COMPETENCE FOR APPROVAL UPON COMPLETION OF THE WORK.

5. THESE GRADING PLANS HAVE BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AND SPECIFICATIONS CONTAINED IN THE REFERENCED GEOTECHNICAL REPORT(S) PREPARED FOR THIS PROJECT.

ANDRES BERNAL	G.E.	DATE
BRYAN MILLER-HICKS	C.E.G.	DATE

NOVA ENGINEERING AND ENVIRONMENTAL
4373 VIEWRIDGE AVE, SUITE B
SAN DIEGO, CA 92123
858-292-7575

*IF THE SOILS ENGINEER (R.C.E. OR G.E.) AND CERTIFIED ENGINEERING GEOLOGIST (C.E.G.) SIGNING THIS STATEMENT ARE NOT FROM THE SAME COMPANY, BOTH COMPANY NAMES AND PHONE NUMBERS MUST BE PROVIDED.

6. FOR SOIL FILE SEE CITY RECORD S - _____

SPECIAL NOTES:

THE FOLLOWING NOTES ARE PROVIDED TO GIVE DIRECTIONS TO THE CONTRACTOR BY THE ENGINEER OF WORK. THE CITY ENGINEER'S SIGNATURE ON THESE PLANS DOES NOT CONSTITUTE APPROVAL OF ANY OF THESE NOTES AND THE CITY WILL NOT BE RESPONSIBLE FOR THEIR ENFORCEMENT.

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTORS SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER, ENGINEER AND GEOLOGIST HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN THE CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROPERTY, EXCEPTING FOR LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

2. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.

3. CONTRACTOR SHALL REMOVE AND REPLACE, TO THE SATISFACTION OF THE CITY ENGINEER, ALL DESTROYED OR DAMAGED SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL OR SUPERIOR.

4. DURING CONSTRUCTION: THE CONTRACTOR SHALL PROPERLY GRADE ALL EXCAVATED SURFACES TO PROVIDE POSITIVE DRAINAGE AND PREVENT PONDING OF WATER. THE CONTRACTOR SHALL CONTROL SURFACE WATER TO AVOID DAMAGE TO ADJOINING PROPERTIES OR TO FINISHED WORK ON THE SITE.

5. ALL WORK NEEDING MATERIALS TESTING REQUIRES THAT THE CONTRACTOR NOTIFY THE CITY MATERIALS LAB AT (858)-627-3279 BY NOON THE DAY BEFORE THE WORK IS SCHEDULED TO BEGIN TO ARRANGE FOR TESTING.

6. WORK PERFORMED WITHOUT BENEFIT OF TESTING AND/OR INSPECTION SHALL BE SUBJECT TO REJECTION AND REMOVAL.

7. CONTRACTOR SHALL NOTIFY THE CITY OF SAN DIEGO FIELD ENGINEERING DIVISION AT (858)-527-3200 48 HOURS BEFORE BEGINNING OF WORK.

8. THE EXISTENCE AND LOCATION OF UTILITY STRUCTURES AND FACILITIES SHOWN ON THE CONSTRUCTION PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. ATTENTION IS CALLED TO THE POSSIBLE EXISTENCE OF OTHER UTILITY FACILITIES OR STRUCTURES NOT KNOWN OR IN A LOCATION DIFFERENT FROM THAT SHOWN ON THE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN ON THE PLANS AND ANY OTHER EXISTING FACILITIES OR STRUCTURES THAT MAY NOT BE SHOWN.

9. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING FACILITIES (ABOVEGROUND AND UNDERGROUND) WITHIN THE PROJECT SITE SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT THE REVISION OF THE CONSTRUCTION PLANS IF IT IS FOUND THE ACTUAL LOCATIONS ARE IN CONFLICT WITH THE PROPOSED WORK.

10. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FROM THE CITY OF SAN DIEGO FOR WORK WITHIN THE PUBLIC RIGHT OF WAY.

11. NEITHER THE CITY NOR THE ENGINEER OF WORK WILL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY DEVICES INCLUDING SHORING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING AND COORDINATING ALL UTILITY COMPANY CONNECTION POINTS.

13. EXTREME CARE SHOULD BE EXERCISED WITH EXISTING WIRES WHICH ARE TO BE REUSED. IF THEY ARE DAMAGED DUE TO NEGLIGENCE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPLACE ALL WIRES IN THE AFFECTED CONDUIT BACK TO THE NEAREST PULLBOX.

CAUTION: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

REFERENCE DRAWINGS

REFERENCE DRAWING DESCRIPTION	DRAWING NUMBER
CANYON SEWER - CABRILLO HEIGHTS PARK	12807-26-D
IMPROVEMENT PLANS FOR KEARNY VILLA ROAD	19413-1-D
PLANS FOR THE CONSTRUCTION OF SANITARY SEWER TO SERVE RESEARCH PARK 4414-D	4414-D
PLANS FOR THE IMPROVEMENT OF CABRILLO HEIGHTS PARK AREA	9776-2,3-D
PLANS FOR CONSTRUCITON OF CABRILLO HTS. NEIGHBORHOOD PARK STORM DRAIN	22746-1,2-D
PLANS FOR THE IMPROVEMENTS OF: 8" WATER MAIN	21669-2-D
IMPROVEMENT PLAN FOR: NAVY HOUSING AT CABRILLO HEIGHTS	32509-9,10-D
SEWER AND WATER PLANS	1936-D
PLANS FOR THE INSTALLATION OF TELEPHONE CONDUITS	30133-6-D
AFTON D. & MILAGROS ST. IN CABRILLO VILLAGE UNIT	34715-D
CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS	23590-3,4-D

TOPOGRAPHY SOURCE

AERIAL PHOTOGRAMMETRY BY COOPER AERIAL SURVEYS CO., FLOWN JAN 2011 SUPPLEMENTED WITH FIELD TOPO SURVEYED FEB 2011.

BENCHMARK

CITY OF SAN DIEGO BRASS PLUG AT THE NORTH EAST CORNER OF THE INTERSECTION OF AFTON ROAD AND HURLBUT STREET, INDEX NO. 2231-17254
ELEVATION = 401.889 (NGVD 29, MEAN SEA LEVEL)

TOTAL DISTURBED AREA

0.28 ACRES

GRADING QUANTITIES

GRADED AREA	0.28 [ACRES]	MAX. CUT DEPTH	6 [FT]
CUT QUANTITIES	1,200 [CYD]	MAX CUT SLOPE RATIO (2:1MAX)	3:1
FILL QUANTITIES	0 [CYD]	MAX. FILL DEPTH	0 [FT]
EXPORT	1,200 [CYD]	MAX FILL SLOPE RATIO (2:1MAX)	N/A

THIS PROJECT PROPOSES TO EXPORT 1,200 CUBIC YARDS OF MATERIAL FROM THIS SITE. ALL EXPORT MATERIAL SHALL BE DISCHARGED TO A LEGAL DISPOSAL SITE. THE APPROVAL OF THIS PROJECT DOES NOT ALLOW PROCESSING AND SALE OF THE MATERIAL. ALL SUCH ACTIVITIES REQUIRE A SEPARATE CONDITIONAL USE PERMIT.

ABBREVIATIONS

C&G	CURB & GUTTER
CAP	CAPACITY
CB	CATCH BASIN
CFS	CUBIC FEET PER SECOND
CI	CURB INLET
FL	FLOW LINE
FPS	FEET PER SECOND
HR	HOUR
IE	INVERT ELEVATION
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MOD	MODIFIED
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONRETE PIPE
SD	STORM DRAIN
SDCO	STORM DRAIN CLEANOUT
SDRSD	SAN DIEGO REGIONAL STANDARD DRAWING
(W)	WATERTIGHT

ALL NEW ASSETS SHOWN IN THIS SET OF PLANS ARE TO BE OWNED AND MAINTAINED BY THE STORM WATER DIVISION

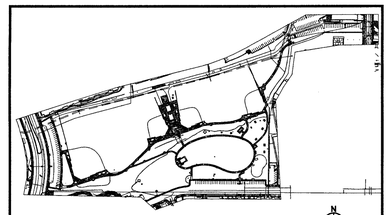
LEGEND

PROPOSED IMPROVEMENTS

IMPROVEMENT	STANDARD DWGS.	SYMBOL
CONTOUR LINE		380
CONCRETE SIDEWALK	SDG-109, 155, 156, G-10	
SCHEDULE J PAVEMENT	SDG-113	
TYPE G CURB & GUTTER	SDG-151	
STORM DRAIN	SDD-110	
TYPE 'F' CATCH BASIN	SDD-119, 114	
TYPE 'A' STORM DRAIN CLEANOUT	SDD-114, D-9	
TYPE 'B' CURB INLET	SDD-114, 116	
STRAIGHT HEADWALL	D-32	
RIP RAP ENERGY DISSIPATOR	SDD-104	
POROUS CUP LYSIMETER		
GRADING DAYLIGHT/LIMITS		

EXISTING IMPROVEMENTS

ITEM	SYMBOL
STORM DRAIN	OR SD
WATER	W
SEWER	S
ELECTRIC	E
TELEPHONE	T



C-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

NOTE SHEET

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 2 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOISE
PROJECT MANAGER

232-1723
CCS27 COORDINATE

1868-6284
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-2 -D

CONSULTANT

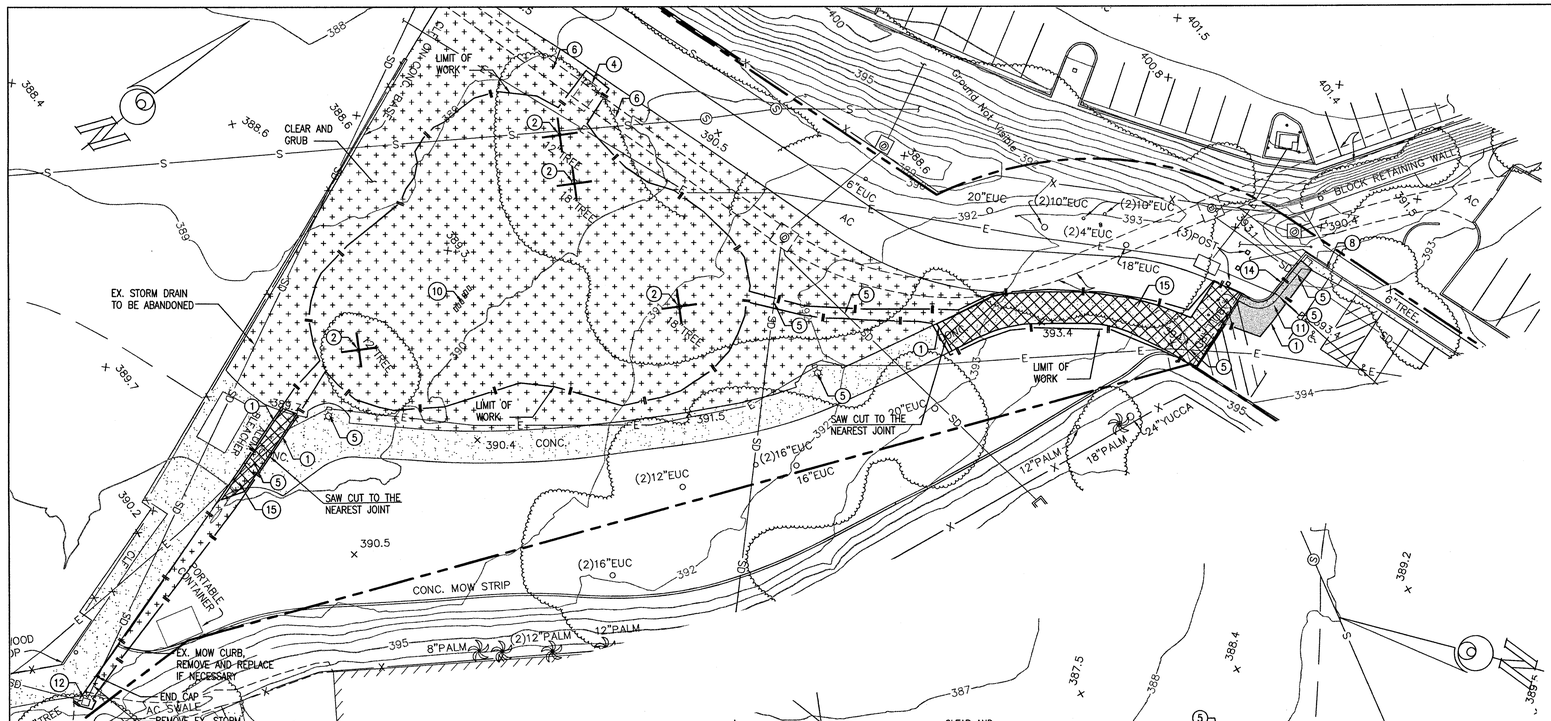
BURKETT&WONG ENGINEERS

ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER — RAFAEL M. FLORES — No. 44176 — Exp. 06-30-13 — CIVIL — STATE OF CALIFORNIA

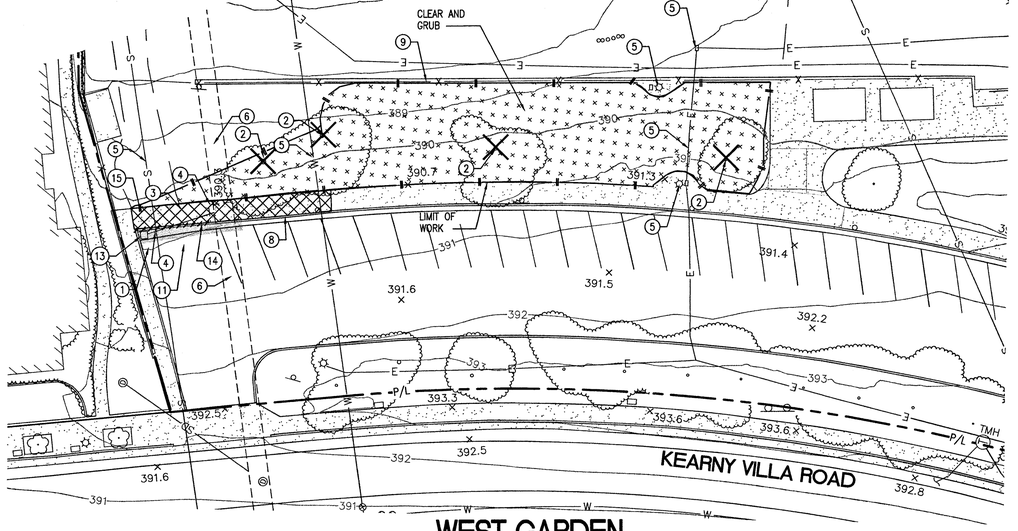
CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

M:\Projects\10500\10655u - Cabrillo Heights Neighborhood Park\dwgs\Sheet_Dwgs\10655-NOTES.dwg 01/08/2013 13:32



EAST GARDEN

SCALE 1"=20'



WEST GARDEN

SCALE 1"=20'

LEGEND

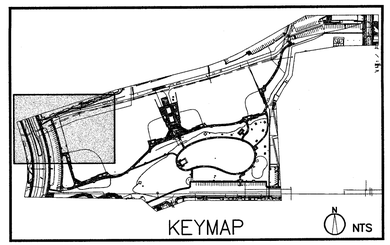
EXIST. GUARD POST	GP
EXIST. FENCE	
EXIST. CURB & GUTTER	
EXIST. BUILDING FOOTPRINT	
EXIST. SEWER CLEAN OUT	SCO
EXIST. CONCRETE	CONC.
EXIST. DECIDUOUS TREE	
EXIST. PALM TREE	
EXIST. TC/FL ELEVATION	359.00TC / 358.50FL
CLEAR AND GRUB	
CONCRETE REMOVAL	
TREE AND ROOT REMOVAL	OR
FENCE REMOVAL	
CONCRETE CURB/CURB AND GUTTER/MOW CURB REMOVAL	
RIGHT OF WAY LINE	
SAWCUT LINE	
LIMITS OF WORK	

DEMOLITION KEY NOTES

1. SAWCUT
2. REMOVE EXISTING TREE (TYP.)
3. REMOVE EXISTING CONCRETE
4. REMOVE EXISTING STORM DRAIN PIPE
5. EXISTING UTILITY PROTECT IN PLACE
6. EXISTING STORM DRAIN PIPE TO REMAIN PROTECT IN PLACE
7. NOT USED
8. EXISTING CURB & GUTTER TO REMAIN, PROTECT IN PLACE (TYP.)
9. EXISTING FENCE TO REMAIN, PROTECT IN PLACE (TYP.)
10. REMOVE/RELOCATE CLUSTER OF IRRIGATION CONTROL BOXES PER LANDSCAPE PLANS
11. REMOVE EXISTING ASPHALT
12. EXISTING CATCH BASIN TO REMAIN, PROTECT IN PLACE
13. REMOVE EXISTING CATCH BASIN
14. REMOVE EXISTING CURB & GUTTER
15. REMOVE EXISTING SIDEWALK PER RSD SDG-156

NOTES:

1. SEE LANDSCAPE PLANS FOR IRRIGATION DEMOLITION



10 0 20 40

SCALE IN FEET
1 inch = 20 ft.

C-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

DEMOLITION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 3 OF 20 SHEETS

WBS B-10025

APPROVED FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLMER, SECTION HEAD

SHELA BOSE, PROJECT MANAGER

232-1723 CCS27 COORDINATE

1868-6284 CCS83 COORDINATE

36497-3 -D

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

CONTRACTOR _____ DATE STARTED _____

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CONSULTANT

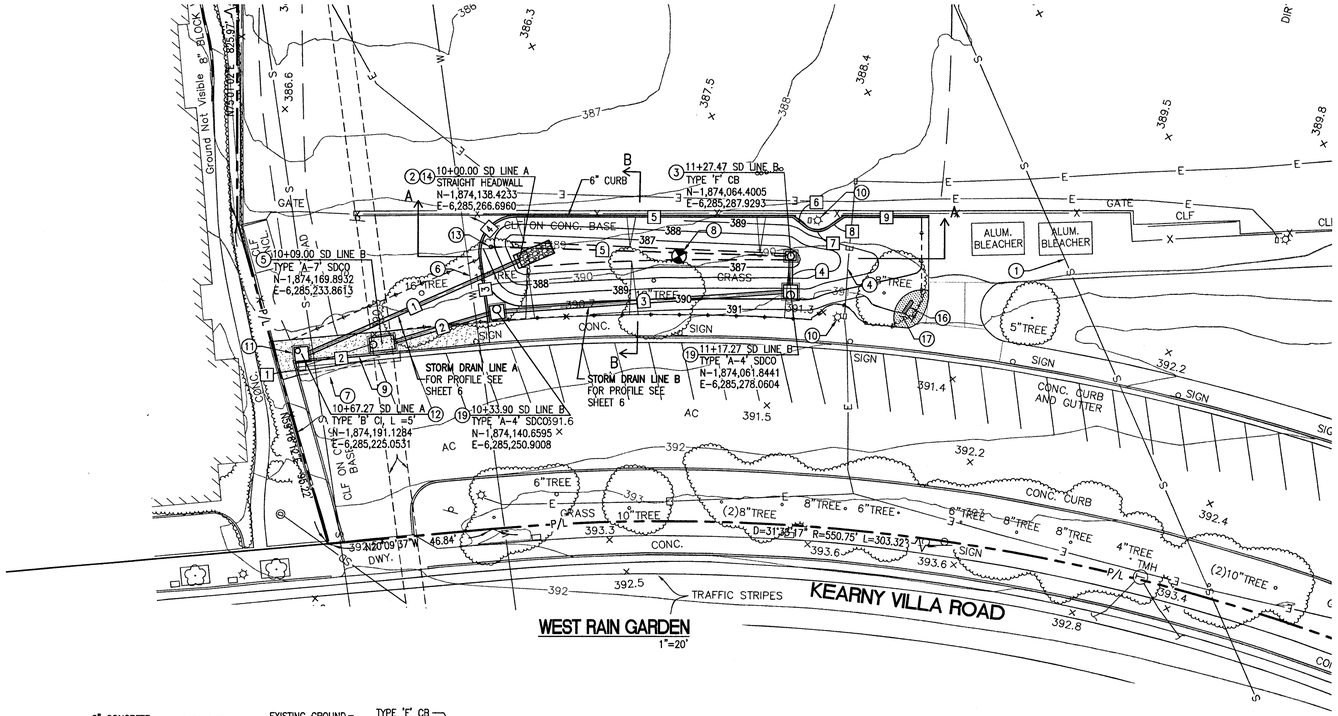
BURKETT&WONG ENGINEERS

ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER — BRIAN E. WONG — No. 50178 — Exp. 06-30-13 — CIVIL — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLOT: M:\PROJECTS\10500\10655U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10655-02DMO.DWG Carl Florios 1/8/2013 1:37 PM



WEST RAIN GARDEN
1"=20'

CONSTRUCTION NOTES

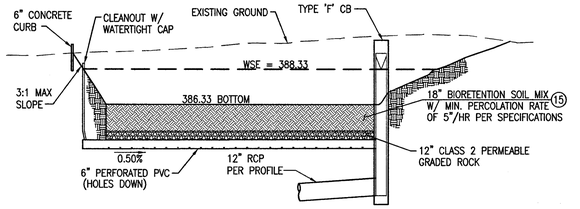
1. EXISTING ABANDONED SEWER PER 12807-D
2. STRAIGHT HEADWALL PER SDRSD D-32
3. TYPE 'F' CATCH BASIN PER SDRSD SDD-119
4. PROTECT EXISTING ELECTRIC UTILITY, RELOCATE AS NECESSARY
5. CONNECT TO EXISTING 66" RCP STORM DRAIN W/ TYPE A-7 SDCO PER SDRSD D-9, CONNECT EXISTING PIPE TO NEW MANHOLE PER SDRSD SDS-108
6. PROTECT EXISTING WATER LINE
7. SAWCUT LINE
8. LYSIMETER PER DETAIL THIS SHEET
9. NEW CURB & GUTTER PER SDRSD SDG-154
10. PROTECT EXISTING LIGHT
11. NEW CONCRETE SIDEWALK PER SDRSD SDG-155, 1.5% MAX CROSS-SLOPE
12. REMOVE EXISTING CATCH BASIN AND REPLACE WITH TYPE B CURB INLET PER SDRSD SDD-116
13. SEWER TYPE CLEANOUT PER SDRSD SC-01
14. TYPE 2 RIP RAP ENERGY DISSIPATOR PER SDRSD SDD-104 NO. 2 BACKING CLASS ROCK OVER FILTER FABRIC, D=1', T=1.1' COLOR TO MATCH COBBLE MULCH PER SHEET LP-4
15. BIORETENTION SOIL MIX PER SPECIFICATIONS
16. INTERPRETIVE SIGN PER LANDSCAPE PLANS
17. SURFACE FINISH PER LANDSCAPE PLANS
18. REPLACE AC PAVEMENT PER SDRSD SDG-113, MATCH EXISTING THICKNESS
19. TYPE 'A-4' STORM DRAIN CLEANOUT PER SDRSD SDRSD D-9

CURB DATA				
NO	BEARING/DELTA	RADIUS	LENGTH	TYPE
1	N59°09'04"E	--	3.79'	6" TYPE G C&G
2	N20°10'54"W	--	29.77'	6" TYPE G C&G
3	N67°20'39"E	--	18.67'	6" CONCRETE CURB
4	D=97°38'24"	10.00'	17.04'	6" CONCRETE CURB
5	N15°00'57"W	--	78.46'	6" CONCRETE CURB
6	N22°50'29"E	--	4.67'	6" CONCRETE CURB
7	D=71°58'34"	5.50'	6.91'	6" CONCRETE CURB
8	N49°08'05"W	--	5.48'	6" CONCRETE CURB
9	N15°00'57"W	--	23.91'	6" CONCRETE CURB

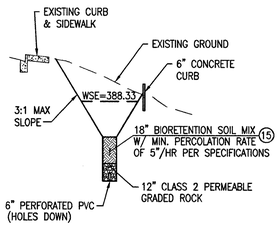
STORM DRAIN DATA					
NO	BEARING/DELTA	RADIUS	LENGTH	SLOPE (%)	SIZE/TYPE (CLASS)
1	N38°50'42"W	--	65.27'	1.00	12" RCP (1350-D)(W)
2	S31°43'48"E	--	28.40'	10.60	12" RCP (1350-D)
3	S19°02'07"E	--	79.37'	2.00	12" RCP (1350-D)
4	N75°28'39"E	--	6.94'	2.00	12" RCP (1350-D)
5	N13°16'50"W	--	83.56'	0.50	6" PERF. PVC (SDR35)

(W) GASKETED WATER TIGHT JOINTS

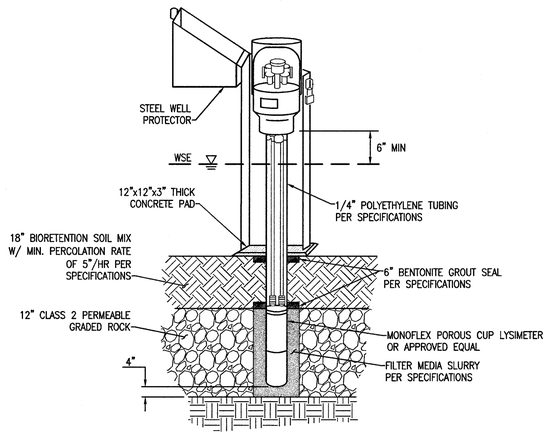
THIS RAIN GARDEN IS DESIGNED TO CAPTURE AND TREAT RUNOFF FROM A STORM EVENT MEASURING 1.4 INCHES.



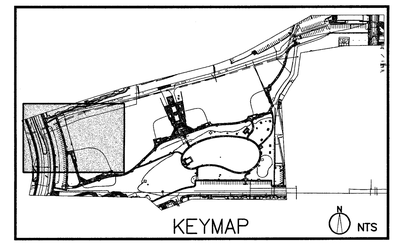
SECTION A-A
NTS



SECTION B-B
NTS



LYSIMETER DETAIL
NTS



10 0 20 40
SCALE IN FEET
1 inch = 20 ft.

C- 3

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

WEST GARDEN GRADING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 4 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

KEVIN CLUNEY
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

232-1723
CCS27 COORDINATE

1868-6284
CCS83 COORDINATE

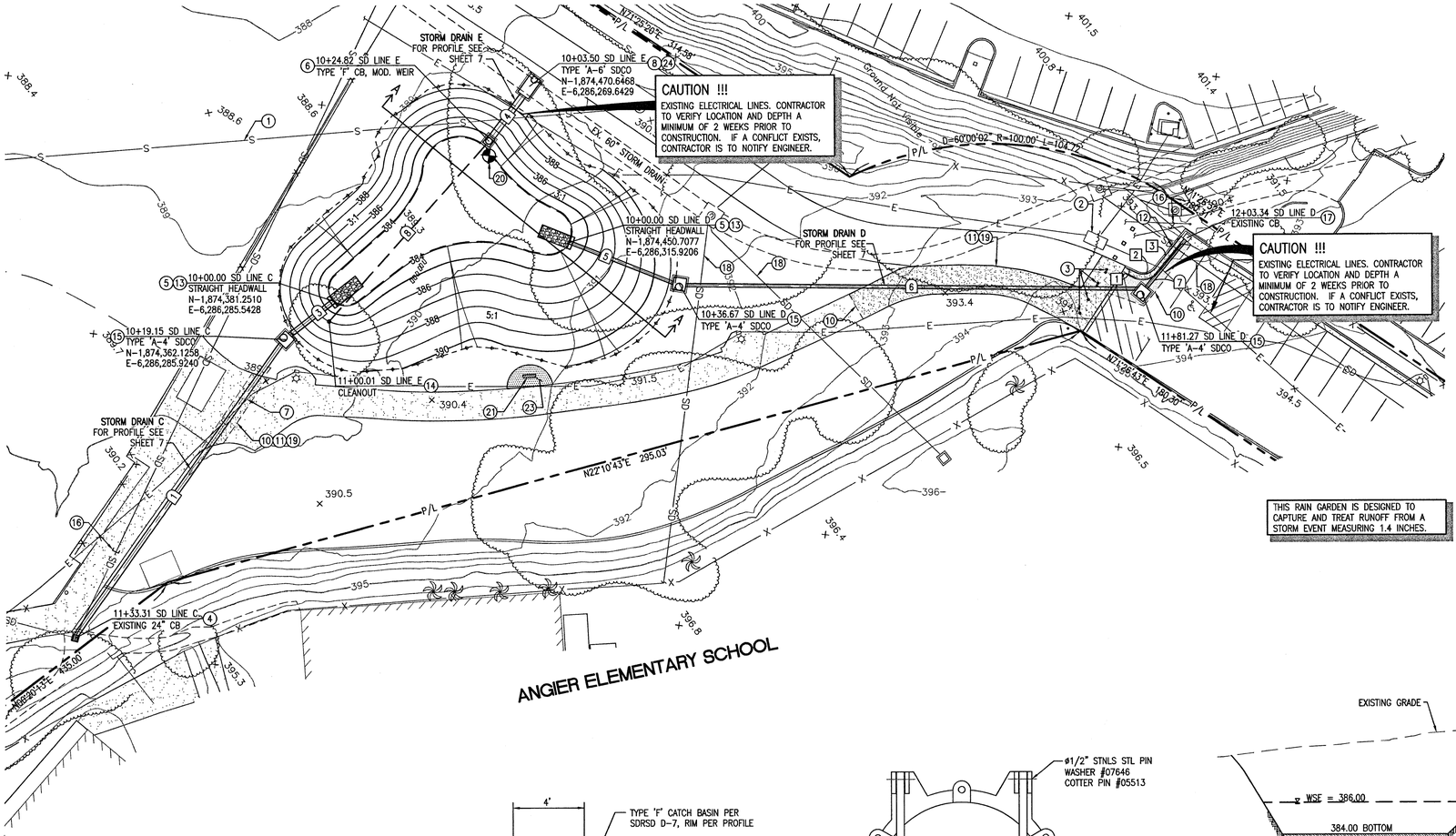
CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-4 -D

CONSULTANT

BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER — BRIAN M. FIORICA — No. 64715 — Exp. 06-30-13 — CIVIL — STATE OF CALIFORNIA



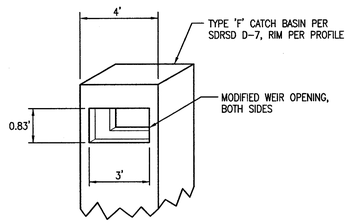
CONSTRUCTION NOTES

1. EXISTING ABANDONED SEWER PER 12807-D, REMOVE AS NECESSARY, CUT & PLUG PER SDRSD WP-03
2. PROTECT EXISTING SDGE FACILITY "H 110230"
3. REPLACE EXISTING REMOVABLE BOLLARDS PER SDRSD M-16
4. CONNECT TO EXISTING CATCH BASIN WITH NEW 18" RCP PER SDRSD SDS-108
5. STRAIGHT HEADWALL PER SDRSD D-32
6. MODIFIED TYPE 'F' CATCH BASIN PER SDRSD SDD-119, SEE MODIFIED WEIR DETAIL THIS SHEET
7. PROTECT EXISTING ELECTRIC UTILITY
8. CONNECT TO EXISTING 60" RCP STORM DRAIN TYPE 'A-6' SDCO PER SDRSD D-9
10. SAWCUT LINE
11. REMOVE EXISTING CONCRETE PAVEMENT
12. REMOVE & REPLACE EXISTING CURB AND GUTTER
13. TYPE 2 RIP RAP ENERGY DISSIPATOR PER SDRSD SDD-104 NO. 2 BACKING CLASS ROCK OVER FILTER FABRIC, T=1.1' COLOR TO MATCH COBBLE MULCH PER SHEET LP-4
14. SEWER TYPE CLEANOUT PER SDRSD SC-01
15. TYPE 'A-4' SDCO PER SDRSD D-9
16. CUT AND CAP EXISTING STORM DRAIN PIPE, REMOVE AS NECESSARY
17. CORE INTO EXISTING CATCH BASIN TO ACCEPT NEW 12" STORM DRAIN, PLUG EXISTING OUTLET. CONNECT PIPE PER SDRSD SDS-108.
18. PROTECT EXISTING STORM DRAIN
19. NEW CONCRETE WALKWAY PER SDRSD SDG-155
20. LYSIMETER PER DETAIL SHEET 4
21. INTERPRETIVE SIGN PER LANDSCAPE PLANS
22. BIORETENTION SOIL MIX PER SPECIFICATIONS
23. SURFACE FINISH PER LANDSCAPE PLANS
24. INSTALL AUTOMATIC DRAINAGE GATE AT OUTLET OF 24" RCP, NEENAH-FOUNDRY R-5050-SF24 OR APPROVED EQUAL, SEE DETAIL THIS SHEET

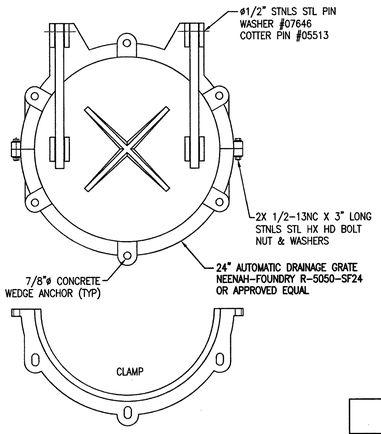
CURB DATA				
NO	BEARING/DELTA	RADIUS	LENGTH	TYPE
1	N63°27'18"E	--	3.80'	6" TYPE G C&G
2	D=76°48'34"	5.00'	6.70'	6" TYPE G C&G
3	N13°21'16"W	--	12.73'	6" TYPE G C&G

STORM DRAIN DATA					
NO	BEARING/DELTA	RADIUS	LENGTH	SLOPE (%)	SIZE/TYPE (CLASS)
1	N17°17'51"W	--	111.15'	0.58	18"RCP (1350-D) (W)
2	NOT USED				
3	N00°15'15"W	--	17.15'	0.58	18"RCP (1350-D) (W)
4	N15°46'38"W	--	16.32'	0.50	24"RCP (1350-D) (W)
5	N59°01'50"E	--	34.67'	5.00	12"RCP (1350-D) (W)
6	N38°05'20"E	--	140.61'	0.50	12"RCP (1350-D)
7	N13°03'26"W	--	19.25'	0.50	12"RCP (1350-D)
8	N10°52'44"W	--	73.69'	0.50	6" PERF PVC (SDR35)

(W) GASKETED WATER TIGHT JOINTS

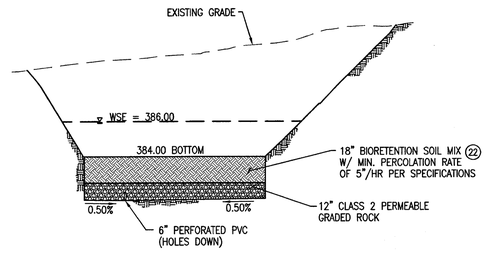


MODIFIED WEIR OPENING DETAIL
NTS

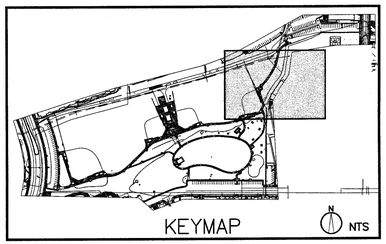


NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH.
MATERIAL: FRAME, LID, CLAMPS, ARMS - CAST GRAY IRON ASTM A-48, CLASS 35B.
27" ARM - CAST DUCTILE IRON, ASTM A-536, 55+KSI YIELD.
FINISH: BLACK EPOXY PAINT.

24" AUTOMATIC DRAINAGE GRATE
NTS



SECTION A-A
NTS



10 0 20 40
SCALE IN FEET
1 inch = 20 ft.

C-4

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

EAST GARDEN GRADING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 5 OF 20 SHEETS

WBS B-10025

APPROVED _____ DATE 3/14/13
FOR CITY ENGINEER
KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOSE
PROJECT MANAGER
232-1723
CCS27 COORDINATE
1868-6284
CCS83 COORDINATE
36497-5 -D

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

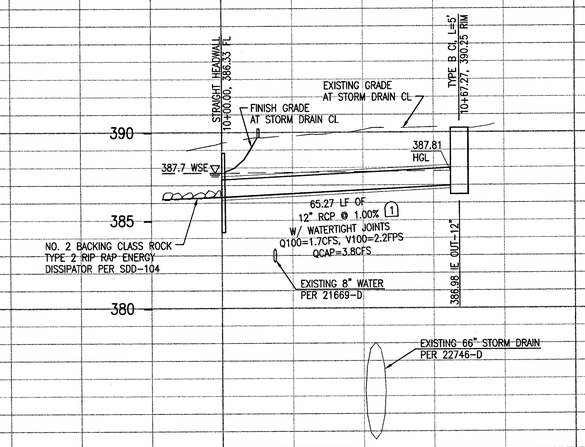
CONSULTANT

BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER
KARL M. FIORENTINO
No. 64715
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

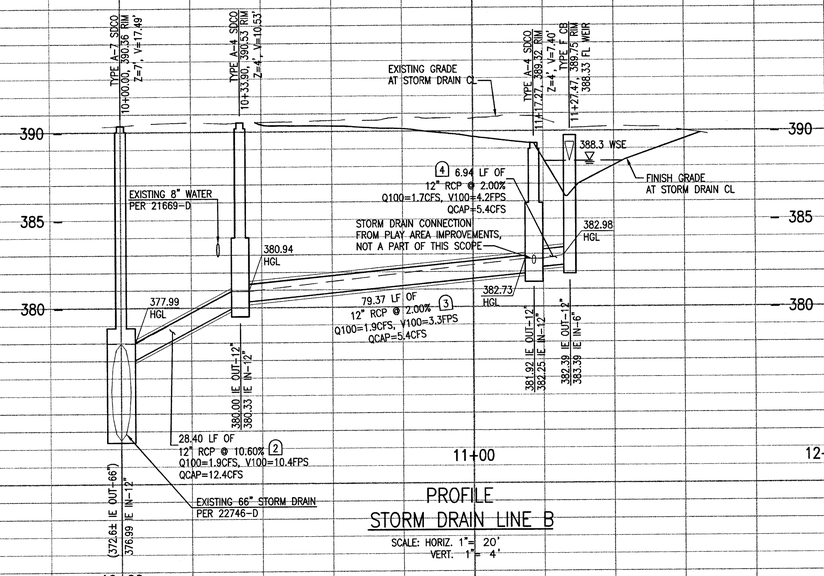
CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLOT: M:\PROJECTS\10500\10650d - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10650-GRADING-EAST.DWG Carl Fiorino 1/8/2013 1:34 PM



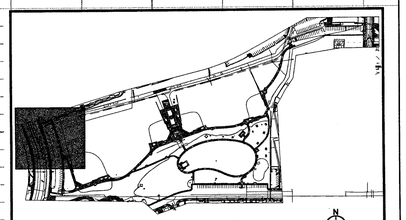
PROFILE
STORM DRAIN LINE A

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'



PROFILE
STORM DRAIN LINE B

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'



C-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

WEST GARDEN STORM DRAIN PROFILES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 6 OF 20 SHEETS

WBS B-10025

APPROVED _____ FOR CITY ENGINEER
3/14/13 DATE

KEVIN CLAUER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOSE
PROJECT MANAGER

232-1723
CC827 COORDINATE

1868-6284
CC883 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-6 -D

CONSULTANT

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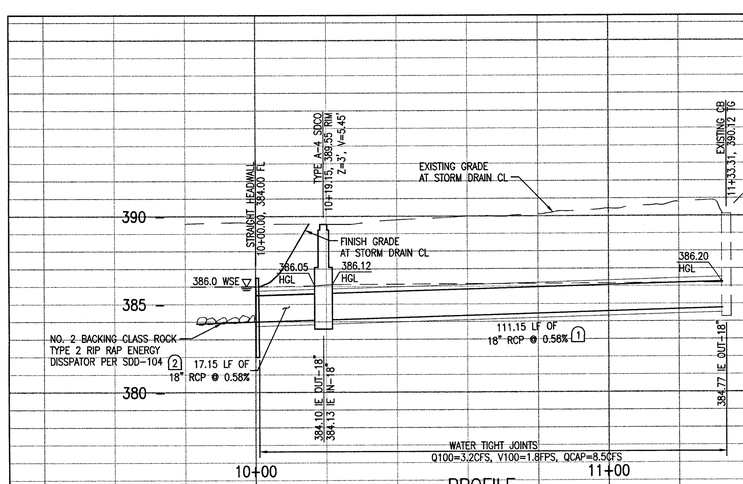
ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

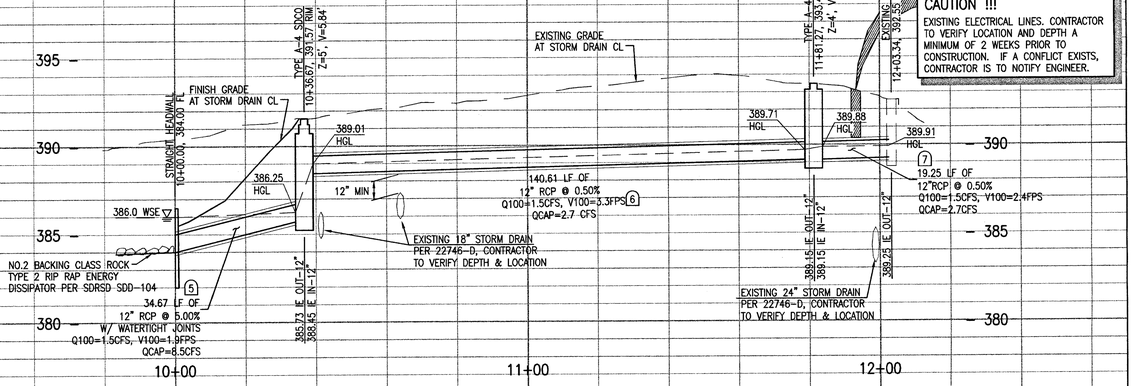
REGISTERED PROFESSIONAL ENGINEER
DARYL M. FIORICA
No. 54715
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN



PROFILE
STORM DRAIN LINE C

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'

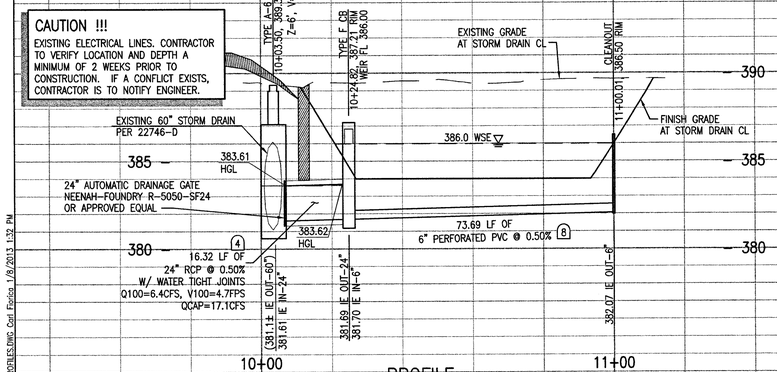


PROFILE
STORM DRAIN LINE D

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'

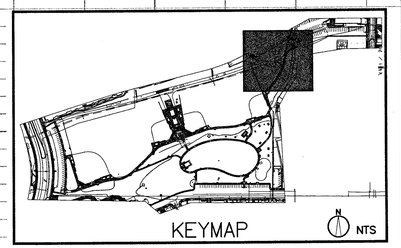
CAUTION !!!

EXISTING ELECTRICAL LINES. CONTRACTOR TO VERIFY LOCATION AND DEPTH A MINIMUM OF 2 WEEKS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS, CONTRACTOR IS TO NOTIFY ENGINEER.



PROFILE
STORM DRAIN LINE E

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'



C-6

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

EAST GARDEN STORM DRAIN PROFILES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 7 OF 20 SHEETS

WBS B-10025

APPROVED _____ FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOBE, PROJECT MANAGER

232-1723 CC827 COORDINATE

1868-6284 CC883 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-7 -D

CONSULTANT

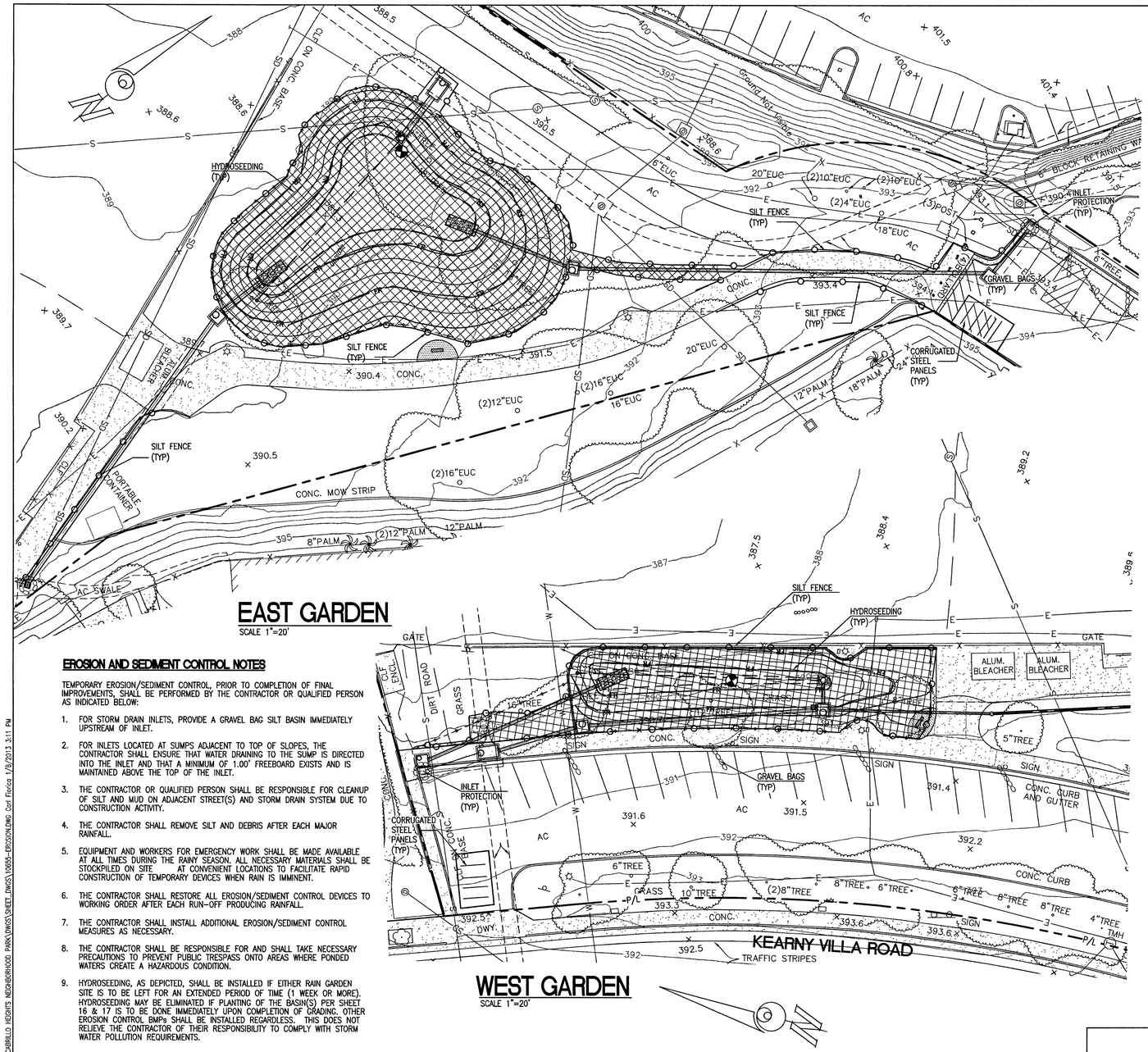
BURKETT&WONG ENGINEERS

ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER — ROBERT M. FIORENTINO — No. 54175 Exp. 06-30-13 — CIVIL — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLOT: M:\PROJECTS\10500\10550 - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET DWGS\10550-PROFILES.DWG Carl Florio 1/8/2013 1:32 PM



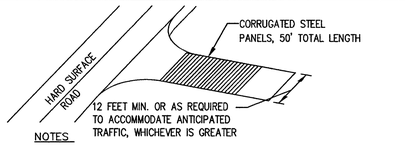
EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION/SEDIMENT CONTROL, PRIOR TO COMPLETION OF FINAL IMPROVEMENTS, SHALL BE PERFORMED BY THE CONTRACTOR OR QUALIFIED PERSON AS INDICATED BELOW:

1. FOR STORM DRAIN INLETS, PROVIDE A GRAVEL BAG SILT BASIN IMMEDIATELY UPSTREAM OF INLET.
2. FOR INLETS LOCATED AT SUMPS ADJACENT TO TOP OF SLOPES, THE CONTRACTOR SHALL ENSURE THAT WATER DRAINING TO THE SUMP IS DIRECTED INTO THE INLET AND THAT A MINIMUM OF 1.00' FREEBOARD EXISTS AND IS MAINTAINED ABOVE THE TOP OF THE INLET.
3. THE CONTRACTOR OR QUALIFIED PERSON SHALL BE RESPONSIBLE FOR CLEANUP OF SILT AND MUD ON ADJACENT STREET(S) AND STORM DRAIN SYSTEM DUE TO CONSTRUCTION ACTIVITY.
4. THE CONTRACTOR SHALL REMOVE SILT AND DEBRIS AFTER EACH MAJOR RAINFALL.
5. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
6. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN-OFF PRODUCING RAINFALL.
7. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES AS NECESSARY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE PONDED WATERS CREATE A HAZARDOUS CONDITION.
9. HYDROSEEDING, AS DEPICTED, SHALL BE INSTALLED IF EITHER RAIN GARDEN SITE IS TO BE LEFT FOR AN EXTENDED PERIOD OF TIME (1 WEEK OR MORE). HYDROSEEDING MAY BE ELIMINATED IF PLANTING OF THE BASIN(S) PER SHEET 16 & 17 IS TO BE DONE IMMEDIATELY UPON COMPLETION OF GRADING. OTHER EROSION CONTROL BMPs SHALL BE INSTALLED REGARDLESS. THIS DOES NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY WITH STORM WATER POLLUTION REQUIREMENTS.

CONSTRUCTION NOTES

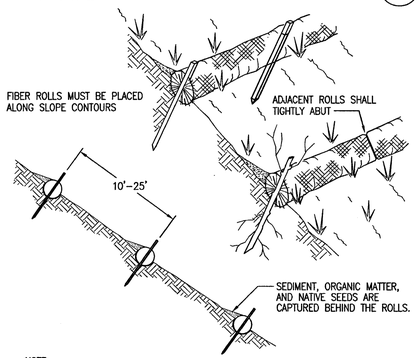
1. REFER TO CALIFORNIA STORMWATER QUALITY ASSOCIATION (CSQA) BMP HANDBOOK FOR FURTHER DESCRIPTION OF BMP.



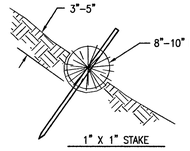
NOTES

1. CONTRACTOR SHALL IMPLEMENT TIRE WASHING, STREET SWEEPING AND VACUUMING AS NEEDED AND AS REQUIRED BY THE CITY OF SAN DIEGO REPRESENTATIVE

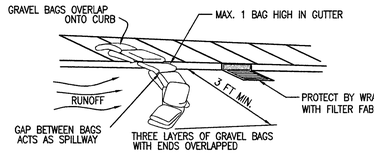
STABILIZED CONSTRUCTION ENTRANCE TC-1 (1)
NOT TO SCALE



NOTE:
1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.



FIBER ROLLS SE-5 (2)
NOT TO SCALE

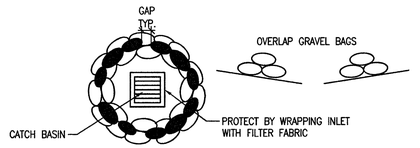


GRAVEL BAGS SE-10 (3)
NOT TO SCALE

LEGEND:

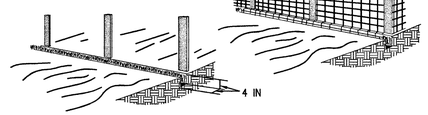
SILT FENCE PER CASQA SE-1
STABILIZED ENTRANCE PER CASQA TC-1
GRAVEL BAGS PER CASQA SE-6, SE-10
FIBER ROLLS PER CASQA SE-5 — FR
HYDROSEEDING PER CASQA EC-4

NOTE: LOCATIONS OF CONSTRUCTION BMPs AND TEMP SOIL PILES SHALL BE DETERMINED BY THE CONTRACTOR

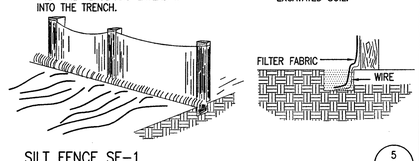


INLET PROTECTION SE-6, SE-10 (4)
NOT TO SCALE

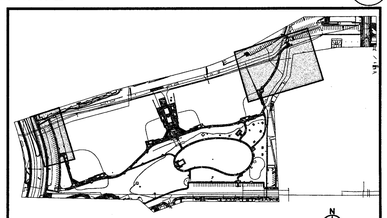
1. SET POSTS AND EXCAVATE A 4 BY 4 INCHES TRENCH UPSLOPE FROM AND ALONG THE LINE OF POSTS.
2. STAPLE WIRE FENCING TO THE POSTS RUN FENCE ON UPHILL SIDE OF POSTS



3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SILT FENCE SE-1 (5)
NOT TO SCALE



C-7

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

EROSION CONTROL PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 8 OF 20 SHEETS

WBS B-10025

APPROVED FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLMER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOSE, PROJECT MANAGER

232-1723 CCS27 COORDINATE

1868-6284 CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-8 -D

CONSULTANT

BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
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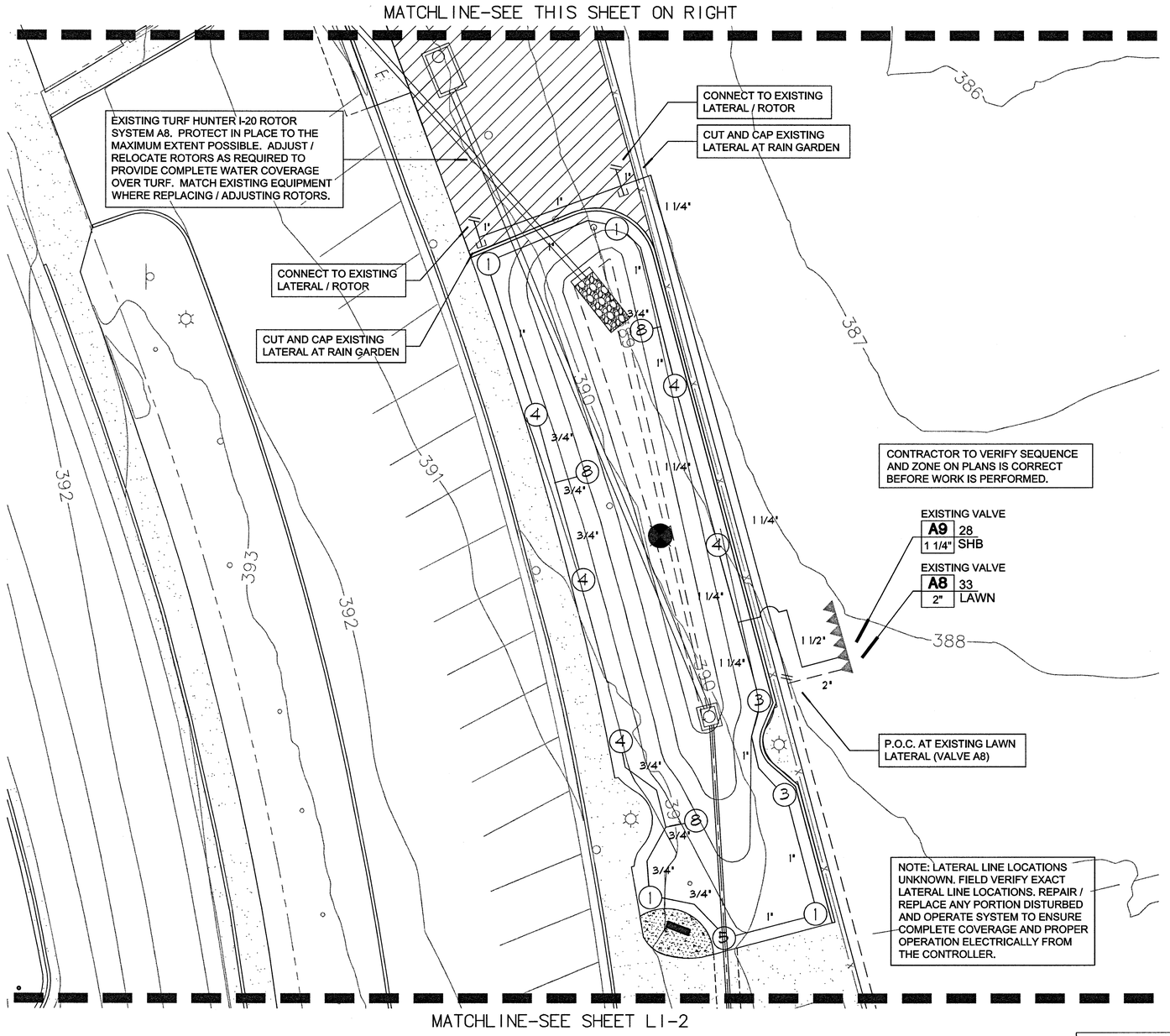
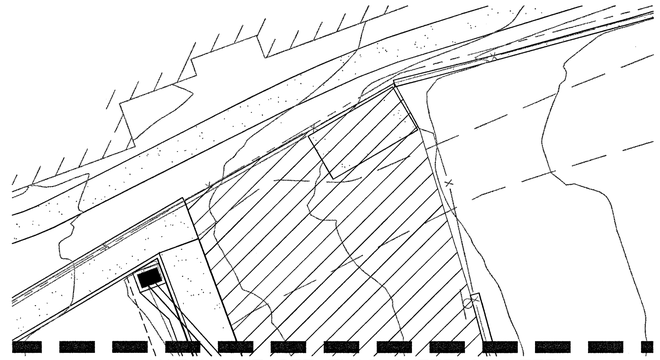
92103-5704 * (619) 299-5550

REGISTERED PROFESSIONAL ENGINEER — BRIAN M. FLORCZAK — No. 64116 — Exp. 06-30-13 — CIVIL — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLOT: M:\PROJECTS\10500\10655U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10655-EROSION.DWG Corf Florczak 1/9/2013 3:11 PM





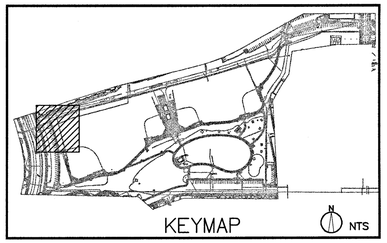
NOTES:

1. REFER TO SHEETS LI-5, LI-6 AND LI-7 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

2. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.

3. TREES ARE LOCATED DIAGRAMMATICALLY. LANDSCAPE ARCHITECT SHALL FIELD VERIFY LOCATION OF TREES PRIOR TO PLANTING. INSTALL TREE HEADS AT THE SAME TIME TREES ARE INSTALLED.

4. TREES SHALL BE LOCATED A MINIMUM OF 15' FROM ALL EXISTING/RELOCATED/NEW IRRIGATION ROTORS.



0 5 10 20 30

SCALE: 1"= 10'

NORTH

LI-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 09 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CONTRACT COORDINATOR

1868-6284
CONTRACT COORDINATOR

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-9 -D

CONSULTANT

KTUA
Planning + Landscape Architecture
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San Diego, CA 92103
619.294.4477
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REGISTERED LANDSCAPE ARCHITECT
KEVIN T. UNDERWOOD
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

MATCHLINE-SEE SHEET LI-1

NOTE: LATERAL LINE LOCATIONS UNKNOWN. FIELD VERIFY EXACT LATERAL LINE LOCATIONS. REPAIR / REPLACE ANY PORTION DISTURBED AND OPERATE SYSTEM TO ENSURE COMPLETE COVERAGE AND PROPER OPERATION ELECTRICALLY FROM THE CONTROLLER.

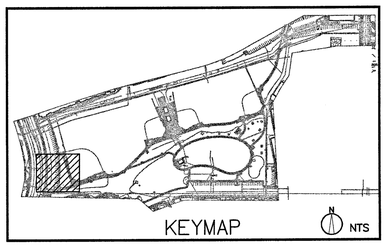
EXISTING TURF ZONE A8 TO REMAIN, PROTECT IN PLACE

392

391

390

391



0 5 10 20 30

SCALE: 1"= 10'

NORTH

LI-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 10 OF 20 SHEETS

APPROVED _____ 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS B-10025

232-1723
CGS87 COORDINATE

1868-6284
CGS83 COORDINATE

36497-10 -D

CONSULTANT

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REGISTERED LANDSCAPE ARCHITECT
ROBERT K. CATTLETT
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STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

MATCHLINE SEE SHEET LI-4

EXISTING 2 1/ 2" MAINLINE TO BE ABANDONED AFTER RE-ROUTED MAINLINE IS COMPLETED.

CUT AND CAP EXISTING MAINLINE

P.O.C. AT EXISTING MAINLINE AND WIRES. SPLICE INTO WIRES WITH NEW WIRES AND RE-ROUTE AS NOTED. SEE ALSO LOWER RIGHT LOCATION.

EX. 2 1/2" MAINLINE

NOTE: LATERAL LINE LOCATIONS UNKNOWN. FIELD VERIFY EXACT LATERAL LINE LOCATIONS. REPAIR / REPLACE ANY PORTION DISTURBED AND OPERATE SYSTEM TO ENSURE COMPLETE COVERAGE AND PROPER OPERATION ELECTRICALLY FROM THE CONTROLLER.

USE EXISTING OPEN STATION VALVE FOR RAIN GARDEN IRRIGATION. VERIFY VALVE I.D. AND PLACE ON AS-BUILT/CONTROLLER CHART

47 SHB **B11** 2"

REPLACE EXISTING VALVES AND PLACE EQUIPMENT 3 FT FROM FENCE :
- (2) 2" GLOBE VALVES
- (1) 1" GLOBE VALVE
- (6) 2" RCV VALVES
- (1) QUICK COUPLER VALVE

RECONNECT EXISTING BALL FIELD LATERAL LINES TO RESPECTIVE VALVES WITH 2-1/2" PIPE. PERFORM OPERATIONAL CHECK OF ALL SYSTEMS FOR PROPER OPERATION AND FUNCTION ELECTRICALLY FROM CONTROLLER.

B10 48 2" TRF
B2 48 2" TRF
C9 48 2" TRF
B3 48 2" TRF
C8 48 2" TRF

2 1/2" 2" GV
2 1/2" 2" 1" GV

CUT AND CAP EXISTING MAINLINE

P.O.C. AT EXISTING MAINLINE AND WIRES. SPLICE INTO WIRES WITH NEW WIRES AND RE-ROUTE AS NOTED. SEE ALSO UPPER LEFT LOCATION.

EX. 2 1/2" MAINLINE

NEW RE-ROUTED 2 1/2" MAINLINE AND CONTROL WIRES

FIELD #4

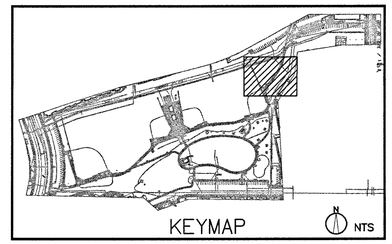
NOTES:

1. REFER TO SHEETS LI-5, LI-6 AND LI-7 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

2. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.

3. TREES ARE LOCATED DIAGRAMMATICALLY. LANDSCAPE ARCHITECT SHALL FIELD VERIFY LOCATION OF TREES PRIOR TO PLANTING. INSTALL TREE HEADS AT THE SAME TIME TREES ARE INSTALLED.

4. TREES SHALL BE LOCATED A MINIMUM OF 15' FROM ALL EXISTING/RELOCATED/NEW IRRIGATION ROTORS.



0 5 10 20 30

SCALE: 1"= 10'

NORTH

LI-3

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 11 OF 20 SHEETS

APPROVED: _____ 3/14/13
FOR CITY ENGINEER — DATE

APPROVED: KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE, PROJECT MANAGER

WBS B-10025

232-1723 CONST COORDINATE

1868-6284 CONM COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-11 -D

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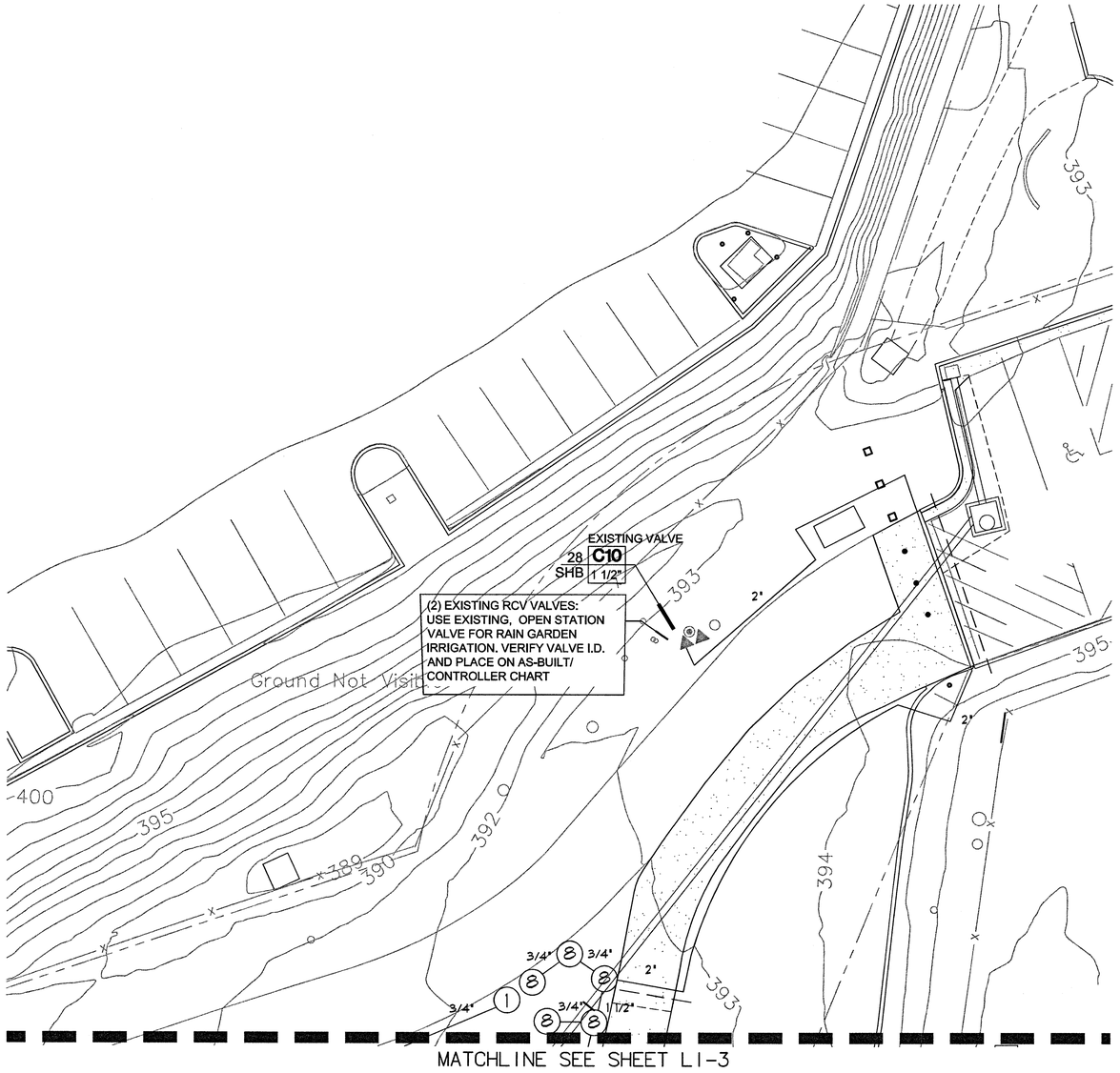
REGISTERED LANDSCAPE ARCHITECT
BRENT W. CATTOR
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN



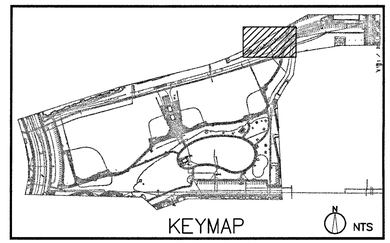
NOTES:

1. REFER TO SHEETS LI-5, LI-6 AND LI-7 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

2. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.

3. TREES ARE LOCATED DIAGRAMMATICALLY. LANDSCAPE ARCHITECT SHALL FIELD VERIFY LOCATION OF TREES PRIOR TO PLANTING. INSTALL TREE HEADS AT THE SAME TIME TREES ARE INSTALLED.

4. TREES SHALL BE LOCATED A MINIMUM OF 15' FROM ALL EXISTING/RELOCATED/NEW IRRIGATION ROTORS.



0 5 10 20 30

SCALE: 1"= 10'

NORTH

LI-4

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 12 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER DATE

APPROVED BY KEVIN OLIVER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE PROJECT MANAGER

232-1723 COSWF COORDINATE

1868-6284 COSSB COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-12 -D

CONSULTANT

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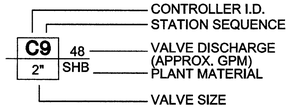
REGISTERED LANDSCAPE ARCHITECT KEVIN W. CLARK No. 2342 Exp. 2/28/15 STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER/MODEL NUMBER	REMARKS	DETAIL	SDI
P.O.C.	POINT OF CONNECTION	-	APPROXIMATE, FIELD VERIFY	-	-
	GLOBE VALVE	CHAMPION #100 (STRAIGHT PATTERN)	SIZE NOTED ON PLANS	-	106, 126
NO SYMBOL	LOCKING VALVE CAP	WEATHERMATIC 906-L	FOR GLOBE VALVE INSTALLATION	-	106
	QUICK COUPLER (POTABLE)	RAIN BIRD 44-LRC	PER DETAIL	-	105,126
NO SYMBOL	QUICK COUPLER KEY	RAIN BIRD 44K	GIVE TO OWNER AT PROJECT END	-	105
	ELECTRIC CONTROL VALVE	RAIN BIRD EFB-CP SERIES	SIZE PER PLAN	-	114,126
PB	PULL BOX	BROOKS 3-HL	PER PLAN & DETAIL	-	115
	PRESSURE SUPPLY LINE	APPROVED - PVC SCH 40	FOR PIPE 1-1/2" AND SMALLER	-	110
	PRESSURE SUPPLY LINE	APPROVED - PVC CL315	FOR PIPE 2" AND LARGER	-	110
	NON-PRESSURE LATERAL LINE	APPROVED - PVC SCH 40	FOR PIPE 3/4" & LARGER	-	110
	SLEEVING	APPROVED - PVC SCH 40	MIN. 2X DIA. OF SLEEVED PIPE	-	110
NO SYMBOL	WATERPROOF WIRE CONNECTOR	DRI-SPLICE DS 100	W/ DS 300 EPOXY SEALANT	A/LI-7	115
	CUT AND CAP	-	APPROXIMATE, FIELD VERIFY	-	-
	EX. QUICK COUPLER (POTABLE)	RAIN BIRD 44-LRC	APPROXIMATE, FIELD VERIFY	-	-
	EX. REMOTE CONTROL VALVE	VARIES	FIELD VERIFY	-	-
	EX. PRESSURE SUPPLY LINE	PVC CL315	APPROXIMATE, FIELD VERIFY	-	-

VALVE CALLOUT:



IRRIGATION LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER/MODEL NO./ NOZZLE	RADIUS	PSI	GPM	SDI
①	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH 1.5 NOZ	23'-28'	45	1.5	103
②	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH 2.0 NOZ	26'-31'	45	2.0	103
③	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH 2.5 NOZ	26'-32'	45	2.5	103
④	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH 3.0 NOZ	29'-34'	45	3.0	103
⑤	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH .75SR NOZ	19'-24'	45	.75	103
⑦	POP-UP SHRUB ROTOR	HUNTER I-20-12 WITH 4.0 NOZ	30'-36'	45	4.0	103
⑧	POP-UP TREE SPRAY (ONE/TREE)	HUNTER PROS-06-NSI-PRS30-CV-8Q	6'-8'	30	.25	103
⑧	POP-UP SHRUB SPRAY	HUNTER PROS-06-NSI-PRS30-CV-8Q	6'-8'	30	.25	103

NOTE: SDI = CITY OF SAN DIEGO PUBLIC WORKS DEPARTMENT STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, 2012 EDITION

GENERAL IRRIGATION NOTES

1. THE IRRIGATION SYSTEM DESIGN IS BASED ON AN AVAILABLE BOOSTED WATER PRESSURE OF 80 PSI. BOOSTER PUMP IS LOCATED UP HILL FROM WATER SOURCE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING WATER PRESSURE PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION AND PROMPTLY REPORT ANY DIFFERENCES TO CITY LANDSCAPE REPRESENTATIVE.
2. THE IRRIGATION SYSTEM IS SHOWN DIAGRAMMATICALLY FOR CLARITY. LOCATE ALL PIPING, VALVES, AND OTHER IRRIGATION EQUIPMENT WITHIN DISTURBED LANDSCAPE AREAS UNLESS NOTED OR DIRECTED OTHERWISE.
3. PRIOR TO ANY EXCAVATION OR TRENCHING LOCATE AND VERIFY ALL CABLES, CONDUITS, AND UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AN UNDERGROUND UTILITY LOCATING SERVICE TO LOCATE AND MARK ALL UTILITIES. THE CONTRACTOR WILL TAKE PROPER PRECAUTIONS NOT TO DAMAGE OR DISTURB SUCH UNDERGROUND UTILITIES. NOTIFY THE OWNER AND/OR CITY LANDSCAPE REPRESENTATIVE IMMEDIATELY IF A CONFLICT EXISTS BETWEEN SUCH OBSTACLES AND THE PROPOSED WORK. PROCEED IN SAME MANNER IF ROCK LAYERS OR ANY OTHER CONDITIONS ARE ENCOUNTERED UNDERGROUND.
4. THE CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT PROMPTLY TO THE ATTENTION OF THE CITY LANDSCAPE REPRESENTATIVE. SHOULD THE CONTRACTOR FAIL TO NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.
5. IRRIGATION LINES SHALL BE INSTALLED IN LANDSCAPE AREAS WHEREVER POSSIBLE AND WITHIN 12" OF LANDSCAPE AREA EDGES UNLESS INDICATED OTHERWISE.
6. NO LOW HEAD DRAINAGE IS ALLOWED. CONTRACTOR SHALL CORRECT ANY LOW HEAD DRAINAGE PER THE DIRECTION OF THE CITY LANDSCAPE REPRESENTATIVE.
7. INSTALL FIXED ARC NOZZLES WHENEVER POSSIBLE. VARIABLE ARC NOZZLES SHALL ONLY BE USED IN AREAS WHERE FIXED ARC NOZZLES CANNOT ACHIEVE EFFECTIVE COVERAGE OR CAUSE EXCESSIVE OVER SPRAY. DURING THE FINAL CLOSEOUT PROCEDURES, NOZZLE CHANGES MAY BE REQUESTED AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. SHOULD THE CONTRACTOR MAKE NOZZLE CHANGES OR ADD HEADS AS A RESULT OF SITE OBSTACLES OR CONSTRUCTION CHANGES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATION AND ADJUSTMENTS IN PIPE SIZES. IN NO CASE SHALL FLOW VELOCITIES EXCEED 5 FEET PER SECOND.
9. ALL SPRINKLER HEADS SHALL BE INSTALLED AND ADJUSTED TO KEEP WATER AND SPRAY OFF ALL PAVING, WALKS, WALLS, OTHER OBSTRUCTIONS, UTILITY ENCLOSURES, IRRIGATION CONTROLLER, AND AREAS NOT UNDER THE CONTROL OF THE OWNER AT ALL TIMES.
10. ALL PLANTINGS SHALL BE FULLY WATERED IN UPON PLANTING. DO NOT RELY SOLELY UPON THE AUTOMATIC IRRIGATION SYSTEM. UTILIZE SUPPLEMENTAL HOSE WATERING AS REQUIRED, INITIALLY AND DURING THE PLANT ESTABLISHMENT PERIOD, AND AS DIRECTED ON PLANS, TO ENSURE ALL PLANTINGS RECEIVE ADEQUATE WATER TO THE ENTIRE ROOT ZONE.
11. THE WORK TO TAKE PLACE FOR THE AREAS REPRESENTED ON THESE PLANS ARE TO REPLACE EXISTING IRRIGATION SYSTEMS WITHIN THE CONSTRUCTION AREA. THE EXISTING SYSTEMS ON THIS SITE WILL BE RETROFITTED IN AND AROUND SITE IMPROVEMENTS. THE EXACT LOCATION OF EXISTING EQUIPMENT, SPRINKLERS AND PIPELINES MAY BE DIFFERENT FROM THAT SHOWN HEREON. PRIOR TO CONSTRUCTION OR EXCAVATION, FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING IRRIGATION EQUIPMENT AND LINES, USING WIRE TRACING METHOD AND POT HOLING AS REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT, SEEK APPROVAL AND COORDINATE ALL WORK WITH THE CONSTRUCTION MANAGER PRIOR TO ANY EXCAVATION OR DISTURBANCE TO THE SITE, AND THROUGHOUT THE CONSTRUCTION PROCESS.
12. EXISTING IRRIGATION SYSTEM DEMOLITION WILL OCCUR WITHIN THE CONSTRUCTION ZONE AS IT PERTAINS TO MAINLINE,WIRES, VALVES AND SPRINKLERS. DISTURBANCE TO EXISTING IRRIGATION IS LIKELY TO OCCUR IN OTHER AREAS ADJACENT TO THE IMMEDIATE CONSTRUCTION ZONE. IT IS ESSENTIAL TO PROTECT IN PLACE ALL EXISTING IRRIGATION WATER METERS, BACKFLOW PREVENTERS, SHUT-OFF VALVES, IRRIGATION ZONE VALVES, MAINLINE AND WIRES, AND STAKE OUT THESE ITEMS TO WARN OTHERS TO AVOID DISTURBANCE.
13. PROTECT IRRIGATION SYSTEMS TO REMAIN TO THE GREATEST EXTENT POSSIBLE AND MAKE ANY ADJUSTMENTS NECESSARY AND AS DIRECTED ON PLANS FOR COMPLETE IRRIGATION COVERAGE OVER THE REPRESENTED PROPOSED PLANTING AREAS. ANY DAMAGE TO EXISTING LANDSCAPE OR IRRIGATION CAUSED BY OPERATIONS OF CONTRACTOR AND OTHER TRADES SHALL BE REPAIRED OR REPLACED TO ORIGINAL OR IMPROVED CONDITION AT CONTRACTOR'S EXPENSE.
14. EXERCISE CARE WHEN TRENCHING AROUND EXISTING LANDSCAPE AND PROTECT EXISTING LANDSCAPE DURING ALL PHASES OF WORK. WHEN ENCOUNTERED, HAND TRENCH AROUND OR UNDER EXISTING PLANT/ TREE ROOTS OVER 2" IN DIAMETER. ALL DISTURBED AREAS SHALL MATCH APPEARANCE OF ADJACENT AREAS AT END OF WORK.
15. INSPECT THE PROJECT SITE PRIOR TO BEGINNING WORK, AND TO THE BEST OF ABILITIES, DETERMINE WHICH EXISTING IRRIGATION FACILITIES WILL BE AFFECTED BY DEMOLITION AND CONSTRUCTION.
16. TAKE APPROPRIATE ACTION PRIOR TO GRADING, TO ENSURE THAT EXISTING PRESSURIZED WATER LINES, LATERAL LINES AND IRRIGATION CONTROL WIRES ARE PROPERLY DISCONNECTED, RELOCATED AND/OR CAPPED TO PREVENT WATER SPILLAGE OR POTENTIAL HAZARDS.
17. HAVE QUALIFIED PERSONNEL ON SITE DURING THE DEMOLITION/TRENCHING OPERATIONS TO DISCONNECT AND CAP AND STAKE EXISTING IRRIGATION FACILITIES.
18. OBTAIN APPROVAL FROM THE CONSTRUCTION MANAGER FOR RELOCATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.
19. VERIFY EXACT LOCATIONS AND STAKE ALL DAMAGED. DISCONNECTED, CAPPED OR RELOCATED FACILITIES IN THE FIELD AFTER PIPELINE CONSTRUCTION HAS BEEN COMPLETED.
20. HAND IRRIGATE ALL EXISTING LANDSCAPED AREAS WHICH CANNOT BE IRRIGATED BY EXISTING FACILITIES AFFECTED BY THE IMPROVEMENTS UNTIL IRRIGATION SYSTEMS ARE RESTORED.
21. MODIFY EXISTING IRRIGATION SYSTEMS IN AREAS INDICATED ON THE PLANS. RELOCATED EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO: VALVES, SPRINKLER HEADS, DISTRIBUTION LINES, AND IRRIGATION WIRE. ANY NEW EQUIPMENT WILL MATCH THE MANUFACTURER AND MODEL NUMBER OF EQUAL, OF EXISTING EQUIPMENT.
22. CHALK THE CONFIGURATION OF THE MODIFIED SYSTEM IN THE FIELD AND OBTAIN APPROVAL FROM THE DESIGNATED CONSTRUCTION MANAGER PRIOR TO TRENCHING.
23. AFTER THE EXISTING IRRIGATION SYSTEM MODIFICATIONS ARE COMPLETE, CONTRACTOR SHALL CONDUCT A COVERAGE TEST IN THE PRESENCE OF THE CONSTRUCTION MANAGER FOR FINAL APPROVAL.
24. REGULAR WATERING OF EXISTING LANDSCAPED AREAS ON THE PROJECT SHALL OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. NOTIFY WELL IN ADVANCE OF, AND COORDINATE WORK WITH CONSTRUCTION MANAGER. ONLY DISRUPT WATER SERVICE FOR THE BRIEF MOMENT REQUIRED TO MAKE CONNECTIONS TO EXISTING MAINLINES.
25. PATCH AND REPAIR ALL EXISTING PLANTING DAMAGED BY INSTALLATION OF NEW IRRIGATION WORK. ALL REPAIRED AREAS SHALL MATCH ADJACENT AREAS. REPAIRED/REPLACED LANDSCAPE MATERIALS SHALL BE OF SAME TYPES AND SIZES AS THAT DISTURBED.
26. ASCERTAIN THE EXTENT OF ANY SIMULTANEOUS AND ESSENTIAL WORK BY OTHERS ON THE SITE. CONTRACTORS SHALL COORDINATE THEIR OPERATIONS AND SHALL COOPERATE TO MINIMIZE INTERFERENCE.
27. REFER TO THE DETAILS AND SPECIFICATIONS FOR FURTHER INFORMATION.

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REGISTERED LANDSCAPE ARCHITECT
STEVEN W. KIEL
No. 2342
Exp. 2/28/13
STATE OF CALIFORNIA

LI-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION LEGEND + NOTES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 13 OF 20 SHEETS

WBS B-10025

APPROVED 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

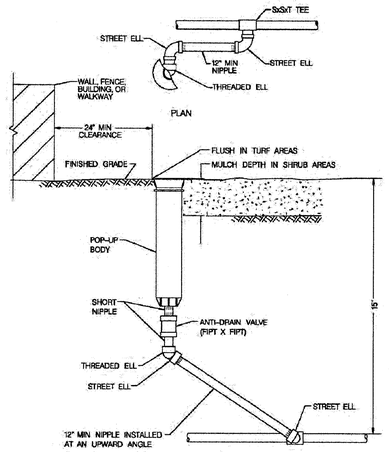
232-1723
CCDSF COORDINATE

1868-6284
CCDSS COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-13-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN



NOTES:

1. FITTINGS SHALL BE PVC SCH 40.
2. NIPPLES AND RISERS SHALL BE PVC SCH 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER OR IN ALL HEADS.
6. LATERAL DEPTH SHALL BE 18" WHEN 12" POP-UP BODIES ARE USED.

LEGEND ON PLANS

SHOW A NUMBER TO INDICATE TYPE HEAD

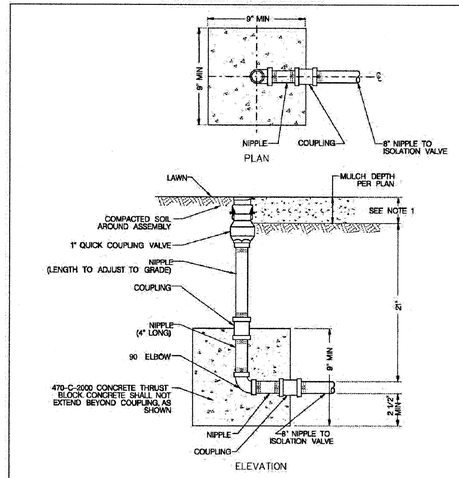
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

ROTOR, SPRAY, OR BUBBLER POP-UP HEAD

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-103**



NOTES:

1. QUICK COUPLING VALVES SHALL BE SET FLUSH IN LAWN AND PER MULCH DEPTH ABOVE FINISH GRADE IN SHRUB /GROUNDCOVER AREAS.
2. CLOSE NIPPLES SHALL NOT BE USED.
3. NIPPLES, COUPLINGS, AND ELBOWS SIZE SHALL BE 1" RED BRASS.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. UPON PROJECT ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE TWO SETS OF APPROPRIATE QUICK CUPLER VALVE KEY WITH 1" BRASS BALL VALVE AND SWIVEL ADAPTER INCLUDED IN THE ASSEMBLY.

LEGEND ON PLANS

QCV

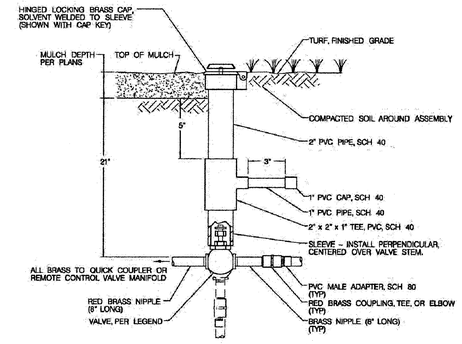
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

QUICK COUPLING VALVE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-105**



NOTES:

1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVES SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. LOCKING CAP SHALL BE MOUNTED FLUSH WITH FINISHED GRADE IN TURF AREAS AND ABOVE FINISHED GRADE IN SHRUB AREAS, PER DEPTH OF MULCH.
6. PROVIDE APPROPRIATE LOCKING CAP KEY AND VALVE KEY TO CPERATE VALVE AT DEPTH.
7. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
8. TEFLON TAPE SHALL BE USED ON ALL THREADED CONNECTIONS.
9. WHEN INSTALLED AS MAINLINE ISOLATION VALVE, NIPPLES AND FITTINGS MAY BE SCH 80 PVC.

LEGEND

GV

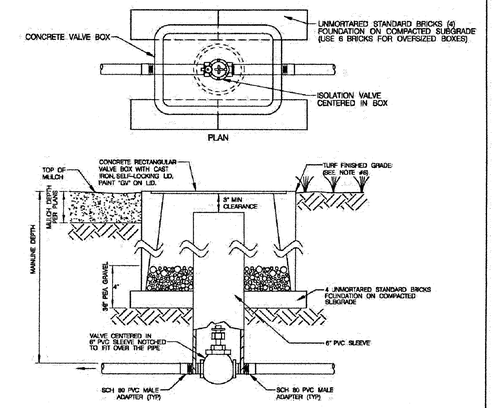
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

ISOLATION GLOBE VALVE 2" AND SMALLER

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-106**



NOTES

1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVE SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. VALVE BOX SHALL BE MOUNTED FLUSH WITH FINISH GRADE IN TURF AREAS AND PER MULCH DEPTH IN SHRUB AREAS.
6. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
7. GATE VALVE SHALL BE USED ONLY ON LOOPED MAINLINE.
8. VALVE BOX SHALL BE SET PERPENDICULAR TO HARDSCAPE.
9. PROVIDE TWO VALVE KEYS TO OPERATE VALVE AT DEPTH.

LEGEND ON PLANS

GATE VALVE GLOBE VALVE

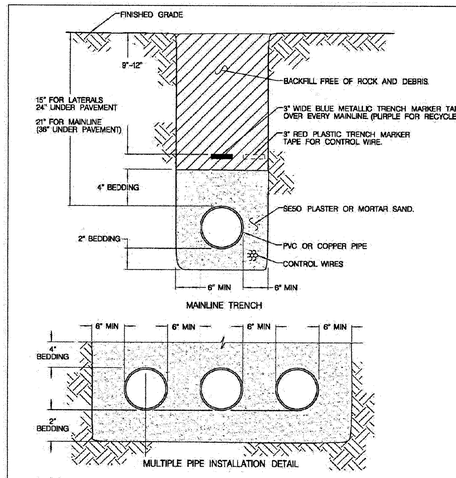
REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

ISOLATION GLOBE/GATE VALVE 2 1/2" AND LARGER

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-107**



NOTES:

1. BACKFILL MATERIAL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 90% MINIMUM.
2. PIPE SHALL LAY FREE IN THE TRENCH WITH NO INDUCED STRAIN AND WITH SUFFICIENT ALLOWANCE FOR EXPANSION AND CONTRACTION.
3. PVC PIPE UNDER PAVEMENT SHALL BE INSTALLED IN A SCH 40 PVC SLEEVE TWICE THE DIAMETER OF THE PIPE (2" MINIMUM SIZE) AND EXTEND 12" MINIMUM BEYOND THE EDGE OF PAVEMENT.
4. THE LETTER "W" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB/SIDEWALK) DIRECTLY ABOVE THE PRESSURE PIPELINE SLEEVE.
5. NO PVC PRESSURE PIPELINE SHALL BE INSTALLED WITHIN 3' OF ANY UTILITY, UNLESS OTHERWISE SPECIFIED.

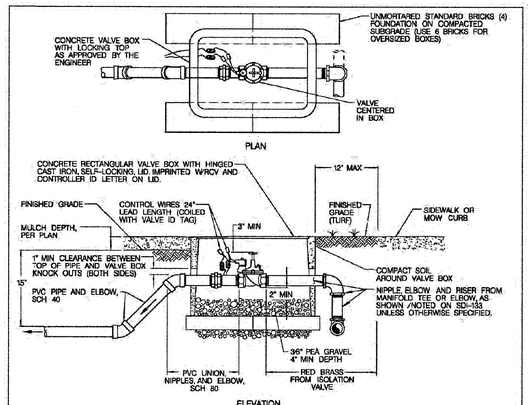
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

IRRIGATION TRENCH PVC OR COPPER PIPE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-110**



NOTES:

1. SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. SEE SDI-115 FOR SPLICE /SOLDERING NOTES.
2. SPLICES SHALL BE SOLDERED WITH A PROPERLY SIZ MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
3. KNOCK OUTS SHALL NOT BE ENLARGED.
4. INSTALL ONLY ONE VALVE PER BOX.
5. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, ABOVE FINISHED GRADE IN SHRUB /GROUNDCOVER AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
6. CLOSE NIPPLES SHALL NOT BE USED.
7. NIPPLES, ELBOWS, AND FITTINGS SHALL BE THREADED RED BRASS FROM ISOLATION VALVE THROUGH THE VALVE, UNLESS OTHERWISE SPECIFIED.
8. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS

LEGEND ON PLANS

RCV

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12

CITY OF SAN DIEGO – STANDARD DRAWING

REMOTE CONTROL VALVE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
M Hoagle 1/31/2012
COORDINATOR R.C.E. 35271 DATE

DRAWING NUMBER **SDI-114**

CONSULTANT

KTUA

3916 Normal Street
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Planning + Landscape Architecture

REGISTERED LANDSCAPE ARCHITECT — GARY W. CARPENTER — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK– RAIN GARDEN

LI-6

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 14 OF 20 SHEETS

WBS B-10025

APPROVED 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

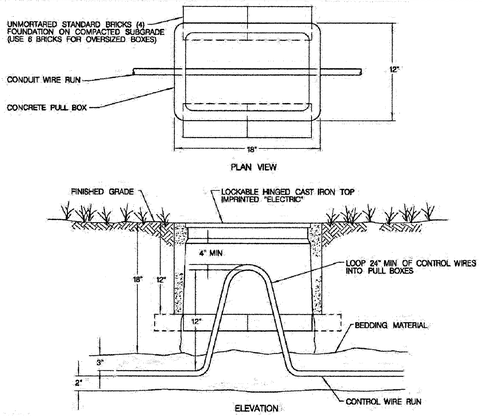
SHEILA BOBE
PROJECT MANAGER

232-1723
CCDSD7 COORDINATE

1868-6284
CCDSD8 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-14 -D



NOTES:

1. INSTALL PULL BOXES AS SHOWN ON PLANS AND AT EACH END OF CONDUITS. SWEEPS RUNNING UNDER VEHICULAR PAVEMENT.
2. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
3. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.
4. SPLICES SHALL ONLY BE MADE IN PULL BOXES, WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, SOLDERED WITH METALLIC ALLOY, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
5. SPARE WIRE ENDS SHALL BE INSULATED IN THE SAME MANNER AS WIRE SPLICES.
6. MINIMUM SIZE PULL BOX SHALL BE AS SHOWN ABOVE. LARGER BOXES MAY BE NECESSARY TO MEET 4" CLEARANCE REQUIRED.
7. NO SPLICES SHALL BE PERMITTED ON WIRE RUNS OF LESS THAN 300'.
8. THE LETTER "E" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE.

LEGEND ON PLANS

PB

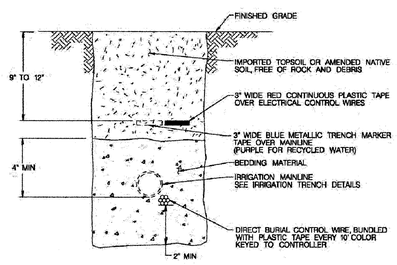
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. WAGELI/DOT	09/12

CITY OF SAN DIEGO – STANDARD DRAWING

ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICING NOTES

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 46371 DATE 12/1/2013

DRAWING NUMBER SDI-115



NOTES:

1. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.
2. WIRES WHICH RUN UNDER PAVED AREAS SHALL BE INSTALLED IN PVC CONDUIT TWICE THE DIAMETER OF THE WIRE BUNDLE (2" MINIMUM SIZE), EXTENDING 12" MINIMUM BEYOND EDGE OF PAVEMENT.
3. THE LETTER E SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT(CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE /CABLE.
4. WHEN CONTROL WIRING CANNOT BE INSTALLED IN A PIPE TRENCH, IT SHALL BE INSTALLED A MINIMUM 18" BELOW FINISH GRADE BUNDLED WITH PLASTIC TAPE.

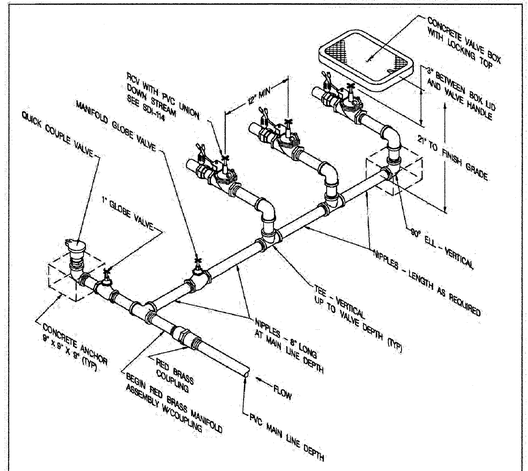
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. WAGELI/DOT	09/12

CITY OF SAN DIEGO – STANDARD DRAWING

CONTROL WIRE INSTALLATION

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 46371 DATE 12/1/2013

DRAWING NUMBER SDI-119



NOTES:

1. ALL PIPES, NIPPLES, AND FITTINGS AFTER MALE ADAPTER SHALL BE RED BRASS.
2. VALVE AND CONTROLLER IDENTIFICATION SHALL BE LABELED OUTSIDE ON THE VALVE BOX LID AND TAGGED INSIDE THE BOX ON THE VALVE.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. WAGELI/DOT	09/12

CITY OF SAN DIEGO – STANDARD DRAWING

REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH BRASS PIPE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 46371 DATE 12/1/2013

DRAWING NUMBER SDI-126

CONSULTANT

KTU+A
Planning + Landscape Architecture
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REGISTERED LANDSCAPE ARCHITECT — JAMES W. LOW — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK– RAIN GARDEN

LI-7

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

IRRIGATION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 15 OF 20 SHEETS

WBS B-10025

APPROVED _____ FOR CITY ENGINEER — DATE 3/4/13

KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

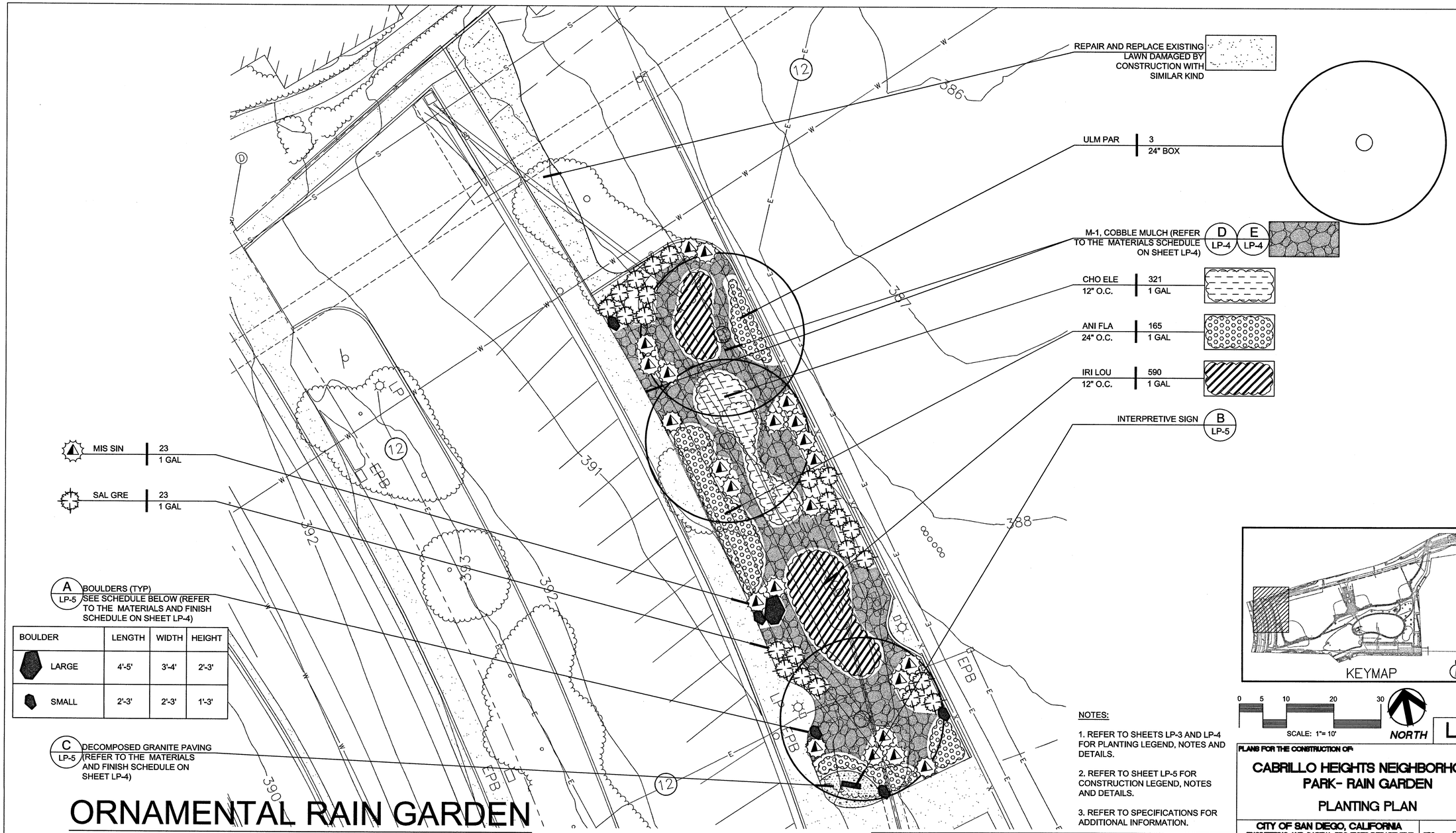
SHEILA BOSE, PROJECT MANAGER

232-1723 CCDSD7 COORDINATE

1868-6284 CCDSD8 COORDINATE

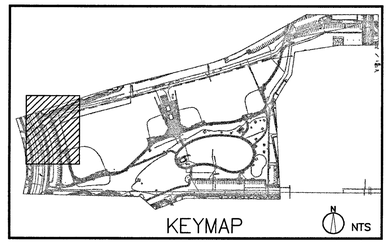
CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-15-D



BOULDER	LENGTH	WIDTH	HEIGHT
LARGE	4'-5'	3'-4'	2'-3'
SMALL	2'-3'	2'-3'	1'-3'

ORNAMENTAL RAIN GARDEN



0 5 10 20 30

SCALE: 1"= 10'

NORTH

NOTES:

1. REFER TO SHEETS LP-3 AND LP-4 FOR PLANTING LEGEND, NOTES AND DETAILS.
2. REFER TO SHEET LP-5 FOR CONSTRUCTION LEGEND, NOTES AND DETAILS.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LP-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANTING PLAN

CONSULTANT

KTUA
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
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REGISTERED LANDSCAPE ARCHITECT — KEVIN R. CARR — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 16 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLMER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE, PROJECT MANAGER

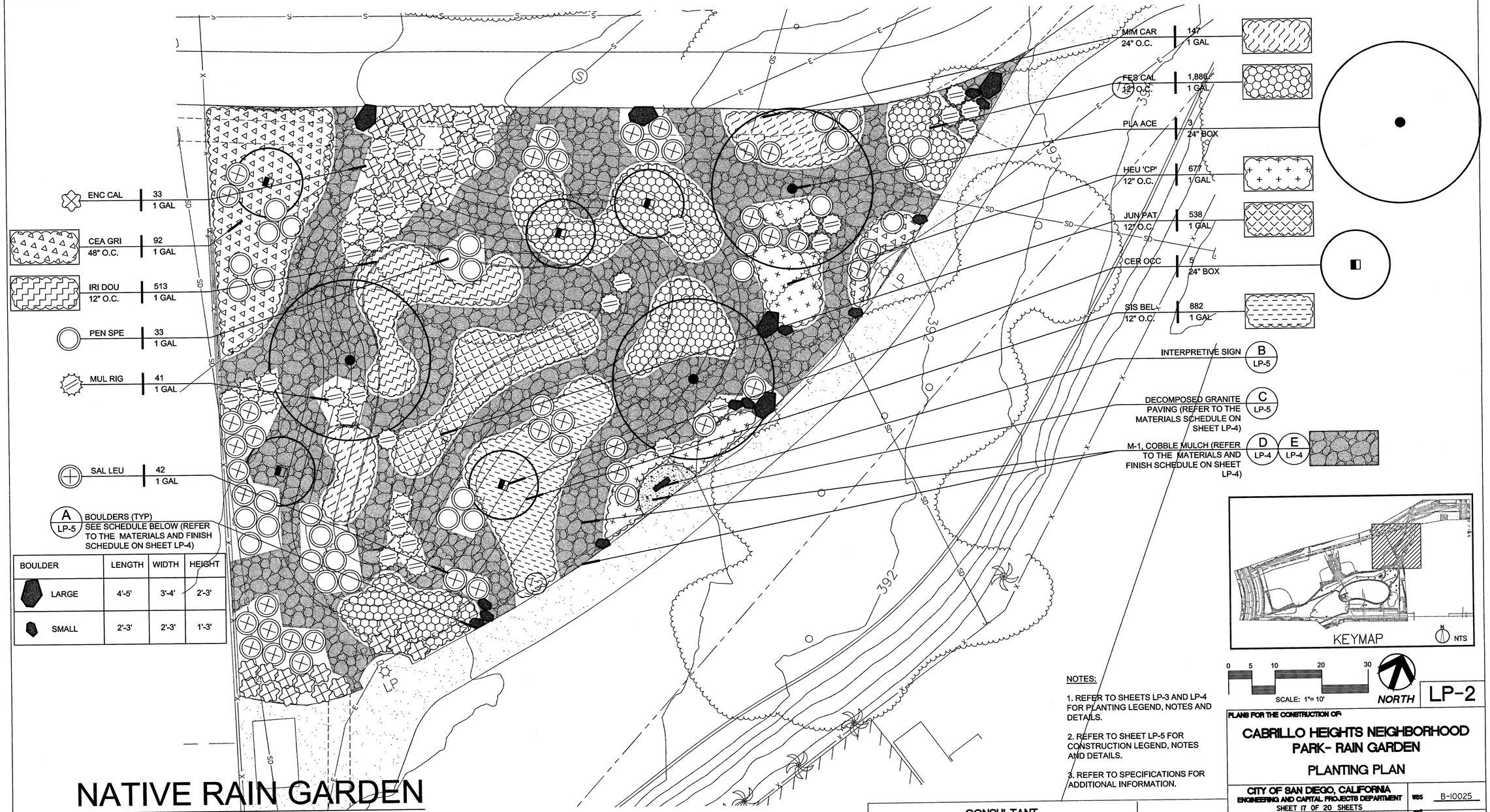
232-1723 COSDT COORDINATE

1868-6284 COSDB COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-16 -D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN



BOULDER	LENGTH	WIDTH	HEIGHT
LARGE	4'-5'	3'-4'	2'-3'
SMALL	2'-3'	2'-3'	1'-3'

NATIVE RAIN GARDEN

NOTES:

1. REFER TO SHEETS LP-3 AND LP-4 FOR PLANTING LEGEND, NOTES AND DETAILS.
2. REFER TO SHEET LP-5 FOR CONSTRUCTION LEGEND, NOTES AND DETAILS.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

0 5 10 20 30
SCALE: 1"= 10'

NORTH

LP-2

PLANS FOR THE CONSTRUCTION OF

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANTING PLAN

CONSULTANT

KTUA
Planning + Landscape Architecture
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REGISTERED LANDSCAPE ARCHITECT
BRADLEY W. GARRETSON
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 17 OF 20 SHEETS

APPROVED: 3/14/13
FOR CITY ENGINEER — DATE

APPROVED BY: KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS B-10025
SHEILA BOSE, PROJECT MANAGER
232-1723 CCB&T COORDINATE
1868-6284 CCB&B COORDINATE
36497-17 -D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANT MATERIAL LEGEND

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	MIN. HEIGHT	MIN. SPREAD	REMARKS	DETAIL*
TREES								
5	CER OCC	CERCIS OCCIDENTALIS**	WESTERN REDBUD	24" BOX	4'-5'	3'-4'	LOW BRANCHING, FULL HEAD, GOOD COLOR, DOUBLE STAKE	A
3	PLA ACE	PLATANUS ACERFOLIA	LONDON PLANE TREE	24" BOX	10'-12'	4'-5'	STANDARD/LOW BRANCHING FORM, GOOD COLOR, DOUBLE STAKE	A
2	ULM PAR	ULMUS PARVIFOLIA	CHINESE ELM	24" BOX	9'-11'	3'-4'	STANDARD, STRAIGHT TRUNK, GOOD COLOR, DOUBLE STAKE	A
SHRUBS AND GROUNDCOVER								
165	ANI FLA	ANIGOZANTHOS FLAVIDUS	KANGAROO PAW 'RED'	1 GAL	6"	6"	24" O.C., FULL CLUMPS, GOOD RED COLOR	B
92	CEA GRI	CEANOTHUS GRISEUS 'YANKEE POINT' **	WILD LILAC	1 GAL	6"	8"	48" O.C., FULL CLUMPS, GOOD PURPLE COLOR	B
33	ENC CAL	ENCELIA CALIFORNICA **	ENCELIA	1 GAL	6"	8"	FULL AND BUSHY FOLIAGE, GOOD YELLOW COLOR	B
677	HEU 'CP'	HEUCHERA 'CANYON PINK' **	CANYON PINK CORAL BELLS	1 GAL	8"	6"	12" O.C., FULL CLUMPS, GOOD PINK COLOR	B, C
513	IRI DOU	IRIS DOUGLASIANA **	DOUGLAS IRIS	1 GAL	12"	8"	12" O.C., FULL CLUMPS, GOOD PALE BLUE COLOR	B, C
590	IRI LOU	IRIS LOUISIANA 'BLACK GAMECOCK'	BLACK GAMECOCK IRIS	1 GAL	12"	8"	12" O.C., FULL CLUMPS, GOOD DARK PURPLE COLOR	B, C
147	MIM CAR	MIMULUS CARDINALIS **	SCARLET MONKEYFLOWER	1 GAL	8"	8"	24" O.C., FULL AND BUSHY, GOOD RED-ORANGE COLOR	B
33	PEN SPE	PENSTEMON SPECTABILIS **	ROYAL BEARD TONGUE	1 GAL	12"	12"	FULL AND BUSHY FOLIAGE, GOOD BLUE COLOR	B
23	SAL GRE	SALVIA GREGGII **	AUTUMN SAGE	1 GAL	12"	12"	FULL AND BUSHY FOLIAGE, GOOD BRIGHT PINK COLOR	B
42	SAL LEU	SALVIA LEUCANTHA **	MEXICAN BUSH SAGE	1 GAL	12"	12"	FULL AND BUSHY FOLIAGE, GOOD PURPLE COLOR	B
882	SIS BEL	SISYRINCHIUM BELLUM **	BLUE-EYED GRASS	1 GAL	8"	8"	12" O.C., FULL AND BUSHY FOLIAGE, GOOD BLUE COLOR	B, C
GRASSES								
321	CHO ELE	CHONDROPETALUM ELEPHANTINUM	CAPE RUSH	1 GAL	6"-8"	8"	12" O.C., CLUMPING FORM, GOOD BLUE GREEN COLOR	B, C
1,886	FES CAL	FESTUCA CALIFORNICA **	CALIFORNIA FESCUE	1 GAL	6"-8"	6"	12" O.C., CLUMPING FORM, GOOD COLOR	B, C
538	JUN PAT	JUNCUS PATENS **	CALIFORNIA GRAY RUSH	1 GAL	6"-8"	8"	12" O.C., FULL AND BUSHY, GOOD COLOR	B
23	MIS SIN	MISCANTHUS SINENSIS 'MORNING LIGHT'	MAIDEN GRASS	1 GAL	6"	6"	FULL AND BUSHY, GOOD COLOR	B
41	MUL RIG	MUHLENBERGIA RIGENS **	DEER GRASS	1 GAL	6"	6"	FULL AND BUSHY, GOOD COLOR	B
AS REQ'D	TURF	GN-1 BERMUDA BY PACIFIC SOD		SOD	-	-	PACIFIC SOD, SEE SPECS, GOOD COLOR	-

* REFER TO SHEET LP-4 FOR PLANTING DETAILS.
* * ELIMINATE FERTILIZER PLANTING TABS IN PLANTING PITS

PLANTING NOTES

1. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL LANDSCAPE AREAS.
2. EXACT LOCATIONS OF PLANT MATERIALS SHALL BE APPROVED BY THE CITY RESIDENT ENGINEER IN THE FIELD PRIOR TO INSTALLATION. RESIDENT ENGINEER RESERVES THE RIGHT TO ADJUST PLANT LOCATIONS IN THE FIELD.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL PLANT COUNTS AND SQUARE FOOTAGES.
4. VERIFY LOCATIONS OF ALL PERTINENT SITE IMPROVEMENTS INSTALLED UNDER OTHER SECTIONS INCLUDE PIPING AND WIRING. IF ANY PART OF THESE PLANS CANNOT BE FOLLOWED DUE TO SITE CONDITIONS, CONTACT THE CITY RESIDENT ENGINEER FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.
5. CONTRACTOR SHALL SUBMIT PHOTOS OF ALL PLANT MATERIAL TO CITY RESIDENT ENGINEER FOR APPROVAL. ANY SUBSTITUTIONS SHALL BE APPROVED BY CITY LANDSCAPE REPRESENTATIVE.
6. MINIMUM TREE SEPARATION DISTANCE:

   TRAFFIC SIGNAL, STOP SIGN - 20 FEET

   UNDERGROUND UTILITY LINES- 5 FEET
   (SEWER- 10 FEET)

   ABOVE GROUND UTILITY STRUCTURES- 10 FEET
   (TRANSFORMERS, HYDRANTS, UTILITY POLES, ETC.)

   DRIVEWAYS- 10 FEET

   INTERSECTIONS- 25 FEET
   (INTERSECTING CURB LINES OF TWO STREETS)

8. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 2" THICK LAYER OF COBBLE MULCH AT ALL PLANTER AREAS AS INDICATED ON PLANS. REFER TO THE SCHEDULE ON SHEET LP-5.

CABRILLO HEIGHTS NEIGHBORHOOD PARK– RAIN GARDEN

LP-3

CONSULTANT

KTU+A Planning + Landscape Architecture
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REGISTERED LANDSCAPE ARCHITECT
GARY W. CARNES
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANTING LEGEND + NOTES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 18 OF 20 SHEETS

WBS B-10025

APPROVED 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLMER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

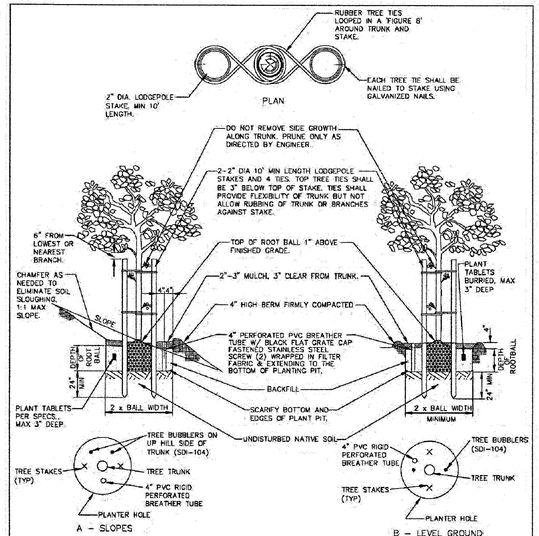
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

232-1723
COORD COORDINATE

1868-6284
COORD COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-18 -D



REVISION	BY	APPROVED	DATE
ORIGINAL*	SG J. WAGELYCOORT		01/12

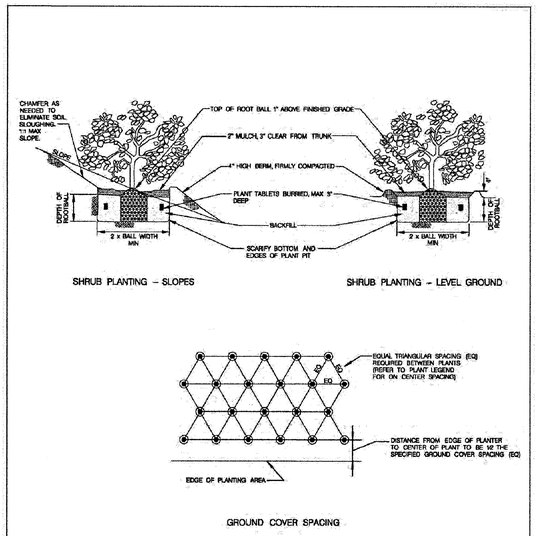
CITY OF SAN DIEGO - STANDARD DRAWING

TREE PLANTING AND STAKING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 46371 DATE 1/01/2013
DRAWING NUMBER **SDL-101**

TREE PLANTING WITH DOUBLE STAKING

A SECTION 3/8" = 1'-0"



REVISION	BY	APPROVED	DATE
ORIGINAL*	KA J. WAGELYCOORT		01/12

CITY OF SAN DIEGO - STANDARD DRAWING

SHRUB PLANTING/GROUND COVER SPACING

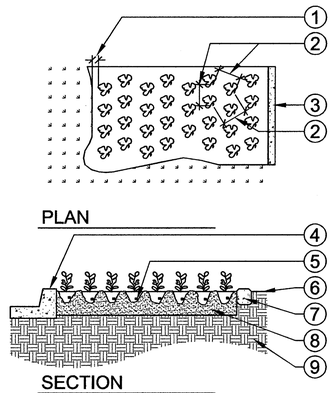
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 46371 DATE 1/01/2013
DRAWING NUMBER **SDL-102**

B SHRUB PLANTING

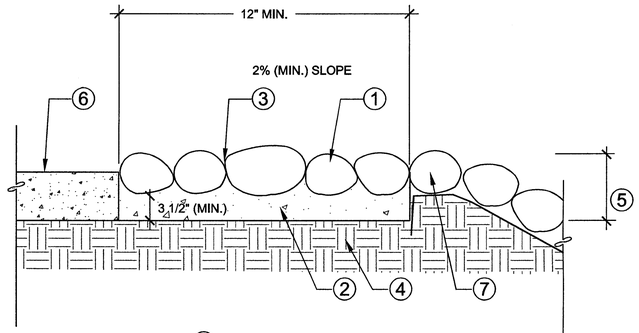
SECTION NO SCALE

C GROUNDCOVER PLANTING

TRIANGULAR NO SCALE



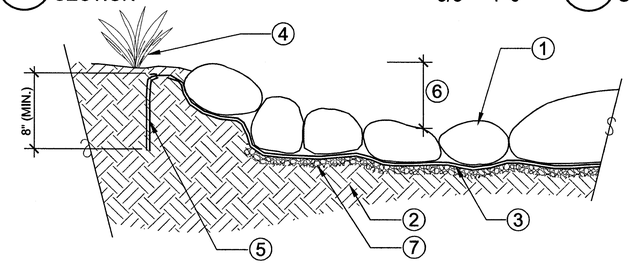
1. 1/2 OF SPACING DISTANCE AT ALL EDGES
2. SEE PLANTING PLAN AND LEGEND FOR SPACING
3. EDGE OF PAVING
4. SET FINISH GRADE 2" BELOW TOP OF PAVING
5. PLANT TABLET (1" MIN. AWAY FROM ROOTS)
6. FINISH GRADE
7. EDGE OF PAVING
8. PREPARED SOIL
9. SUBGRADE PER CIVIL PLANS



1. M-1, COBBLE MULCH- SET IN WET CONCRETE OR MORTAR IN PLACE WHERE ADJACENT TO SIDEWALK
2. CONCRETE SETTING OR MOTAR BED
3. SET COBBLES NEXT TO EACH OTHER.
4. NATIVE SOIL OR APPROVED 90% COMPACTED SUBGRADE - COMPACT SOIL TO 12" MIN. DEPTH.
5. DEPTH VARIES 8"-10"
6. CONCRETE SIDEWALK, WHERE OCCURS
7. M-1, COBBLE MULCH - PLACE ON FINISH GRADE IN RAIN GARDE, REFER TO DETAIL E ON SHEET LP-4

D COBBLE SET IN CONCRETE AT SIDEWALK

SECTION N.T.S.



1. M-1, COBBLE MULCH
2. SUBGRADE
3. PERMEABLE WEED BLOCKING FABRIC, PER SPECIFICATIONS
4. PLANTING AREA, WHERE OCCURS
5. TURN WEED BLOCKING FABRIC UNDER AT ALL EDGES, (TYP.) SECURE FABRIC WITH STEEL "U" STAKES AT 24" O.C. AT EDGES
6. DEPTH VARIES, SEE CIVIL PLANS
7. 3" DEPTH GRAVEL BASE (1/2" SIZE) COMPACTED TO 90% MIN.

E COBBLE ON GRADE

SECTION 3/8" = 1'-0"

MATERIALS AND FINISH SCHEDULE

KEY	DETAIL / SHEET REFERENCE	ITEM	DESCRIPTION	COLOR / FINISH	REMARKS	SUPPLIERS
B-1	A / LC-5	BOULDERS	REFER PLAN SHEETS FOR BOULDER SCHEDULE	DESERT SELECT BOULDER OR APPROVED EQUAL	-	KRC ROCK 11655 WOODSIDE AVENUE LAKESIDE, CA 92040 P: 619.443.8153
M-1	D / LP-4, E / LP-4	COBBLE MULCH (3"-4" DIA)	REFER TO PLANTING PLANS FOR LOCATIONS	TAN COBBLE STREAMBED KIT MIXTURE OR EQUAL	REFER TO SPECIFICATIONS	KRC ROCK 11655 WOODSIDE AVENUE LAKESIDE, CA 92040 P: 619.443.8153
DG-1	C / LC-5	DECOMPOSED GRANITE PAVING	STABILIZED DECOMPOSED GRANITE	COYOTE GOLD OR APPROVED EQUAL	REFER TO SPECIFICATIONS	KRC ROCK 11655 WOODSIDE AVENUE LAKESIDE, CA 92040 P: 619.443.8153
S-1	B / LC-5	INTERPRETIVE SIGN	DOUBLE PEDESTAL WITH INGROUND MOUNT AND DURAREADER INTERRUPTIVE PANEL OR APPROVED EQUAL	REFER TO DETAIL FOR PANEL ARTWORK, BLACK POWDER COAT BLACK PEDESTAL	REFER TO SPECIFICATIONS	ENVIROSIGNS 2700 FULTON DR NW CANTON, OH 44718 P: 800.492.5377

LP-4

CONSULTANT

KTUA Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax • 619.294.9965

REGISTERED LANDSCAPE ARCHITECT MARK W. CATLETT No. 2342 Exp. 2/28/15 STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANTING DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 19 OF 20 SHEETS

WBS B-10025

APPROVED FOR CITY ENGINEER 3/14/13 DATE

APPROVED KEVIN OLMER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE PROJECT MANAGER

232-1723 ODBC COORDINATE

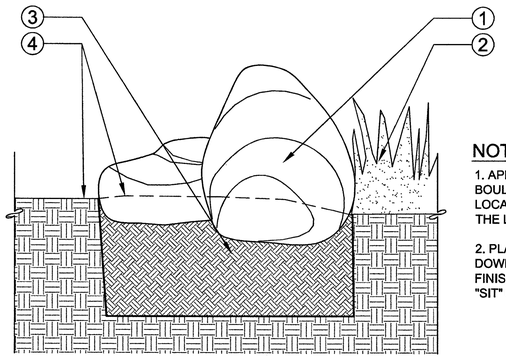
1868-6284 ODBC COORDINATE

CONTRACTOR DATE STARTED

INSPECTOR DATE COMPLETED

36497-19 -D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN



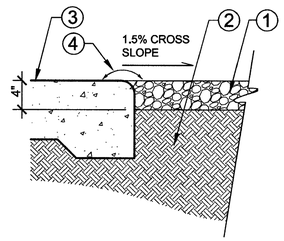
NOTES:

1. APPROXIMATE SIZE AND LOCATION OF BOULDERS SHOWN ON PLAN. FINAL SIZE, LOCATION AND TYPE SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT.

2. PLACE FLATTEST, WIDEST FACE OF BOULDER DOWN WITH APPROXIMATE. 1/3 OF ROCK BELOW FINISH GRADE. BOULDER SHALL NOT APPEAR TO "SIT" ON FINISH GRADE.

(1) B-1, BOULDER- BURY LOWER THIRD
(2) PLANTING PER PLANS
(3) COMPACT SUBGRADE TO 90% MIN. 12" DEEP
(4) FINISH GRADE IN PLANTER

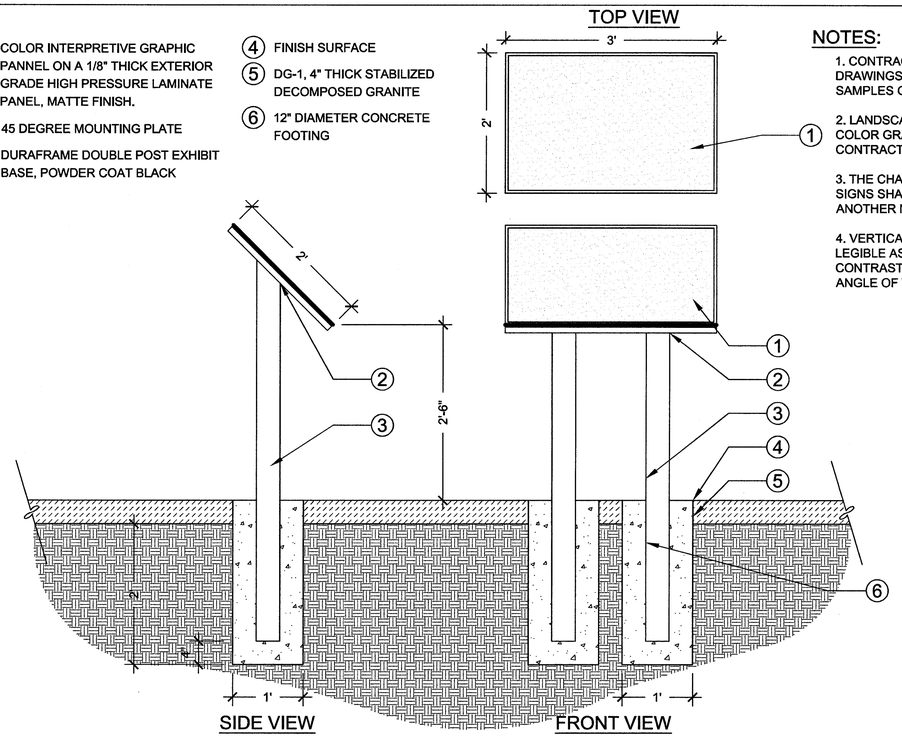
A BOULDERS
SECTION
SCALE: NTS



(1) DG-1, 4" DEPTH STABILIZED DECOMPOSED GRANITE
(2) SUBSOIL COMPACTED 95% TO MIN. 12" DEPTH
(3) EXISTING CONCRETE PAVING
(4) MAKE D.G. PATH FLUSH WITH ADJACENT CONCRETE PAD

C DECOMPOSED GRANITE PAVING
SECTION
NO SCALE

(1) COLOR INTERPRETIVE GRAPHIC PANNEL ON A 1/8" THICK EXTERIOR GRADE HIGH PRESSURE LAMINATE PANEL, MATTE FINISH.
(2) 45 DEGREE MOUNTING PLATE
(3) DURAFRAME DOUBLE POST EXHIBIT BASE, POWDER COAT BLACK
(4) FINISH SURFACE
(5) DG-1, 4" THICK STABILIZED DECOMPOSED GRANITE
(6) 12" DIAMETER CONCRETE FOOTING



NOTES:

1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING FASTENERS AND SAMPLES OF MATERIALS TO BE USED.

2. LANDSCAPE ARCHITECT SHALL PROVIDE COLOR GRAPHICS FOR THE SIGN TO THE CONTRACTOR UPON REQUEST.

3. THE CHARACTERS AND BACKGROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR ANOTHER NON-GLARE FINISH.

4. VERTICALLY DISPLAYED SIGNS MUST BE LEGIBLE AS DEPENDENT ON THE CONTRAST, REFLECTIVITY, LIGHTING, ANGLE OF VISION, AND SIZE.

SIGNAGE PANEL GRAPHIC:

B INTERPRETIVE SIGN
SECTION / ELEVATION
NTS

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

LP-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- RAIN GARDEN

PLANTING DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 20 OF 20 SHEETS

WBS B-10025

APPROVED _____ 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CCDBS COORDINATE

1868-6284
CCDBS COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36497-20-D

CONSULTANT

KTU+A
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
SHELLEY L. CARSON
No. 2342
EXP. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

UNDERGROUND UTILITIES

AT LEAST THREE (3) WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL REQUEST A MARKOUT OF UNDERGROUND UTILITIES BY CALLING THE BELOW LISTED REGIONAL NOTIFICATION CENTER FOR AN INQUIRY IDENTIFICATION NUMBER:
UNDERGROUND SERVICE ALERT (U.S.A.) 1-800-422-4133

CONTRACTOR'S RESPONSIBILITIES

CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING: SAFETY OF ALL PERSONS AND PROPERTY, AND THAT THIS REQUIREMENT SHALL
1. APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

CONTRACTOR SHALL INSTALL TEMPORARY FENCING AROUND AREAS OF DISTURBANCE DURING CONSTRUCTION. INSTALLATION OF TEMPORARY FENCING SHALL NOT DETER OR HINDER ACCESS TO EXISTING AND NEW FIRE HYDRANTS. FENCING SHALL BE
2. MAINTAINED IN A GOOD CONDITION AND IF DAMAGED, THE CONTRACTOR SHALL REPAIR IMMEDIATELY. CONTRACTOR SHALL REMOVE FENCING UPON THE COMPLETION OF THE WORK AND REPAIR DAMAGE CAUSE BY THE INSTALLATION OF TEMPORARY FENCING.

WATER POLLUTION CONTROL NOTES:

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS NOTED IN THE GREENBOOK 2009 CITY SUPPLEMENT SEC 801 - WATER POLLUTION CONTROL.

REFERENCE DRAWINGS:

CABRILLO HEIGHTS NEIGHBORHOOD PARK AS-BUILT PLANS	23590-1-D TO 23590-1-23590-1-D
CANYON SEWER - CABRILLO HEIGHTS PARK	12807-26-D
IMPROVEMENT PLANS FOR KEARNY VILLA ROAD	19413-1-D
PLANS FOR THE CONSTRUCTION OF SANITARY SEWER TO SERVE RESEARCH PARK	4414-D
PLANS FOR CONSTRUCTION OF CABRILLO HEIGHTS NEIGHBORHOOD PARK AREA	9776-2,3-D
PLANS FOR CONSTRUCTION OF CABRILLO HEIGHTS NEIGHBORHOOD PARK STORM DRAIN	22746-1,2-D
PLANS FOR THE IMPROVEMENTS OF 18" WATER MAIN	21669-2-D
IMPROVEMENT PLAN FOR NAVY HOUSING AT CABRILLO HEIGHTS	32509-9,10-D
SEWER AND WATER PLANS	1936-D
PLANS FOR THE INSTILLATION OF TELEPHONE CONDUITS	30133-6-D
AFTON D. & MILAGROS ST. IN CABRILLO VILLAGE UNIT	34715-D
CABRILLO HEIGHTS NEIGHBORHOOD PARK IMPROVEMENTS	23590-3,4-D

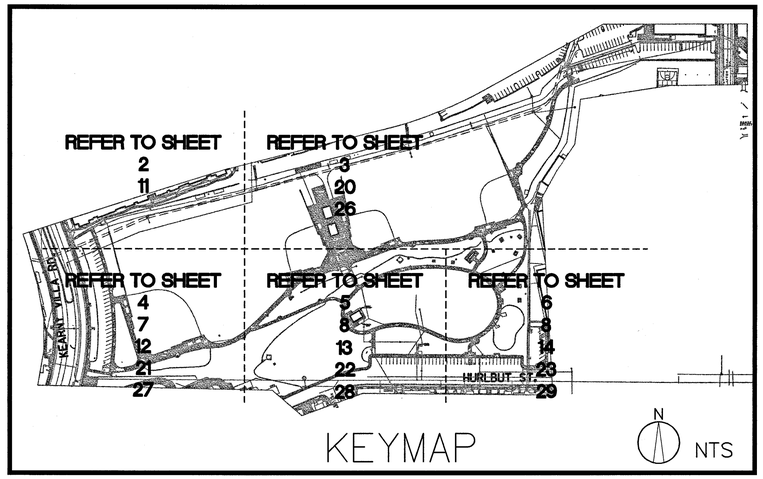
PARK CONSTRUCTION INSPECTION STAGES AND INSPECTION TEAM

PARK INSPECTION TEAM:

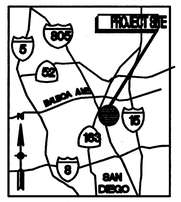
1. SITE SUPERINTENDENT (CONTRACTOR/ DEVELOPER'S REPRESENTATIVE)
2. CONTRACTOR(S)
3. RESIDENT ENGINEER FROM FIELD ENGINEERING DEPARTMENT
4. CITY PROJECT MANAGER
5. DESIGN CONSULTANT
6. PARK AND RECREATION DISTRICT MANAGER
7. PARK AND RECREATION ASSET MANAGER

PARKCONSTRUCTION INSPECTION STAGES: (MINIMUM)

1. PRE-CONSTRUCTION MEETING.
2. ROUGH GRADING AND DRAINAGE.
3. IRRIGATION MAINLINE PRESSURE TEST.
4. IRRIGATION LATERAL LINE PRESSURE TEST.
5. WIRING PRIOR TO BACKFILLING TRENCHES.
6. HARDSCAPE AT TIME OF FINISHED STAKING AND LAYOUT.
7. FINISH GRADING AND SOIL PREPARATION.
8. IRRIGATION COVERAGE TEST.
9. PLANT MATERIAL (WHEN DELIVERED) AND PLACEMENT APPROVAL.
10. PLAY GROUND AUDIT AND INSPECTION.
11. PROJECT CONSTRUCTION 90 PERCENT COMPLETE (DEVELOP PUNCH LIST AND SUBMIT RED-LINE AS-BUILTS).
12. 120 DAY PLANT MAINTENANCE PERIOD (THIS INSPECTION IS TO BE HELD WHEN THE PUNCH LIST ITEMS ARE COMPLETE).
13. FINAL WALK-THROUGH, ACCEPTANCE BY THE CITY. CONTRACTOR TO SUBMIT FINAL APPROVED AS-BUILT DRAWINGS TO THE CITY.



KEYMAP



VICINITY MAP
NOT TO SCALE

SCOPE OF WORK FOR FENCE PERMIT

THIS PERMIT IS REQUIRED FOR ADDITIVE ALTERNATIVE 'A' ONLY. NET BARRIER FENCING INCLUDES NETTING, POSTS, AND FOOTINGS. REFER TO SHEETS C-1, LC-1, AND LC-5 FOR MORE INFORMATION.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE LANDSCAPE ARCHITECT OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IN CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF THE PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS LANDSCAPE ARCHITECT OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

KURT W. CARLSON - LICENSE NUMBER 2342 - 2/28/13
KTU+A 15
3916 NORMAL STREET
SAN DIEGO, CA 92103
P: (619) 294-4477
F: (619) 294-9965
KURT@KTUA.COM

SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE
01	G-1	TITLE SHEET
02	D-1	DEMO PLAN
03	D-2	DEMO PLAN
04	D-3	DEMO PLAN
05	D-4	DEMO PLAN
06	D-5	DEMO PLAN
07	C-1	GRADING PLAN
08	C-2	GRADING PLAN
09	C-3	STORM DRAIN PROFILES
10	L-1	ACCESSIBILITY PLAN
11	LC-1	LANDSCAPE CONSTRUCTION PLAN
12	LC-2	LANDSCAPE CONSTRUCTION PLAN
13	LC-3	LANDSCAPE CONSTRUCTION PLAN
14	LC-4	LANDSCAPE CONSTRUCTION PLAN
15	LC-5	LANDSCAPE CONSTRUCTION MATERIALS AND FINISH SCHEDULE
16	LC-6	LANDSCAPE CONSTRUCTION DETAILS
17	LC-7	LANDSCAPE CONSTRUCTION DETAILS
18	LC-8	LANDSCAPE CONSTRUCTION DETAILS
19	LC-9	LANDSCAPE CONSTRUCTION DETAILS
20	LI-1	LANDSCAPE IRRIGATION PLAN
21	LI-2	LANDSCAPE IRRIGATION PLAN
22	LI-3	LANDSCAPE IRRIGATION PLAN
23	LI-4	LANDSCAPE IRRIGATION PLAN
24	LI-5	LANDSCAPE IRRIGATION NOTES AND LEGEND
25	LI-6	LANDSCAPE IRRIGATION DETAILS
26	LP-1	LANDSCAPE PLANTING PLAN
27	LP-2	LANDSCAPE PLANTING PLAN
28	LP-3	LANDSCAPE PLANTING PLAN
29	LP-4	LANDSCAPE PLANTING PLAN
30	LP-5	LANDSCAPE PLANTING NOTES AND LEGEND
31	LP-6	LANDSCAPE PLANTING DETAILS

NOTE TO BIDDERS:

REFER TO SHEET 36496-15-D FOR BID ADDITIVE ALTERNATIVES LEGEND

PROJECT DIRECTORY

OWNER:
CITY OF SAN DIEGO
ENGINEERING AND CAPITAL PROJECTS
600 B STREET,
SUITE 800, MS 908A
SAN DIEGO, CA 92101-4502
P: (619) 533-4698
CONTACT: MS. SHEILA BOSE
SBOSE@SANDIEGO.GOV

CIVIL ENGINEER:
BURKET AND WONG
3434 4TH AVENUE
SAN DIEGO, CA 92103
P: (619) 299-5550
CONTACT: CARL FIORICA
CFIORICA@BURKETT-WONG.COM

PRIME CONSULTANT:
KTU+A
3916 NORMAL STREET,
SAN DIEGO, CA 93102
P: (619) 294-4477
F: (619) 294-9965
CONTACT:
CHERI BLATNER - SENIOR ASSOCIATE
CHERI@KTUA.COM, EXT. 119
BROOKE PIETZ, PROJECT MANAGER
BROOKE@KTUA.COM, EXT. 151

G-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

TITLE SHEET

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

TEMPORARY BMP SITE STORM WATER PRIORITY _X_ LOW

CONSULTANT

KTU+A Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax • 619.294.9965

SPEC NUMBER: 5784

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 01 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER — DATE 7/14/13
APPROVED JOHN OLIVER SECTION HEAD

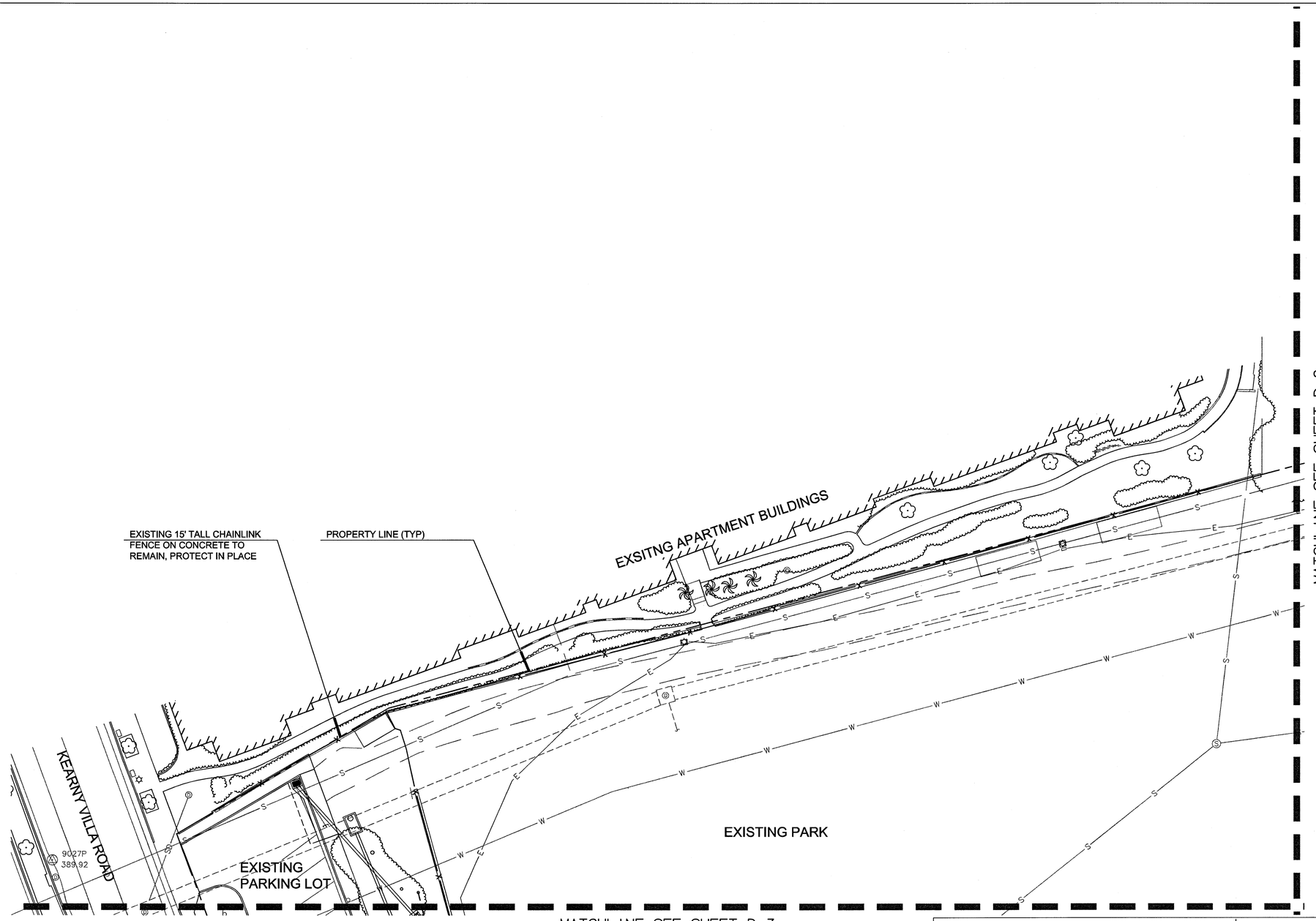
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

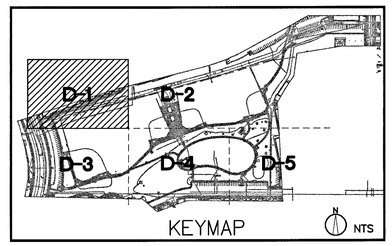
SHEILA BOSE PROJECT MANAGER
232-1723 CGS87 COORDINATE
1868-6284 CGS88 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-1-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS





0 10 20 40 60

SCALE: 1"= 20'

NORTH

D-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

DEMO PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 02 OF 31 SHEETS

WBS S-00763

APPROVED 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CGS87 COORDINATE

1868-6284
CGS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-2-D

CONSULTANT

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Planning + Landscape Architecture
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San Diego, CA 92103
619.294.4477
fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET D-1

PROPERTY LINE (TYP)

EXISTING CONCRETE AND CURB AT PLANTER AREAS (6 PLANTERS TOTAL) TO REMAIN, PROTECT IN PLACE

B EXISTING TREES, SHRUBS, STUMPS, AND ROOTS, TO BE REMOVED. REMOVE EXISTING SOIL AND AMMEND SOIL PER SPECIFICATIONS IN PLANTER (6 PLANTERS TOTAL), ADDITIVE ALTERNATIVE 'B'

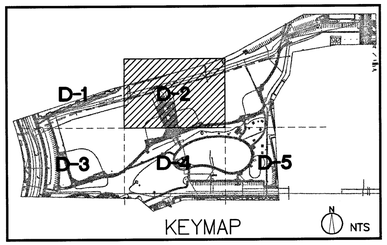
MATCHLINE-SEE SHEET D-4

EXISTING TREES TO BE REMOVED:

1. 8" CALIPER, KOELREUTERIA BIPINNATA- CHINESE FLAME TREE
2. 8" CALIPER, KOELREUTERIA BIPINNATA- CHINESE FLAME TREE
3. 8" CALIPER, KOELREUTERIA BIPINNATA- CHINESE FLAME TREE
4. 10" CALIPER, KOELREUTERIA BIPINNATA- CHINESE FLAME TREE

NOTES:

B 1. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

D-2

PLANS FOR THE CONSTRUCTION OF

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

DEMO PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 03 OF 31 SHEETS

WBS S-00763

APPROVED _____ FOR CITY ENGINEER

3/14/13 DATE

APPROVED BY KEVIN OLIVER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE PROJECT MANAGER

232-1723 COSWF COORDINATE

1868-6284 COSSB COORDINATE

CONTRACTOR _____ DATE STARTED _____

INSPECTOR _____ DATE COMPLETED _____

36496-3 -D

CONSULTANT

KTU+A
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax = 619.294.9965

REGISTERED LANDSCAPE ARCHITECT W. J. CARLSON No. 2342 Exp. 2/28/15 STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET D-1

MATCHLINE-SEE SHEET D-4

KEARNY VILLA ROAD

EXISTING PARKING LOT

N.I.C. RAIN GARDEN BASIN

END AT CLOSEST JOINT

SAWCUT EXISTING SIDEWALK, CONCRETE TO BE REMOVED AND REPLACED, REFER CIVIL PLANS

EXISTING ELECTRICAL LINE UNDER PROPOSED PLAY SURFACE AND EQUIPMENT TO BE REMOVED AND RELOCATED IN PLANTER AREA

EXISTING SIDEWALK FROM ACCESSIBLE PARKING TO TOT-LOT EXCEEDING 2% CROSS SLOPE TO BE REMOVED AND REPLACED, REFER CIVIL PLANS

EXISTING MOW CURB TO BE REMOVED

EXISTING LIGHT AND CONCRETE PAD TO REMAIN, PROTECT IN PLACE

EXISTING TURF AND IRRIGATION, TO BE REMOVED

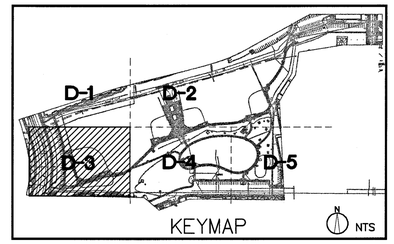
EXISTING MOW CURB TO REMAIN, PROTECT IN PLACE

END AT CLOSEST JOINT (TYP)

REFER TO CIVIL PLANS FOR UNIVERSAL ACCESS IMPROVEMETNS

EXISTING TREES TO BE REMOVED:

1	12" CALIPER, EUCALYPTUS



0 10 20 40 60

SCALE: 1"= 20'

NORTH

D-3

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

DEMO PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 04 OF 31 SHEETS

WBS S-00763

APPROVED: _____ FOR CITY ENGINEER — DATE 3/14/13

APPROVED BY: KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHELA BOSE
PROJECT MANAGER

232-1723
CSB67 COORDINATE

1868-6284
CSB8S COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-4-D

CONSULTANT

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Planning + Landscape Architecture

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REGISTERED LANDSCAPE ARCHITECT
KEVIN W. CARLSON
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET D-2

MATCHLINE-SEE SHEET D-3

MATCHLINE-SEE SHEET D-5

EXISTING DRINKING FOUNTAIN TO BE REMOVED, PROTECT IN PLACE EXISTING DRAINAGE SYSTEM FOR RECONNECTION OF THE NEW DRINKING FOUNTAIN

9035P
397.51

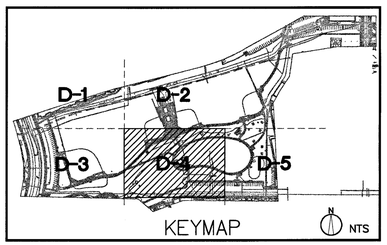
C EXISTING DRINKING FOUNTAIN TO BE REMOVED, PROTECT IN PLACE EXISTING DRAINAGE SYSTEM FOR RECONNECTION OF THE NEW DRINKING FOUNTAIN, AND IRRIGAITON SYSTEM. ADDITIVE ALTERNATIVE 'C'

C SAWCUT AND REMOVE EXISTING CONCRETE PAD AT DRINKING FOUNTAIN, ADDITIVE ALTERNATIVE 'C'

HURLBUT STREET

NOTES:

C 1. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60
SCALE: 1"= 20'

NORTH

D-4

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

DEMO PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 05 OF 31 SHEETS

WBS S-00763

APPROVED: _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CONST COORDINATE

1868-6284
CONS COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-5-D

CONSULTANT

KTUA
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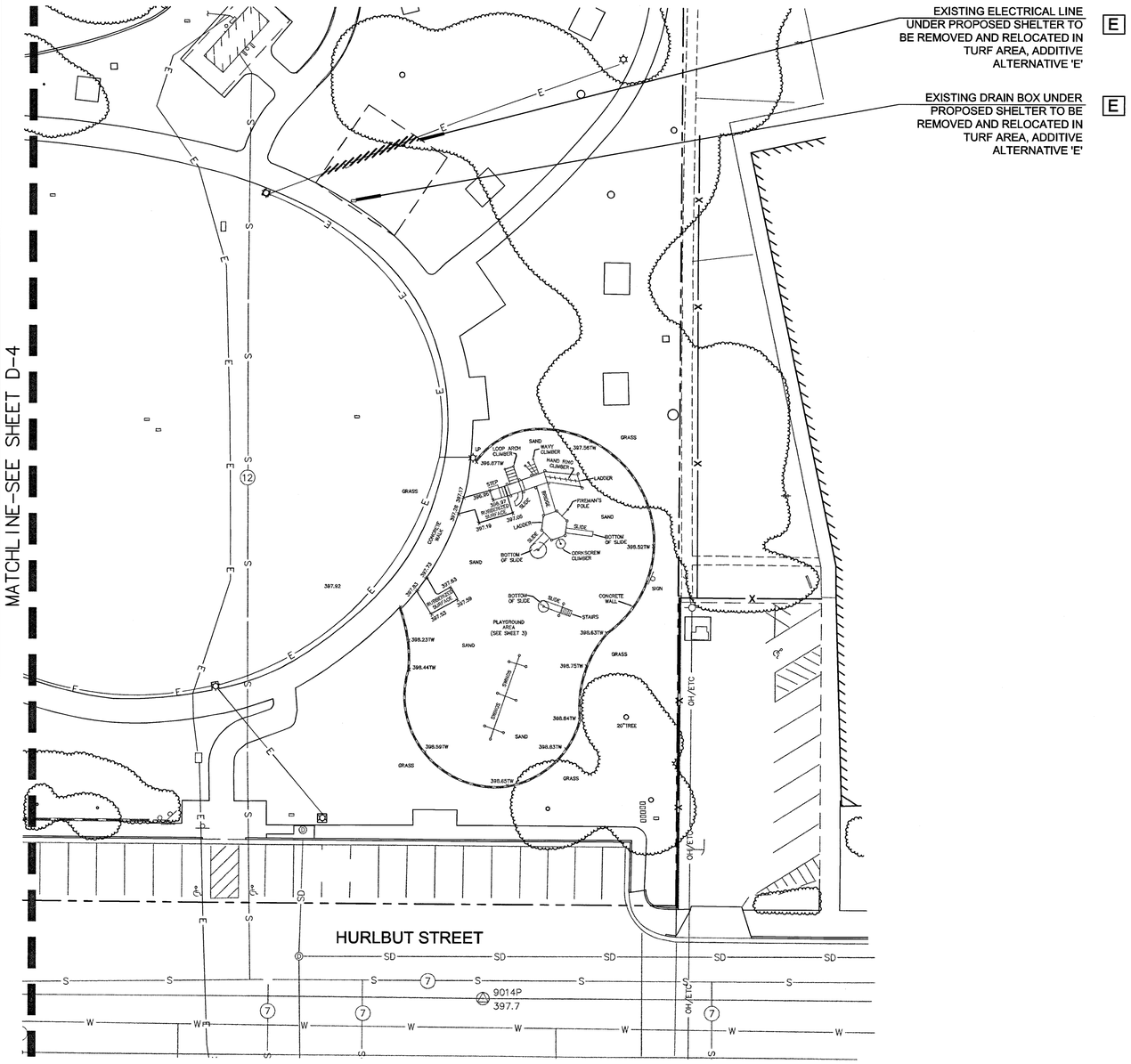
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax • 619.294.9965

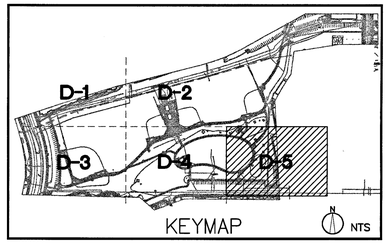
REGISTERED LANDSCAPE ARCHITECT
MARY E. WORK
No. 2342
EXP. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

[E] 1. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

D-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

DEMO PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 06 OF 31 SHEETS

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS S-00763

KEVIN OLIVER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

232-1723
CONT COORDINATE

1868-6284
CORIS COORDINATE

36496-6-D

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GARY L. CAVENER
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Exp. 2/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

BASE BID

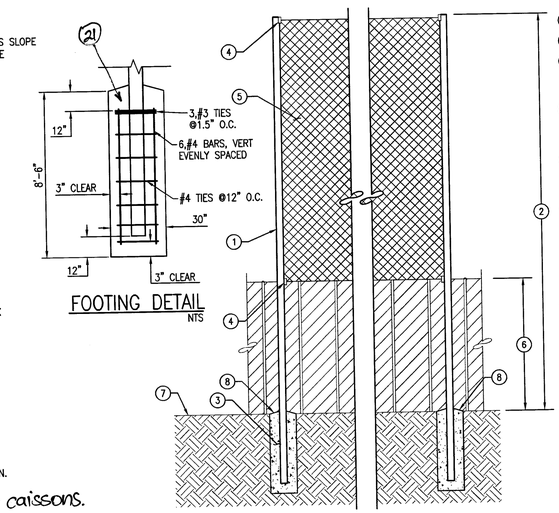
PLAY AREA AND ADA PARKING IMPROVEMENTS

SEE SHEET LC-5 1"=10'

CONSTRUCTION NOTES

1. SEE LANDSCAPE PLANS FOR SURFACE FINISH
2. SEE STORM DRAIN PLAN AND PROFILE, SHEET C-3
3. MATCH EXISTING IMPROVEMENTS
4. NEW CONCRETE SIDEWALK PER SDRSD SDG-155, MAX 1.5% CROSS SLOPE IN ANY DIRECTION. NEW CONCRETE TO MATCH EXISTING CONCRETE COLOR, FINISH AND JOINT/SCORE PATTERN
5. PROTECT EXISTING ELECTRIC UTILITY
6. REMOVE EXISTING STRIPING
7. ACCESSIBLE PARKING PER SDRSD SDM-117
8. INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN (VAN ACCESSIBLE) PER SDRSD SDM-117
9. TYPE B CURB RAMP PER SDRSD SDG-132
10. DETECTABLE WARNING TILES (36" DEEP) PER SDRSD SDG-130
11. CONCRETE SIDEWALK WITH DEEPENED EDGE PER DETAILS C, SHEET LC-6
12. CONCRETE SIDEWALK WITH DEEPENED EDGE PER DETAIL A, SHEET LC-6
13. REMOVE AND REPLACE EXISTING CURB AND GUTTER
14. GRIND EXISTING CONCRETE FLUSH WITH NEW CONCRETE SIDEWALK
15. PLAY EQUIPMENT AND SURFACE PER LANDSCAPE PLANS
16. BENCH PER LANDSCAPE PLANS
17. PICNIC AREA PER LANDSCAPE PLANS
18. REMOVE EXISTING CONCRETE TO NEAREST JOINT AND MATCH EXISTING IMPROVEMENTS
19. MAXIMM 1.5% SLOPE IN ANY DIRECTION
20. CONCRETE SUBGRADE FOR RUBBERIZED PLAY SURFACE. LEVEL PLAYING SURFACE TO BE PROVIDED BY RUBBERIZED FINISH FOR ADA COMPLIANCE. SEE LC-6 FOR CONCRETE SECTION.

(21) 3000 psi concrete required for caissons.



FOOTING DETAIL

NTS

ADDITIVE ALTERNATE A

NET BARRIER FENCING DETAIL

NTS

1. 6" DIA EXTRA STRONG GALVANIZED STEEL POST X 30' TALL AT 15' O.C.
2. 30' TOTAL HT.
3. 30" DIAMETER X 8'-6" DEEP FOOTING, SEE DETAIL
4. WELD GALVANIZED EYEBOLTS TO POSTS, ATTACH NETTING TO POSTS WITH $\frac{5}{16}$" GALVANIZED CABLE THROUGH EYEBOLTS
5. F-1, NET: NO. 36 TREATED NYLON 1 $\frac{3}{4}$" MESH, UV STABILIZED NETTING WITH ROPE EDGING, INSTALL WITH 9 GAUGE GALVANIZED HOG RINGS
6. 15' TALL EXISTING CHAINLINK FENCE, NETTING TO BEGIN AT TOP OF EXISTING FENCE
7. FINISH SURFACE
8. FINISH CONCRETE TO DRAIN AWAY FROM POSTS

NOTES:

CONTRACTOR SHALL OBTAIN A PERMIT FOR THE NET BARRIER FENCING, SEE SPECIFICATIONS SECTION 7-5 AND BID ALTERNATE SCHEDULE.

ITEM REQUIRING SPECIAL INSPECTION:

STRUCTURAL CONCRETE PER CBC SECTION 1704.4 AND TABLE 1704.4.

STRUCTURAL STEEL PER CBC SECTION 1704.3 AND TABLE 1704.3.

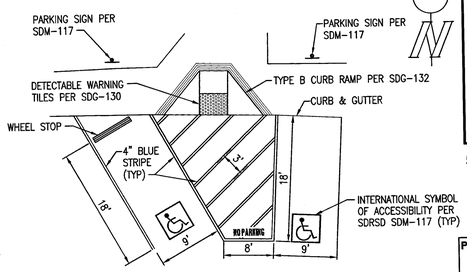
EXCAVATION OF SOILS PER CBC SECTION 1704.7 AND TABLE 1704.7

SPECIAL INSPECTION NOTES:

NOTICE TO THE APPLICANT/OWNER/OWNER'S AGENT/ARCHITECT OR ENGINEER OF RECORD: BY USING THESE PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION/INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU AGREE TO COMPLY WITH THE CITY OF SAN DIEGO REQUIREMENTS OF THE CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING AND OFF-SITE FABRICATION OF BUILDING COMPONENTS, CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE STATE OF CALIFORNIA CONSTRUCTION CODES.

NOTICE TO THE CONTRACTOR/BUILDER/INSTALLER/SUB-CONTRACTOR /OWNER-BUILDER: BY USING THIS PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION/INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU ACKNOWLEDGE AND ARE AWARE OF THE REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING AND OFF-SITE FABRICATION OF BUILDING COMPONENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE CALIFORNIA CONSTRUCTION CODES.

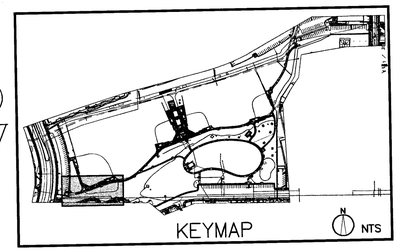
THE SPECIAL INSPECTOR MUST BE CERTIFIED BY THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES, IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION.



ACCESSIBLE PARKING SHALL CONFORM TO CITY OF SAN DIEGO STANDARD DRAWING SDM-117

TYPICAL ADA PARKING DETAIL

NTS



5 0 10 20

SCALE IN FEET
1 inch = 10 ft.

C-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

GRADING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 7 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER — DATE 3/14/13

APPROVED BY KEVIN OLMER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOSE, PROJECT MANAGER

232-1723 CCS827 COORDINATE

1868-6284 CCS83 COORDINATE

36496-7-D

CONTRACTOR _____ DATE STARTED _____

INSPECTOR _____ DATE COMPLETED _____

CONSULTANT

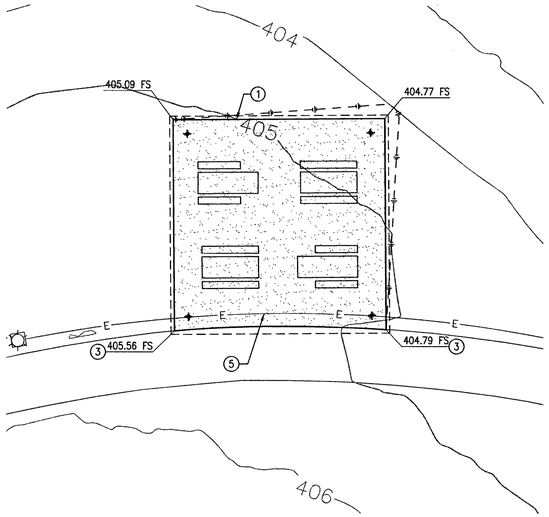
BURKETT&WONG ENGINEERS

ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
92103-5704 * (619) 299-5550

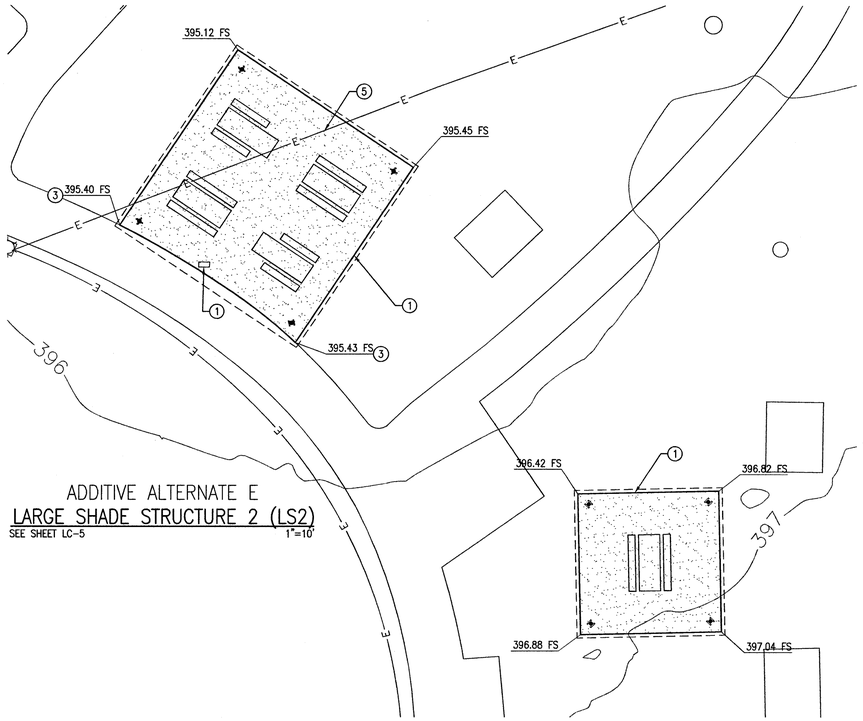
REGISTERED PROFESSIONAL ENGINEER — DARYL M. FIORICA — Exp.06-30-15 — CIVIL — STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLOT: M:\PROJECTS\10500\10565U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10565-GRADING-PLAY.DWG Carl Fiorica 2/26/2013 9:04 AM



ADDITIVE ALTERNATE C
LARGE SHADE STRUCTURE 1 (LS1)
SEE SHEET LC-4 1"=10'

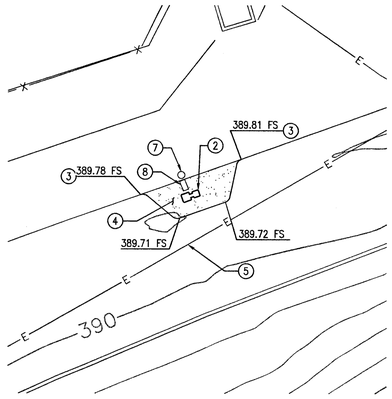


ADDITIVE ALTERNATE E
LARGE SHADE STRUCTURE 2 (LS2)
SEE SHEET LC-5 1"=10'

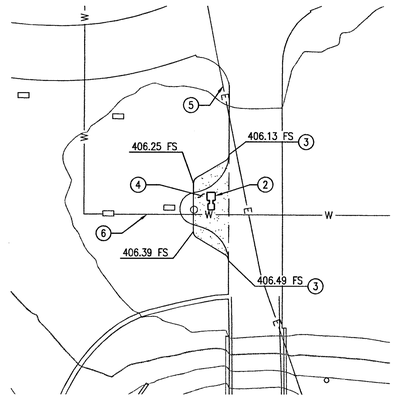
ADDITIVE ALTERNATE D
SMALL SHADE STRUCTURE (SS1)
SEE SHEET LC-5 1"=10'

CONSTRUCTION NOTES

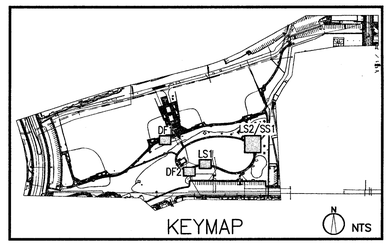
1. SHADE STRUCTURE PER LANDSCAPE PLANS
2. DRINKING FOUNTAIN AND PAVEMENT PER LANDSCAPE PLANS
3. MATCH EXISTING SIDEWALK
4. NEW CONCRETE SIDEWALK PER SDRSD SDG-155, MAX 1.5% CROSS SLOPE
5. PROTECT EXISTING ELECTRIC UTILITY
6. PROTECT EXISTING WATER LINE
7. PROTECT EXISTING WATER VALVE
8. ADJUST EXISTING METER BOX TO GRADE



BASE BID
DRINKING FOUNTAIN 1 (DF1)
SEE SHEET LC-4 1"=10'



ADDITIVE ALTERNATE C
DRINKING FOUNTAIN 2 (DF2)
SEE SHEET LC-4 1"=10'



C-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

GRADING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 8 OF 31 SHEETS

WBS S-00763

APPROVED 3/14/13
FOR CITY ENGINEER DATE

APPROVED
KEVIN OLIVER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

232-1723
CCB27 COORDINATE

1868-6284
CCB83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-8-D

CONSULTANT

BURKETT&WONG ENGINEERS
ENGINEERS & SURVEYORS
3434 Fourth Ave. San Diego CA.
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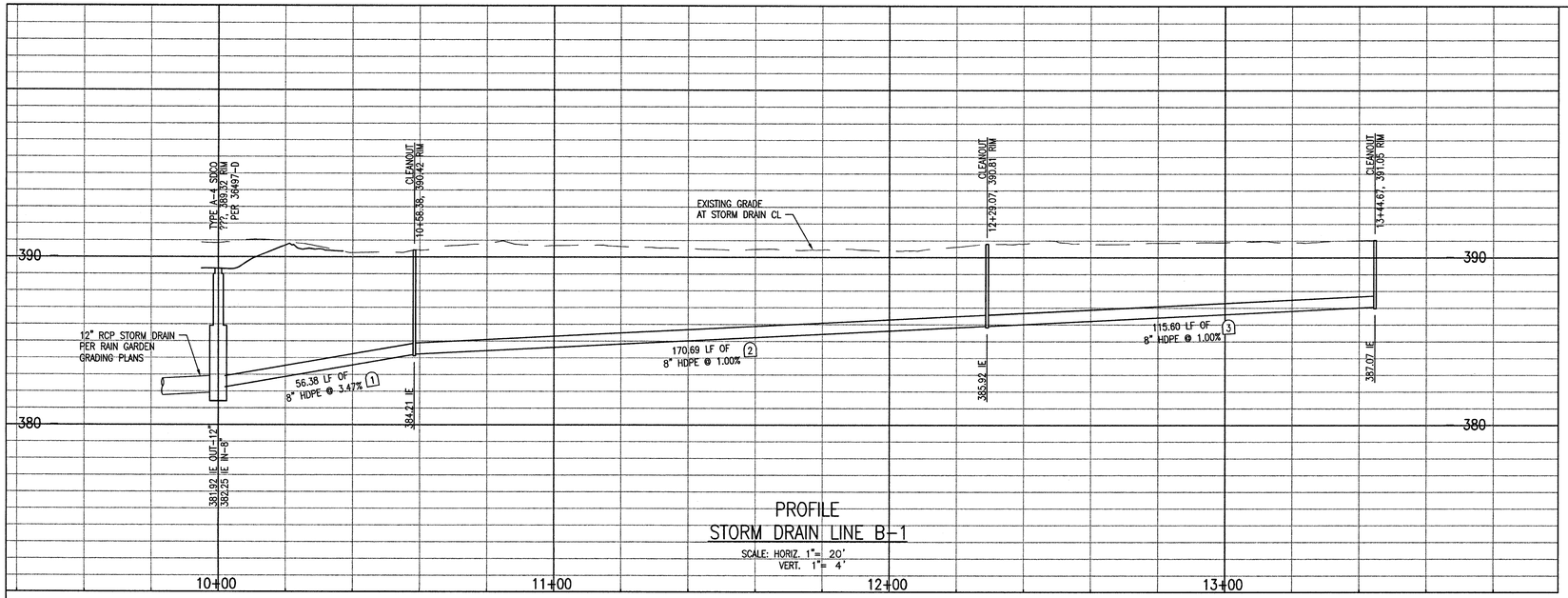
REGISTERED PROFESSIONAL ENGINEER
KARL M. FIORICA
Exp. 06-30-13
CIVIL
STATE OF CALIFORNIA

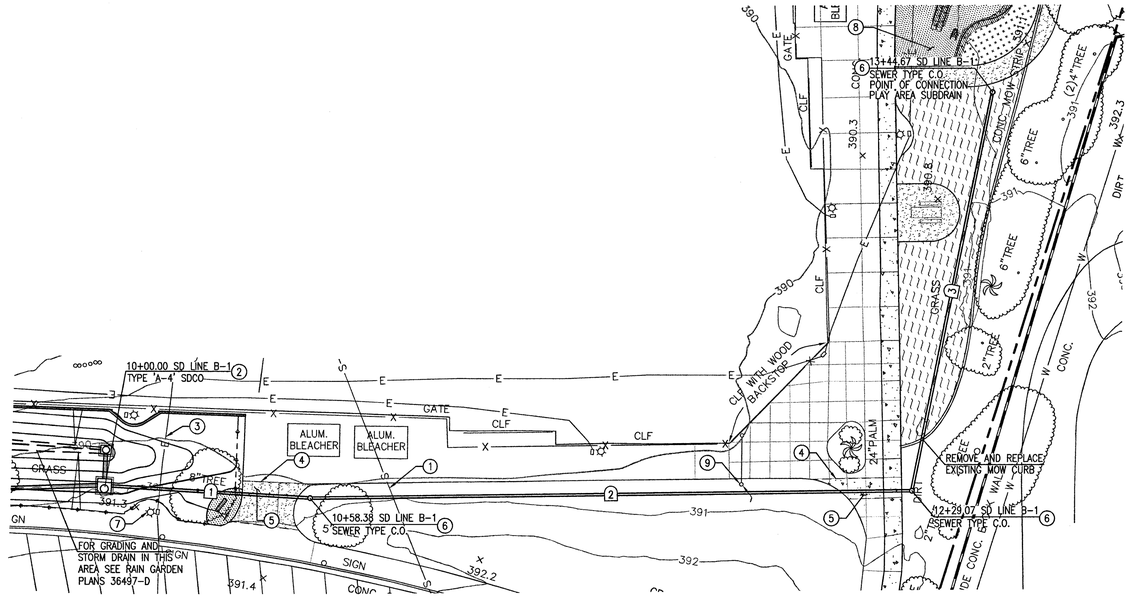
CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLOT: M:\PROJECTS\10500\10655U - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10655-GRADING-PLAN.DWG Curt Fiorica 1/9/2013 1:34 PM



PROFILE
STORM DRAIN LINE B-1

SCALE: HORIZ. 1"= 20'
VERT. 1"= 4'



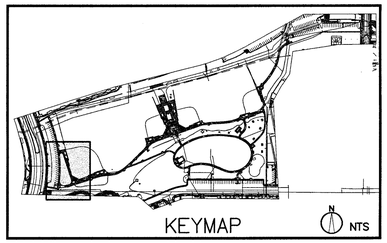
BASE BID
PLAN VIEW : 8" STORM DRAIN (B-1)
1"=20'

CONSTRUCTION NOTES

1. EXISTING ABANDONED SEWER PER 12807-D, REMOVE AS NECESSARY
2. TYPE 'A-4' STORM DRAIN CLEANOUT PER RAIN GARDEN GRADING PLANS, 36497-D
3. PROTECT EXISTING ELECTRIC UTILITY, RELOCATE AS NECESSARY
4. SAWCUT LINE, REMOVE SIDEWALK TO NEAREST JOINT
5. CONCRETE SIDEWALK PER SDRSD SDG-115
6. SEWER TYPE CLEANOUT PER SDRSD SC-01
7. PROTECT EXISTING LIGHT
8. SEE GRADING PLAN FOR PLAY AREA IMPROVEMENTS
9. PROTECT EXISTING WATER FACILITY

STORM DRAIN DATA*					
NO	BEARING/DELTA	RADIUS	LENGTH	SLOPE (%)	SIZE/TYPE (CLASS)
1	N13°39'37"W	---	56.38'	7.85	8" HDPE (DR 26)
2	N17°50'41"W	---	170.69'	1.00	8" HDPE (DR 26)
3	N84°16'53"E	---	115.60'	1.00	8" HDPE (DR 26)

* - STORM DRAIN FACILITIES SHOWN IN THIS TABLE IS TO BE MAINTAINED BY THE PARKS AND RECREATION DEPARTMENT



SCALE: 1"=20'

C-3

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

STORM DRAIN PROFILES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 9 OF 31 SHEETS

WBS S-00763

APPROVED _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLMER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	BWE			

SHEILA BOXE
PROJECT MANAGER

232-1723
CCS27 COORDINATE

1868-6284
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-9-D

CONSULTANT

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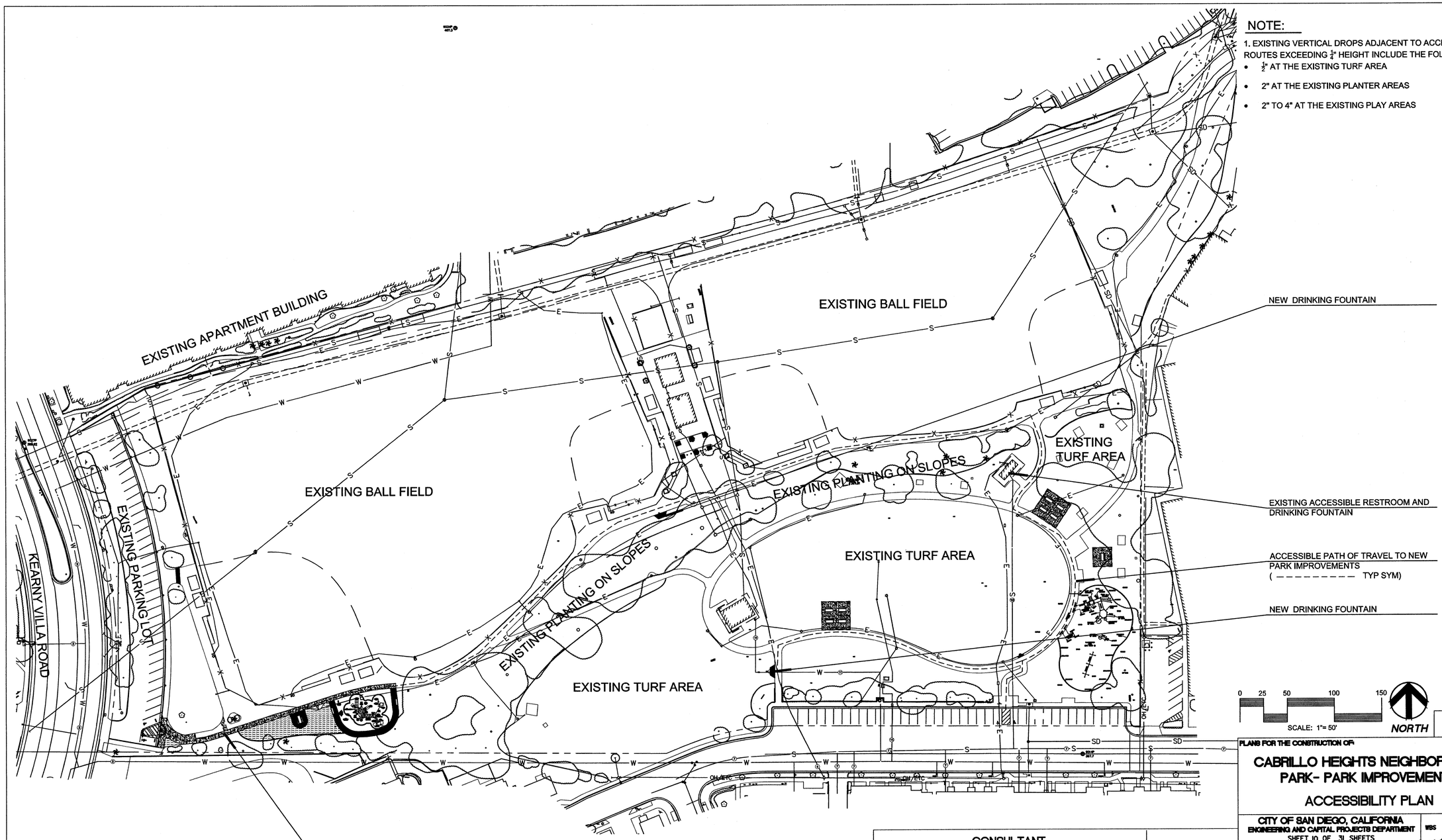
EARL M. FIORENTINO
Exp 06-30-15
CIVIL
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLOT: M:\PROJECTS\10500\10650\ - CABRILLO HEIGHTS NEIGHBORHOOD PARK\DWGS\SHEET_DWGS\10650-SD-IMPROVEMENT.DWG Carl Fiorino 1/8/2013 1:29 PM



NOTE:

1. EXISTING VERTICAL DROPS ADJACENT TO ACCESSIBLE ROUTES EXCEEDING ½" HEIGHT INCLUDE THE FOLLOWING:
   - ½" AT THE EXISTING TURF AREA
   - 2" AT THE EXISTING PLANTER AREAS
   - 2" TO 4" AT THE EXISTING PLAY AREAS

L-1

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fax • 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

ACCESSIBILITY PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 10 OF 31 SHEETS

WBS S-00763

APPROVED: _____ FOR CITY ENGINEER
3/14/13 DATE
KEVIN OLIVER, DIRECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

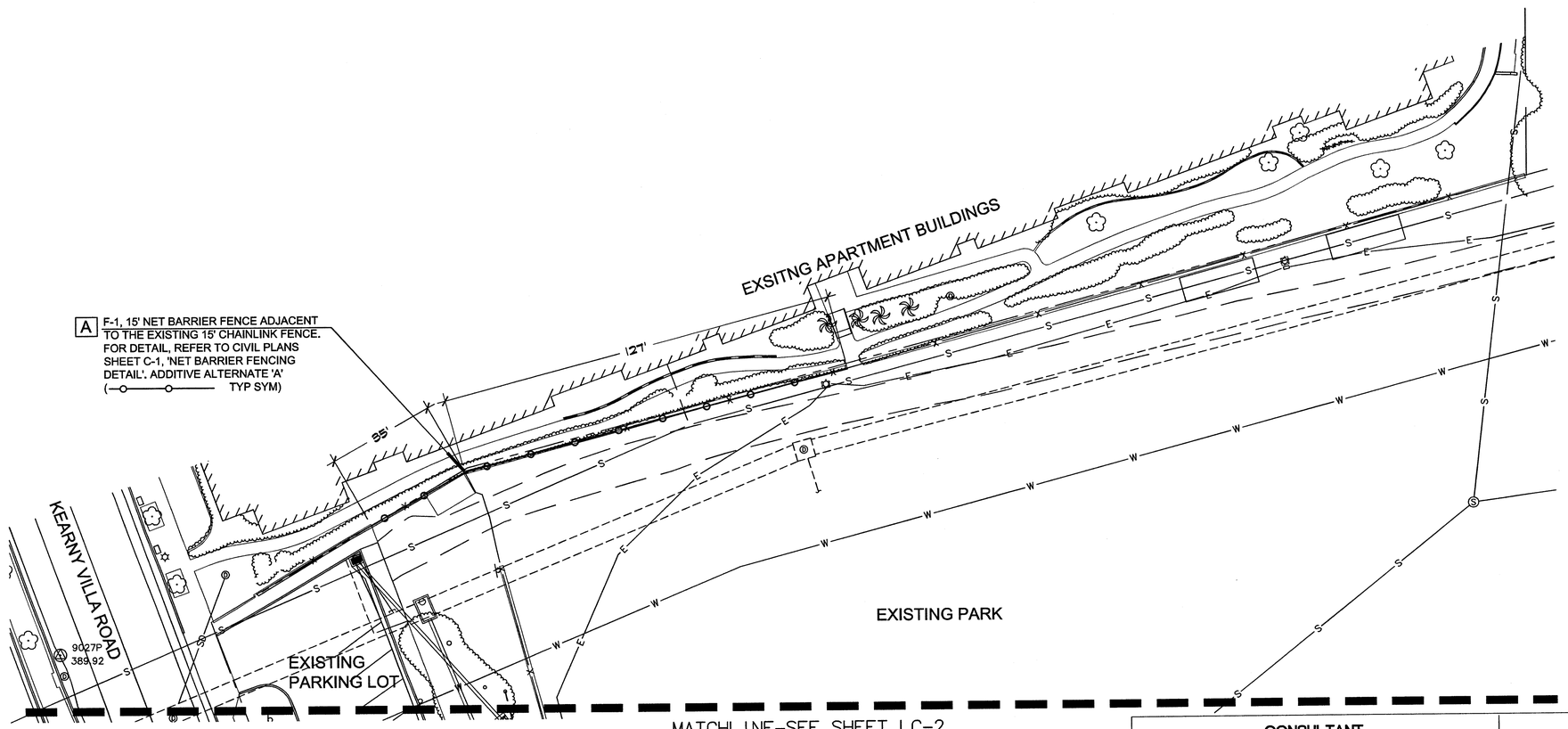
232-1723
CCDEP COORDINATE

1868-6284
CCDSD COORDINATE

36496-10-D

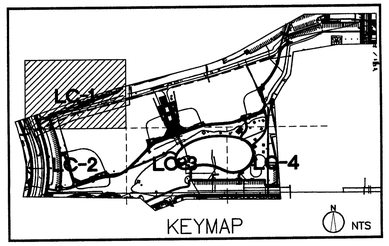
CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

1. REFER TO SHEETS LC-5 TO LC-8 FOR CONSTRUCTION DETAILS, NOTES, AND LEGEND.
2. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.
   A
3. REFER TO SHEET LC-5 FOR MATERIALS AND FINISH SCHEDULE.



0 10 20 40 60
SCALE: 1"= 20'
NORTH

LC-1

PLANS FOR THE CONSTRUCTION OF

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 11 OF 31 SHEETS

WBS S-00763

APPROVED _____ DATE 3/14/13
FOR CITY ENGINEER

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CONST COORDINATE

1868-6284
CONSS COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-11-D

CONSULTANT

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San Diego, CA 92103
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fax 619.294.9965

RECOMMENDED FOR APPROVAL BY THE CITY ENGINEER
No. 2342
Exp. 2/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET LC-1

A LC-6 C-1, 4 " THICK PEDESTRIAN CONCRETE PAVING (TYP)

KEARNY VILLA ROAD

EXISTING PARKING LOT

ACCESSIBLE PAVING AND PARKING IMPROVEMENTS, REFER TO CIVIL PLANS

B-1, CONCRETE BENCH (2 TOTAL)

A LC-9 PS-1, LARGE PLAY STRUCTURE AND PLAY SURFACING

D LC-6 RESILENT PLAY SURFACING

A LC-6 C-2, 6" THICK VEHICULAR CONCRETE PAVING

A LC-6 C-1, 4 " THICK PEDESTRIAN CONCRETE PAVING (TYP)

E LC-6 RGS-1, PLAYGROUND SAND

EXISTING CONCRETE CURB TO REMAIN

BM-1, BARK MULCH, 4" DEEP, FLUSH WITH ADJACENT SURFACES

A LC-7 CONCRETE PAD AND PT-2, PICNIC TABLE, ADA

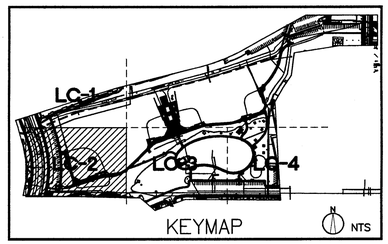
MATCHLINE-SEE SHEET LC-3

NOTES:

1. REFER TO SHEETS LC-5 TO LC-9 FOR CONSTRUCTION DETAILS, NOTES, AND LEGEND.

2. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.

3. REFER TO SHEET LC-5 FOR MATERIALS AND FINISH SCHEDULE.



KEYMAP NTS

0 10 20 40 60

SCALE: 1"= 20'

NORTH

LC-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 12 OF 31 SHEETS

WBS S-00763

APPROVED _____ FOR CITY ENGINEER — DATE 3/14/13

APPROVED BY KEVIN OLIVER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE PROJECT MANAGER

232-1723 CCDES COORDINATE

1868-6284 CCDES COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-12-D

CONSULTANT

KTU+A
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET LC-2

MATCHLINE-SEE SHEET LC-3

MATCHLINE-SEE SHEET LC-5

A LC-8 DF-1, DRINKING FOUNTAIN, CONNECT TO EXISTING POC AND EXISTING DRAINAGE SYSTEM

A LC-6 C-1, 4" THICK PEDESTRIAN CONCRETE PAVING

C A LC-7 B LC-7 SS-2, LARGE SHELTER WITH C-1, 4" THICK PEDESTRIAN CONCRETE PAD, ADDITIVE ALTERNATIVE 'C'

C A LC-8 DF-1, DRINKING FOUNTAIN CONNECT TO EXISTING POC AND EXISTING DRAINAGE SYSTEM, ADDITIVE ALTERNATIVE 'C'

C A LC-6 C-1, 4" THICK PEDESTRIAN CONCRETE PAVING, ADDITIVE ALTERNATIVE 'C'

C REPLACE HANDRAILS AND STRIPE STAIRS PER SDRSD SDM-118. HANDRAIL SHALL RUN PARALLEL TO THE ADJACENT SIDEWALK. TO ALLOW FOR EXTENSION. ADDITIVE ALTERNATIVE 'C'

EJ-1, EXPANSION JOINT (TYP), ADDITIVE ALTERNATIVE 'C' C

PT-1, PICNIC TABLE (TYP), ADDITIVE ALTERNATIVE 'C' C

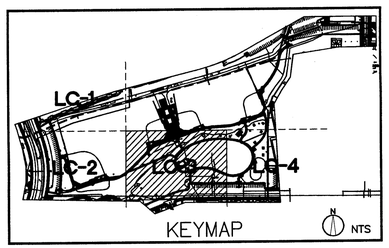
PT-2, PICNIC TABLE, ADA (TYP), ADDITIVE ALTERNATIVE 'C' C

HURLBUT STREET

90350
397.51

NOTES:

1. REFER TO SHEETS LC-5 TO LC-8 FOR CONSTRUCTION DETAILS, NOTES, AND LEGEND.
2. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND. C
3. REFER TO SHEET LC-5 FOR MATERIALS AND FINISH SCHEDULE.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LC-3

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 13 OF 31 SHEETS

WBS S-00763

APPROVED: _____ 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
ODBC COORDINATE

1868-6284
ODBB COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-13-D

CONSULTANT

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Planning + Landscape Architecture
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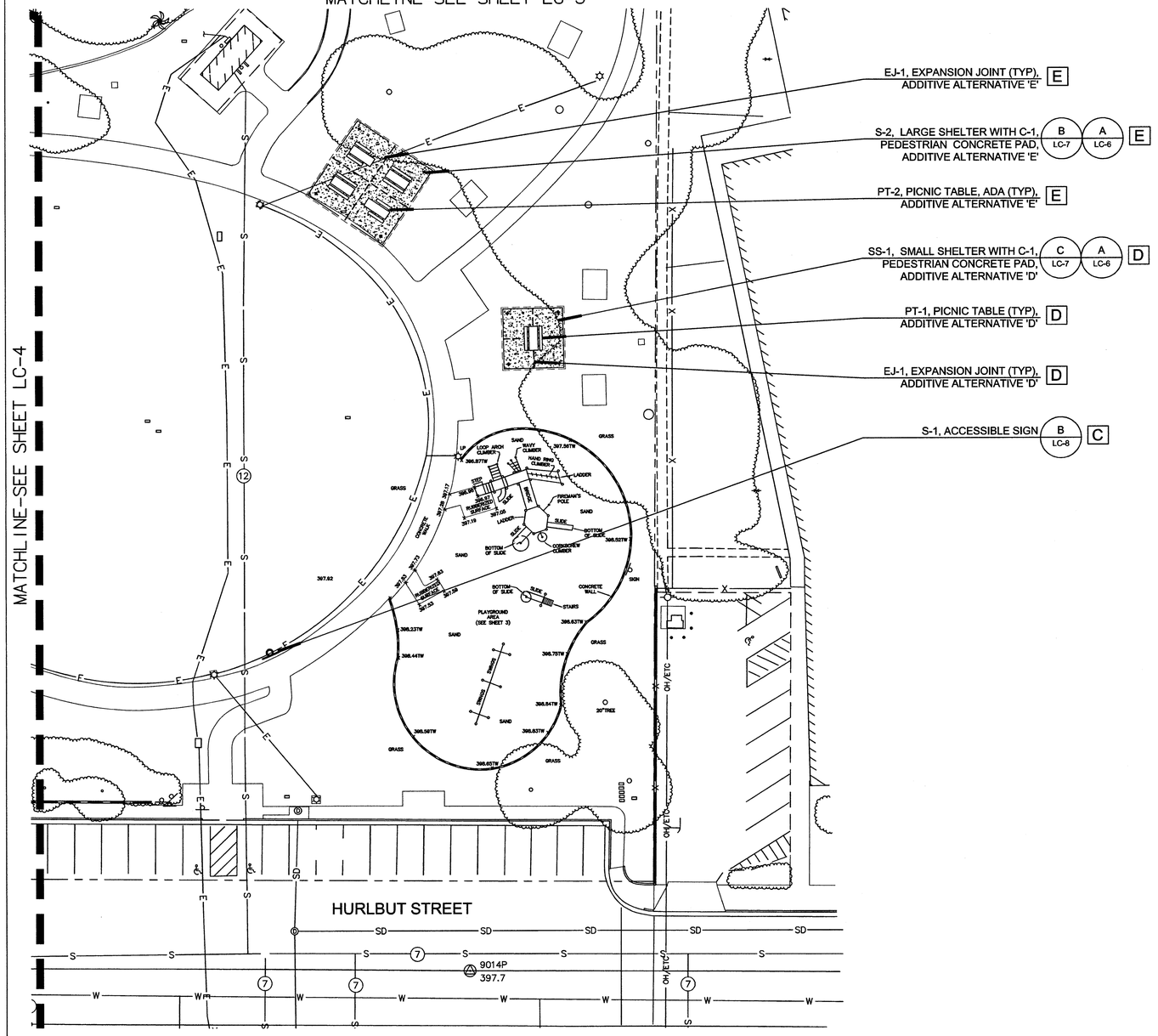
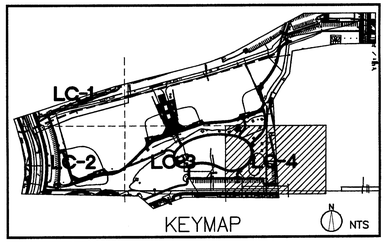
REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

1. REFER TO SHEETS LC-5 TO LC-8 FOR CONSTRUCTION DETAILS, NOTES, AND LEGEND.
2. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND. D E
3. REFER TO SHEET LC-5 FOR MATERIALS AND FINISH SCHEDULE.



0 10 20 40 60
SCALE: 1"= 20'
NORTH

LC-4

CONSULTANT

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San Diego, CA 92103
619.294.4477
fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT MATT N. GARTEN No. 2342 Exp. 2/28/15 STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 14 OF 31 SHEETS

WBS S-00763

APPROVED _____ 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CCDSD COORDINATE

1868-6284
CCDSB COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-14-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATERIALS AND FINISH SCHEDULE

KEY	DETAIL / SHEET REFERENCE	ITEM	DESCRIPTION	COLOR / FINISH	REMARKS	SUPPLIERS
PAVING AND SURFACING						
C-1	A / LC-6	CONCRETE PAVING, 4" THICK PEDESTRIAN	NATURAL CONCRETE COLOR	MEDIUM BROOM FINISH AND TOOLED SCORELINES (MATCH EXISTING)	REFER TO SPECIFICATIONS	-
C-2	A / LC-6	CONCRETE PAVING, 6" THICK VEHICULAR	NATURAL CONCRETE COLOR	MEDIUM BROOM FINISH AND TOOLED SCORELINES (MATCH EXISTING)	REFER TO SPECIFICATIONS	-
EJ-1	B / LC-6	EXPANSION JOINT	EXPANSION JOINT AT COLUMN/BUILDING/WALL/ SIDEWALK	SEALANT TO MATCH COLOR OF ADJACENT PAVING	REFER TO SPECIFICATIONS	-
SJ-1	B / LC-6	TOOLED JOINT	-	-	REFER TO SPECIFICATIONS	-
PS-1	C / LC-6 ; D / LC-6	TOT LOT PLAY SURFACE	TOTTURF SUPREME BY PLAYCORE OR APPROVED EQUAL	COLOR: SKY BLUE	INSTALL RESILIENT SURFACING PER MANUFACTURER'S SPECIFICATIONS	PLAYCORE CONTACT: DAVID PURCELL PHONE: 760.809.1875
PGS-1	E / LC-6	PLAYGROUND SAND	-	-	REFER TO SPECIFICATIONS	-
FENCING AND RAILING						
F-1	REFER TO CIVIL PLANS, SHEET C-1	NET BARRIER FENCE	NO. 36 TREATED NYLON 1 3/4" MESH, UV STABILIZED NETTING WITH ROPE EDGING	COLOR: BLACK	-	RMF DEVELOPMENT COMPANY CONTACT: RICK FRISBY 2051 RAINBOW GLENN ROAD ESCONDIDO, CA 92027 P:760.747.3366
PLAYGROUND EQUIPMENT						
PS-1	A / LC-9	LARGE PLAY STRUCTURE	PLAY BOOSTER OR APPROVED EQUAL	-	INSTALL PER MANUFACTURER'S SPECIFICATIONS	COAST RECREATION CONTACT: MIKE EISERT PHONE: 714.619.0100 X 206
SITE FURNISHINGS						
PT-1	A / LC-7 ; B / LC-7 ; C / LC-7	PICNIC TABLE	Q-LBT102PTADA OR APPROVED EQUAL, CONTRACTOR SHALL SUPPLY AND INSTALL ANTI-GRAFFITI COATING PER SPECS	COLOR: C-1, NATURAL FINISH: T-7, ACID ETCH MATERIAL: SRC	SECURE WITH EPOXY ON CONCRETE PAD PER MANUFACTURER'S SPECIFICATIONS	QUICK CRETE P.O.BOX 639 NORCO, CA 92860 P: 951.737.6240
PT-2	A / LC-7 ; B / LC-7 ; C / LC-7	PICNIC TABLE, ADA	Q-LMR-96PTADA OR APPROVED EQUAL, CONTRACTOR SHALL SUPPLY AND INSTALL ANTI-GRAFFITI COATING PER SPECIFICATIONS	COLOR: C-1, NATURAL FINISH: T-7, ACID ETCH MATERIAL: SRC	SECURE WITH EPOXY ON CONCRETE PAD PER MANUFACTURER'S SPECIFICATIONS	QUICK CRETE P.O.BOX 639 NORCO, CA 92860 P: 951.737.6240
SS-1	B / LC-7	LARGE SHELTER	MODEL #SQ30M ICON 30' SQUARE SHELTER WITH MULTI RIB, STEEL ROOF, OR APPROVED EQUAL	ROOF AND FRAME: ROMAN BLUE POSTS AND FRAME: POWDER COAT SURREY BEIGE	INSTALL PER MANUFACTURER'S SPECS, STANDARD BELOW GRADE COLUMN BASE CONNECTION, CONTRACTOR IS RESPONSIBLE FOR PERMITTING STRUCTURE	ICON SHELTER SYSTEMS LOCAL REP: COAST RECREATION CONTACT: MIKE EISERT PHONE: 714.619.0100 X 206
SS-2	C / LC-7	SMALL SHELTER	MODEL #SQ20M ICON 20' SQUARE SHELTER WITH MULTI RIB, STEEL ROOF OR APPROVED EQUAL	ROOF AND FRAME: ROMAN BLUE POSTS AND FRAME:POWDER COAT SURREY BEIGE	INSTALL PER MANUFACTURER'S SPECS, STANDARD BELOW GRADE COLUMN BASE CONNECTION, CONTRACTOR IS RESPONSIBLE FOR PERMITTING STRUCTURE	ICON SHELTER SYSTEMS LOCAL REP: COAST RECREATION CONTACT: MIKE EISERT PHONE: 714.619.0100 X 206
DF-1	A / LC-8	DRINKING FOUNTAIN	HAWS HI-LO, BARRIER FREE VANDAL RESISTANT DRINKING FOUNTAIN, MODEL 3300 OR APPROVED EQUAL	COLOR: GREEN POWDER COAT FINISH	INSTALL WATER FOUNTAIN PER MANUFACTURER'S SPECIFICATIONS, INSTALL GATE VALVE AND FOUNTAIN DRAINAGE SYSTEM PER SAN DIEGO REGIONAL STANDARD DRAWING M-18	HAWS P: 775.359.4712
B-1	- / -	BENCH	Q1EM84B, CONTRACTOR SHALL SUPPLY AND INSTALL ANTI-GRAFFITI COATING PER SPECIFICATIONS OR APPROVED EQUAL	COLOR: C-1, NATURAL FINISH: T-7, ACID ETCH MATERIAL: SRC	SECURE WITH EPOXY ON CONCRETE PAD PER MANUFACTURER'S SPECIFICATIONS	QUICK CRETE P.O.BOX 639 NORCO, CA 92860 P: 951.737.6240
MISC						
TS-1	- / -	TOPSOIL	-	-	ADD SOIL AMENDMENTS PER SPECIFICATIONS	-
BM-1	- / -	BARK MULCH	-	-	REFER TO SPECIFICATIONS, INSTALL FLUSH WITH ADJACENT FINISH SURFACES	-
S-1	C / LC-8	ACCESSIBLE SIGN	-	-	-	-

BID ALTERNATIVE LEGEND

	DESCRIPTION	DETAIL(S)
A	**ADDITIVE ALTERNATIVE 'A'**	
	NET BARRIER FENCING INCLUDING NETTING, POSTS, AND FOOTINGS. CONTRACTOR IS RESPONSIBLE FOR PULLING PERMIT FROM THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT. ALL APPROVALS TO BE OBTAINED BY THE CITY. SEE SPEC SECTION 7-5.	MATERIALS AND FINISH SCHEDULE / -15-D
B	**ADDITIVE ALTERNATIVE 'B'**	
	TREE PLANTING INCLUDING TREES, BARK MULCH, SOIL, ROOT BARRIER, AND SUPPLEMENTAL IRRIGATION	A / -31-D, B / 31-D, C / -31-D
C	**ADDITIVE ALTERNATIVE 'C'**	
	REPLACE 1 DRINKING FOUNTAIN AND CONCRETE PAD. REPAIR TURF AND IRRIGATION DISTURBED DURING CONSTRUCTION	A / -16-D, B / 16-D, A / -18-D, MATERIALS AND FINISH SCHEDULE / -15-D
	MODIFY STAIRS AT HURLBUT INCLUDING RAILING AND WARNING STRIP ON STAIRS	SDRSD SDM-118
	ADA DIRECTIONAL SIGNAGE	B / -18-D
	1 LARGE SHELTER INCLUDING 4 TABLES, CONCRETE PAD, AND FOOTINGS. REPAIR TURF AND IRRIGATION DISTURBED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING BUILDING PERMIT FOR THE LARGE SHELTER FROM THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT (DSD). CONTRACTOR TO OBTAIN DETAIL DRAWINGS FROM THE SHADE STRUCTURE MANUFACTURER. FOOTING STRUCTURAL CALCULATIONS ARE INCLUDED IN BID SPECIFICATION APPENDIX.	A / -16-D B / -16-D B / -17-D MATERIALS AND FINISH SCHEDULE / -15-D
D	**ADDITIVE ALTERNATIVE 'D'**	
	1 SMALL SHELTER INCLUDING 1 TABLE, CONCRETE PAD, AND FOOTINGS. REPAIR TURF AND IRRIGATION DISTURBED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING BUILDING PERMIT FOR THE SMALL SHELTER FROM THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT (DSD). CONTRACTOR TO OBTAIN DETAIL DRAWINGS FROM THE SHADE STRUCTURE MANUFACTURER. FOOTING STRUCTURAL CALCULATIONS ARE INCLUDED IN BID SPECIFICATION APPENDIX.	A / -16-D B / -16-D C / -17-D MATERIALS AND FINISH SCHEDULE / -15-D
E	**ADDITIVE ALTERNATIVE 'E'**	
	1 LARGE SHELTER INCLUDING 4 TABLES, CONCRETE PAD, AND FOOTINGS. REPAIR TURF AND IRRIGATION DISTURBED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING BUILDING PERMIT FOR THE LARGE SHELTER FROM THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT (DSD). CONTRACTOR TO OBTAIN DETAIL DRAWINGS FROM THE SHADE STRUCTURE MANUFACTURER. FOOTING STRUCTURAL CALCULATIONS ARE INCLUDED IN BID SPECIFICATION APPENDIX.	A / -16-D B / -16-D B / -17-D MATERIALS AND FINISH SCHEDULE / -15-D

LC-5

CABRILLO HEIGHTS NEIGHBORHOOD PARK– PARK IMPROVEMENTS

CONSULTANT

KTUA
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
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fax • 619.294.9965

REGISTERED LANDSCAPE ARCHITECT — STEPHEN B. CASE — No. 2342 — EXP. 2/28/15 — STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS
LANDSCAPE CONSTRUCTION MATERIALS AND FINISH SCHEDULE

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 15 OF 31 SHEETS

WBS S-00763

APPROVED _____ FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

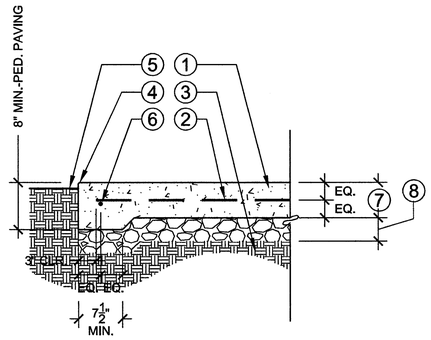
SHEILA BOGE, PROJECT MANAGER

232-1723 CCDSD COORDINATE

1868-6284 CCDSD COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

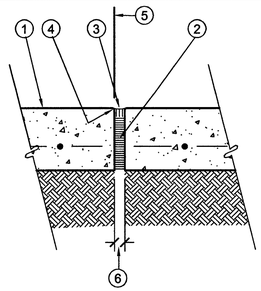
36496-15-D



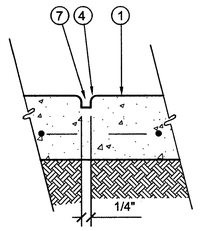
1. CONCRETE PAVING- FINISH PER PLAN
2. SLAB REINFORCING PLACED AT SLAB CENTER PED: 6x6x10 WWM SLAB REINFORCING VEH:#4 @18" O.C. MIN. E.W.
3. COMPACTED SUBGRADE 95% MIN. X 12" DEEP
4. 1/4" RADIUS, TYP.
5. 1" @ LAWN AREA 2" @ GROUNDCOVER
6. #4 REBAR CONT. @ THICKENED EDGE
7. CONCRETE PAVING PED: 4" THICK VEH: 6" THICK
8. AGGREGATE BASE PED: NONE VEH: 4" THICK COMPACED 95%

NOTES:
1. SLOPE PAVING PER CIVIL DRAWINGS

A CONCRETE PAVING
SECTION 1"=1'=0"



EXPANSION JOINT (TYPICAL)

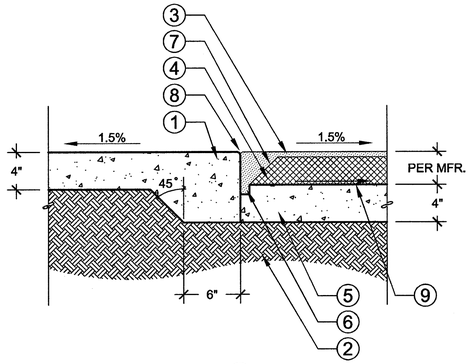


TOOLED SCORELINE

1. PAVING PER PLAN
2. FIBER EXPANSION JOINT MATERIAL
3. SEALANT- COLOR TO MATCH ADJACENT SURFACE
4. 1/4" RADIUS, TYP
5. FACE OF WALL OR CURB- WHERE OCCURS
6. 3/8" WIDE
7. 1/2" DEEP TOOLED JOINT

NOTES:
-FOR CONCRETE THICKNESS AND INSTALLATION DETAILS OTHER THAN JOINTING, REFER TO DETAIL A, THIS SHEET.

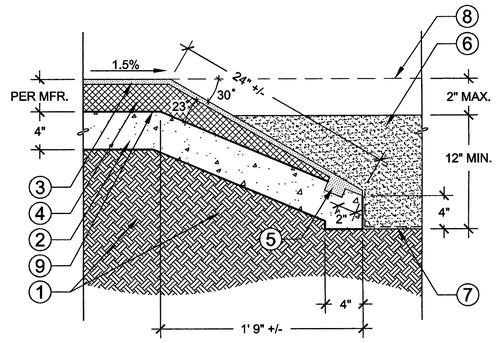
B TYPICAL JOINTS
SECTION NO SCALE



1. C-1, CONCRETE PAVEMENT WITH THICKENED EDGE.
2. 95% COMPACTED SUBGRADE
3. COLOR WEAR LAYER PER MANUFACTURER
4. CUSHION LAYER PER MANUFACTURER
5. CONCRETE BASE, REFER TO CIVIL DRAWINGS
6. 1"x1" KEY IN CONCRETE BASE
7. 45°CHAMFER
8. 3/8" RADIUS WHERE ABUTTING POURED-IN-PLACE SURFACING
9. ELEVATION AND SLOPE PER CIVIL

NOTE:
1. SLOPE CONCRETE BASE FOR RESILIENT SURFACING TOWARD TOT LOT DRAINAGE.

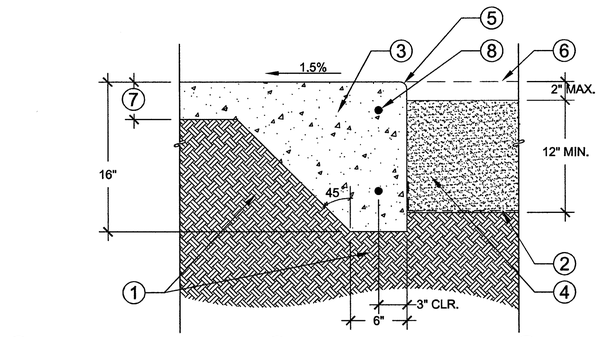
C TOT LOT SURFACE
SECTION NO SCALE



1. 95% COMPACTED SUBGRADE
2. CONCRETE BASE, REFER TO CIVIL DRAWINGS
3. COLOR WEAR LAYER PER MANUFACTURER
4. CUSHION LAYER PER MANUFACTURER
5. 1x2 KEY IN CONCRETE BASE
6. PGS-1, PLAYGROUND SAND
7. FILTER FABRIC PER SPECIFICATIONS
8. AT INITIAL CONSTRUCTION, FILL SAND TO THE TOP OF RESILIANT SURFACE AND EDGING
9. ELEVATION AND SLOPE PER CIVIL

NOTE:
1. SEE PLAYGROUND DRAINAGE DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.

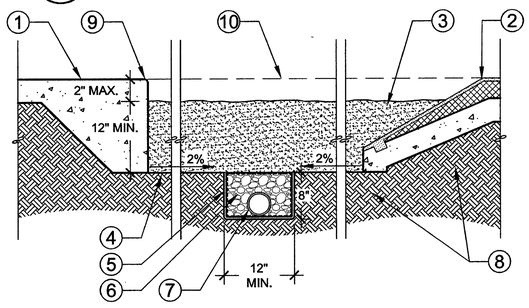
D TOT LOT SURFACE TURN-DOWN
SECTION NO SCALE



1. 95% COMPACTED SUBGRADE - SLOPE TOWARD DRAIN PIPE @ 1.5% MIN.
2. FILTER FABRIC PER SPECIFICATIONS: EXTEND 3" AT ALL EDGES
3. CONCRETE PAVEMENT WITH THICKENED EDGE, REFER TO CIVIL DRAWINGS
4. PGS-1, PLAYGROUND SAND
5. 1/4" RADIUS
6. AT INITIAL CONSTRUCTION, FILL SAND TO THE TOP OF RESILIANT SURFACE AND EDGING
7. 4" THICK PEDESTRIAN CONCRETE PAVING 6" THICK VEHICULAR CONCRETE PAVING
8. #4 REBAR CONT. AT THICKENED EDGE

NOTE:
1. SEE PLAYGROUND DRAINAGE DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.

E PLAYGROUND SAND / EDGE
SECTION NO SCALE



1. C-1, CONCRETE PAVING. REFER TO DETAIL E, THIS SHEET, FOR EDGING DETAIL
2. R-1, RUBBERIZED PLAY AREA, REFER TO DETAIL C/D ON THIS SHEET FOR SURFACE DETAILS
3. PGS-1, PLAYGROUND SAND
4. SOIL SEPARATOR FABRIC MIRAFI 700X FABRIC OR EQUAL, CONTINUOUS BETWEEN SOIL AND SAND; EXTEND 3" AT ALL EDGES
5. PLACE FILTER FABRIC AROUND PIPE AND AGGREGATE IN TRENCH AND WRAPPED OVER TOP WITH 12" OVERLAP. MIRAFI 700X OR APPROVED EQUAL
6. ¾" CRUSHED AGGREGATE
7. 4" RIGID PERFORATED PIPE SLOPED 2% MIN. TO STORM SYSTEM CONNECTION (REFER TO CIVIL DRAWINGS)
8. 95% MIN. COMPACTED SUBGRADE x 12" DEEP UNDER SAND AND EDGES.
9. ¼" RADIUS
10. AT INITIAL CONSTRUCTION, FILL SAND TO THE TOP OF RESILIANT SURFACE AND EDGING

F PLAYGROUND DRAINAGE AT SAND AREA
SECTION NO SCALE

CONSULTANT

KTU+A Planning + Landscape Architecture
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San Diego, CA 92103
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REGISTERED LANDSCAPE ARCHITECT MARK W. TERRELL No. 2342 Exp. 2/28/15 STATE OF CALIFORNIA

LC-6

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 16 OF 31 SHEETS

APPROVED: 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
CONSTRUCTION MANAGER

SHEILA BOSE
PROJECT MANAGER

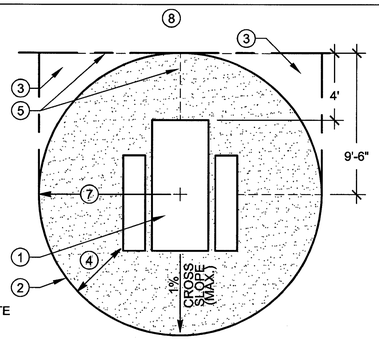
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

WBS S-00763
232-1723 CONT/ COORDINATE
1868-6284 CONTR COORDINATE
36496-16-D

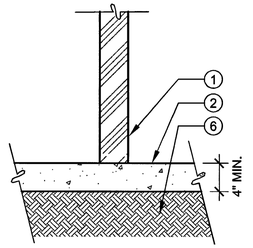
CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

1. PT-2, CONCRETE PICNIC TABLE, ADA. SECURE W/ EPOXY OR ANCHOR PER MANUFACTURER'S SPECIFICATIONS.
2. C-1, 4" MIN. THICK CONCRETE PAD, MEDIUM BROOM FINISH, PROVIDE 1/4" RADIUS AT EDGE. TOP OF PAD SHALL BE FLUSH WITH ADJACENT SURFACE,
3. WHERE ADJACENT TO CONCRETE WALK, EXTEND PAVING AT TANGENT POINT TO ADJACENT PAVING MATERIAL. SEE PLANS FOR LOCATION.
4. 4'-0" CLR. @ PAD, ALL SIDES
5. EJ-1, EXPANSION JOINT AT CENTERLINE OF SLAB, EACH WAY, TYP.
6. SUBSOIL COMPACTED 95% TO MIN. 12" DEPTH
7. RADIUS = 8'-3", MUST MAINTAIN 4' CLEAR IN ALL DIRECTIONS, TYP.
8. ADJACENT CONCRETE WALK PER PLAN

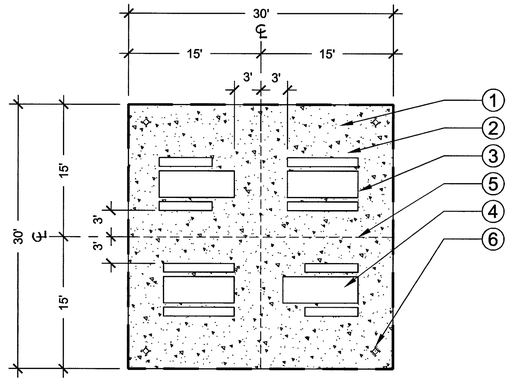


PLAN VIEW

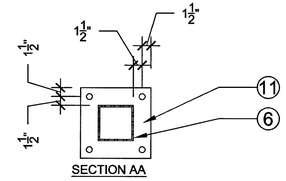


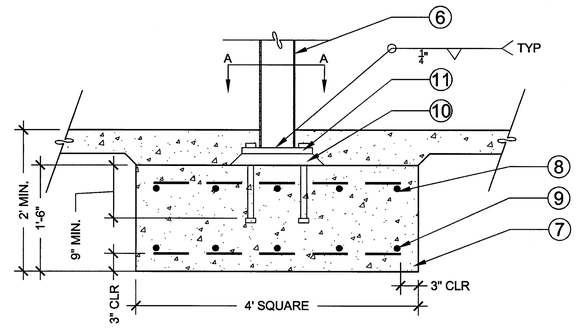
SECTION

A CONCRETE PAD
PLAN / SECTION — NO SCALE



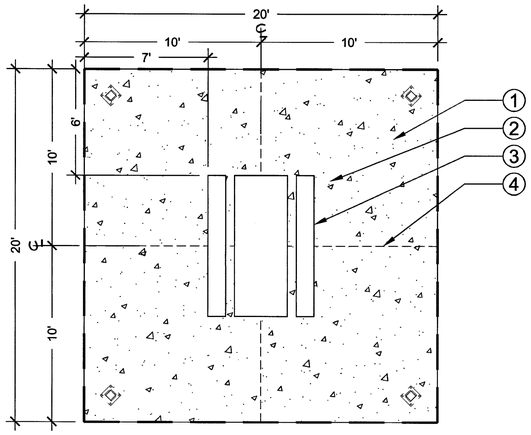
1. C-1, 30' X 30' CONCRETE PAD
2. SS-1, LARGE SHELTER
3. PT-1, PICNIC TABLE
4. PT-2, PICNIC TABLE, ADA
5. EJ-1 EXPANSION JOINT
6. 6" COLUMN PER MANUFACTURER
7. 48" SQUARE CONCRETE FOOTING
8. (5) #4 EACH WAY AT TOP
9. (5) #5 EACH WAY AT BOTTOM
10. 1 ½" NON-SHRINK GROUT
11. PLATE ¾" X 12" X 12" WITH (4) ¾" DIA X 12" HEADED THREADED ANCHORS



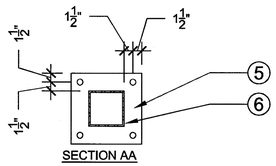


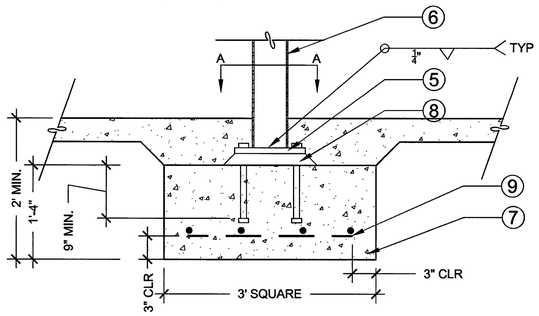
FOOTING DETAIL
1"=1'-0"

B LARGE SHELTER WITH CONCRETE PAD
PLAN / SECTION — 1/8"= 1'-0"



1. C-1, 20' X 20' CONCRETE PAD
2. SS-2, SMALL SHELTER
3. PT-1, PICNIC TABLE
4. EJ-1, EXPANSION JOINT
5. PLATE ¾" X 11" X 11" WITH (4) ¾" DIA X 12" HEADED THREADED ANCHORS
6. 5" COLUMN PER MANUFACTURER
7. 36" SQUARE CONCRETE FOOTING
8. 1 ½" NON-SHRINK GROUT
9. (4) #5 EACH WAY AT BOTTOM





FOOTING DETAIL
1"=1'-0"

C SMALL SHELTER WITH CONCRETE PAD
PLAN / SECTION — 1/4"=1'-0"

CONSULTANT

KTUA
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3916 Normal Street
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REGISTERED LANDSCAPE ARCHITECT — BART T. TATE — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

LC-7

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 17 OF 31 SHEETS

WBS S-00763

APPROVED: 3/14/13
FOR CITY ENGINEER — DATE
KEVIN OLIVER, SECTION HEAD

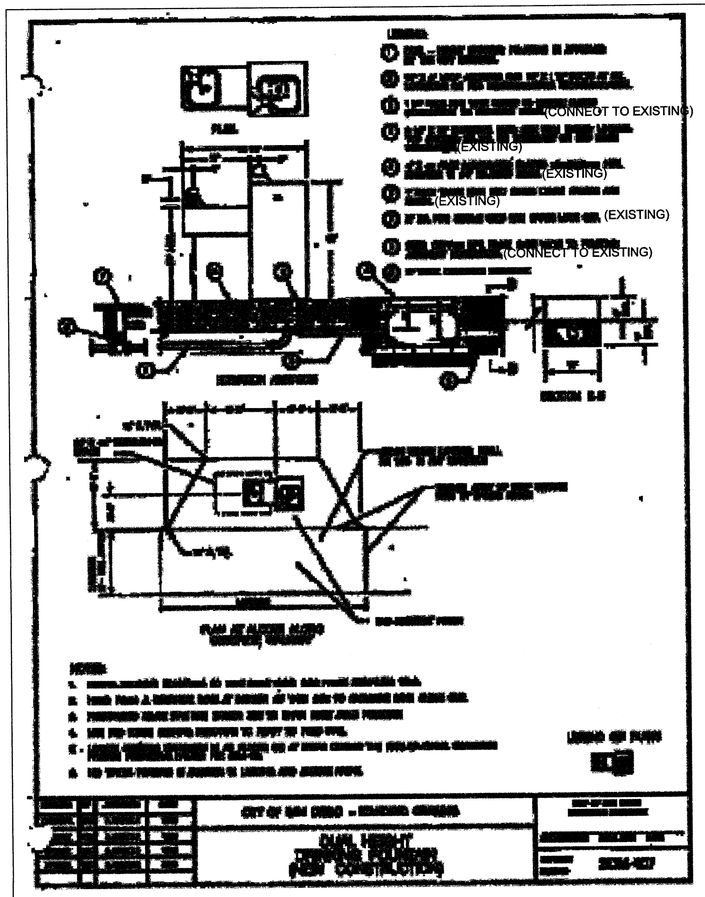
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE, PROJECT MANAGER
232-1723 CCDBT COORDINATE
1868-6284 CCDSB COORDINATE

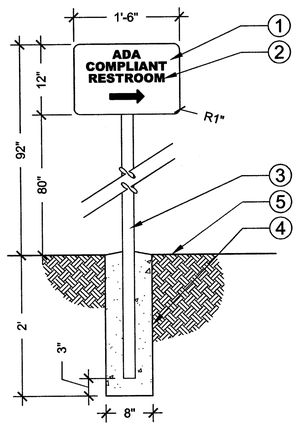
CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED

36496-17-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



A DRINKING FOUNTAIN



1. S-1, METAL SIGN BLUE BACKGROUND WITH WHITE LETTERS
2. SIGN TEXT: WHITE, 1½" AERIAL BLACK FONT SHALL READ, "ADA COMPLIANT RESTROOM"
3. GALVANIZED STEEL U-CHANNEL SIGN POST
4. 8" ROUND x 24" DEEP CONCRETE FOOTING
5. FINISH GRADE

B ADA RESTROOM SIGN
SECTION 1" = 1'-0"

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LC-8

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 18 OF 31 SHEETS

WBS S-00763

APPROVED _____ DATE 3/14/13
FOR CITY ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

BRIN OLIVER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

232-1723
COMM7 COORDINATE

1868-6284
COMM8 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-18-D

CONSULTANT

KTU+A
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3916 Normal Street
San Diego, CA 92103
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fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
MARY K. KATSANTONIS
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

ACCESSIBILITY REQUIREMENTS

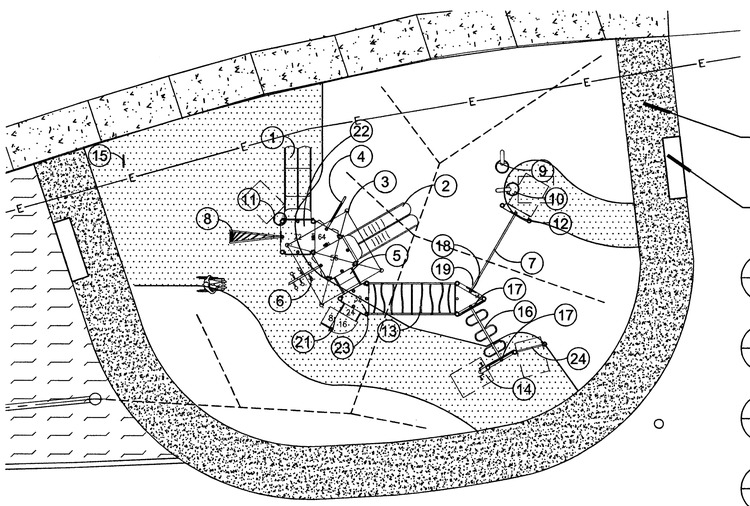
TOTAL ELEVATED PLAY COMPONENTS: 6			
TOTAL ELEVATED COMPONENTS ACCESSIBLE BY RAMP:	0	REQUIRED	0
TOTAL ELEVATED COMPONENTS ACCESSIBLE BY TRANSFER:	5	REQUIRED	3
TOTAL ACCESSIBLE GROUND LEVEL COMPONENTS SHOWN:	6	REQUIRED	2
TOTAL DIFFERENT TYPES OF GROUND LEVEL COMPONENTS:	5	REQUIRED	5

ADA GROUND LEVEL CLARIFICATION:
E-POD/SEAT = SEAT
ACCESSIBLE STATIONARY CYCLER = UPPER BODY
RINGPULL = OVERHEAD
IND NOODLE PODS = STEPPING/BALANCE
OVERHEAD LADDER = OVERHEAD
CANYON CLIMBER = CLIMBER

1. 130390A- DOUBLE SWOOSH POLY SLIDE 72" DK DB
2. 123336A- DOUBLE WAVE POLY SLIDE 56" DK DB
3. 166081A- COOLTOPPERS WAVE ROOF
4. 179018A- LOGO CLIMBER WI/ VIBE HANDHOLDS 64" DK DB
5. 152907B- DECK LINK W/ BARRIER TWO STEPS
6. 179019A- LOLLIPOP CLIMBER W/ VIBE HANDHOLDS 56" DK DB
7. 176081A- CANYON CLIMBER
8. 146812A- SKY RAIL CLIMBER 72" DK DB
9. 158108B- NOODLE POD (16" HEIGHT) DB ONLY
10. 158108C- NOODLE POD (24" HEIGHT) DB ONLY
11. 166809A- E-POD/SEAT
12. 120818A- PLAYSTRUCTURE SEAT
13. 165445A- RINGTANGLE W/ HANDLOOP 8" DK DIFF
14. 153165A- STATIONARY CYCLER ACCESSIBLE
15. 182503C- WELCOME SIGN 5-12 YEARS (PROVIDED)
16. 119805A- SINGLE BEAM LOOP HORIZ LAD 84" CONNECTED BETWEEN DECK
17. 141886A- ACCESS/ LANDING ASSY RAILS BARRIER 24" DK (2)
18. 111345A- BRIDGE/RAMP TRANSITION BRACKET
19. 111276A- RAIL ASSY (2)
20. 116244A- PIPE BARRIER ABOVE DECK
21. 152911A- CURVED TRANSFER MODUAL LEFT 32" DK DB
22. 111228A- SQUARE TENDERDECK (2)
23. 111231A- TRIANGULAR TENDERDECK (2)
24. 130873- RING PULL

PLAYGROUND EQUIPMENT NOTES:

1. FOR MATERIALS / FINISH SCHEDULE REFER TO SHEET LC-5.
2. CONTRACTOR SHALL PROVIDE LANDSCAPE ARCHITECT WITH SUBSTITUTES OF PLAY EQUIPMENT FOR REVIEW AND APPROVAL.
3. INSTALLATION CONTRACTOR SHALL BE CPSI CERTIFIED.
4. THE CONTRACTOR SHALL HAVE NATIONAL PLAYGROUND SAFETY INSTITUTE (NPSI) CERTIFICATION FOR INSTALLERS AND IN ADDITION THE INSTALLERS SHALL BE CERTIFIED BY THE EQUIPMENT MANUFACTURER TO INSTALL THEIR EQUIPMENT AND SURFACING. THE NPSI CERTIFIED INSTALLERS SHALL BE INVOLVED IN THE CONSTRUCTION OF THE PLAYGROUND AT ALL TIMES DURING CONSTRUCTION AND INCLUDING PREPARATION OF THE SUBGRADE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN INDEPENDENT THIRD PARTY AUDIT OF THE PLAYGROUND AREA, SURFACING AND ALL PLAY EQUIPMENT. THE AUDIT SHALL BE CONDUCTED BY A NRPA / NPSI CERTIFIED PLAYGROUND SAFETY INSPECTOR IN ACCORDANCE WITH NPSI STANDARDS. THE AUDIT SHALL DETERMINE COMPLIANCE OF THE PLAYGROUND AREA, SURFACING, AND ALL PLAY EQUIPMENT WITH THE MOST CURRENT VERSIONS OF ACCESSIBILITY AND SAFETY STANDARDS, INCLUDING THE FOLLOWING: AMERICANS WITH DISABILITIES ACT (ADA), CONSUMER PRODUCT SAFETY COMMISSION'S (CPSC) "HANDBOOK FOR PUBLIC PLAYGROUND SAFETY", THE AMERICAN SOCIETY FOR TESTING AND MATERIALS' (ASTM) "STANDARD CONSUMER SAFETY PERFORMANCE SPECIFICATION FOR PLAYGROUND EQUIPMENT FOR PUBLIC USE" (ASTM F1487), AND "STANDARD SPECIFICATION FOR IMPACT ATTENUATION OF SURFACE SYSTEMS UNDER AND AROUND PLAYGROUND EQUIPMENT" (ASTM F1292), AND "STANDARD SPECIFICATION FOR DETERMINATION OF ACCESSIBILITY OF SURFACE SYSTEMS UNDER AND AROUND PLAYGROUND EQUIPMENT" (ASTM F1951). POURED IN PLACE RESILIENT SURFACING SHALL BE TESTED ON SITE AFTER INSTALLATION IN ACCORDANCE WITH ASTM F1292: MANUFACTURER'S CERTIFICATION IS NOT ACCEPTABLE.
6. AUDIT: AT THE COMPLETION OF INSTALLATION BUT PRIOR TO OPENING THE PLAYGROUND TO THE PUBLIC, THE PLAYGROUND SHALL PASS AUDIT BY A NATIONAL PLAYGROUND SAFETY INSTITUTE CERTIFIED PLAYGROUND SAFETY INSPECTOR. SEE SECTION 3.2.6, LAYOUT AND CONSTRUCTION PLANS, FOR ADDITIONAL INFORMATION.
7. HEAD IMPACT CRITERIA (HIC) TEST: AT THE COMPLETION OF INSTALLATION BUT PRIOR TO OPENING THE PLAYGROUND TO THE PUBLIC, POURED-IN-PLACE RUBBERIZED PLAYGROUND SURFACING SHALL BE TESTED FOR IMPACT ATTENUATION IN COMPLIANCE WITH ASTM F1292. TESTING SHALL BE CONDUCTED BY A TECHNICIAN CERTIFIED BY THE MANUFACTURER OF THE TESTING EQUIPMENT USED. TESTING SHALL BE DONE FOR EACH AGE GROUP.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING AY ITEMS FOUND NOT TO BE IN COMPLIANCE WITH THE ABOVE STANDARDS AS A RESULT OF THE AUDIT, AT NO CHARGE TO THE CITY. THE CONTRACTOR SHALL PROVIDE TO THE RESIDENT ENGINEER AND PROJECT MANAGER A SIGNED LETTER STATING THAT THE PLAYGROUND AREA, SURFACING AND PLAY EQUIPMENT COMPLY WITH ALL CURRENT APPLICABLE ACCESSIBILITY AND SAFETY STANDARDS. THE LETTER SHALL INCLUDE AN ITEMIZED LIST CORRESPONDING TO EACH AUDIT ITEM, DESCRIBING ALL CORRECTIONS AND THE DATE EACH CORRECTION WAS COMPLETED. IF APPLICABLE, THE LETTER MAY STATE THAT ANY EQUIPMENT IN QUESTION IS CERTIFIED BY INTERNATIONAL PLAYGROUND EQUIPMENT MANUFACTURERS ASSOCIATION (IPEMA). (PROVIDE MANUFACTURER'S PROOF OF IPEMA CERTIFICATION).
9. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



A LARGE PLAY STRUCTURE AND SURFACE PLAN

1/8"=1'-0"

PLAYGROUND EQUIPMENT COLOR LEGEND:	
COLORS	COMPONENTS
LIMON	SLIDES
NAVY BLUE	ROOF
SILVER	POSTS
GRAY	DECK OF PLAYGROUNDS
DENIM	PLAY COMPONENTS

LC-9

CONSULTANT

KTU+A Planning + Landscape Architecture
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REGISTERED LANDSCAPE ARCHITECT — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LANDSCAPE CONSTRUCTION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 19 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLIVER, SECTION HEAD
SHEILA BOSE, PROJECT MANAGER

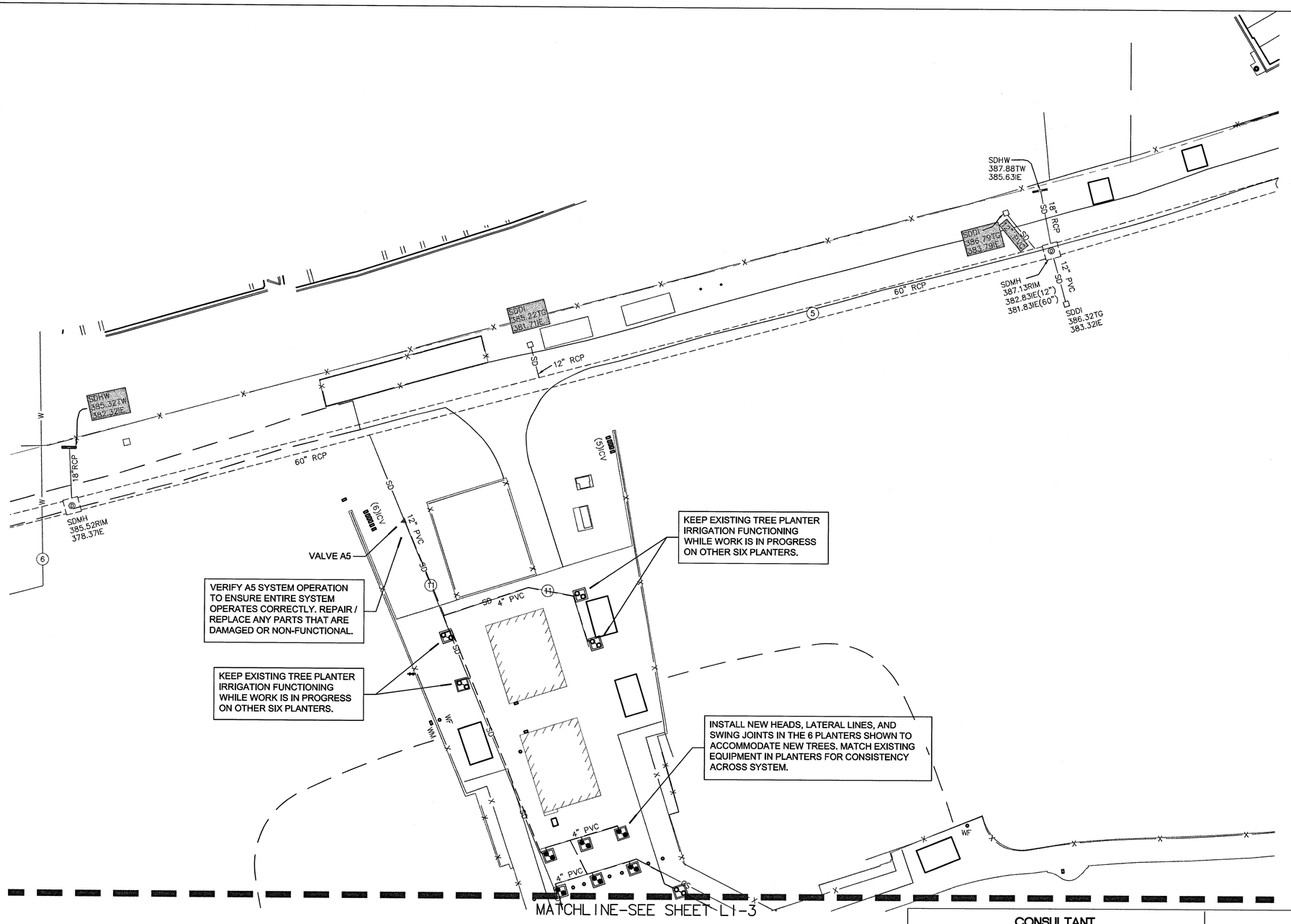
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

232-1723 CCDES COORDINATE
1868-6284 CCDES COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-19-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



KEEP EXISTING TREE PLANTER IRRIGATION FUNCTIONING WHILE WORK IS IN PROGRESS ON OTHER SIX PLANTERS.

VERIFY A5 SYSTEM OPERATION TO ENSURE ENTIRE SYSTEM OPERATES CORRECTLY. REPAIR / REPLACE ANY PARTS THAT ARE DAMAGED OR NON-FUNCTIONAL.

KEEP EXISTING TREE PLANTER IRRIGATION FUNCTIONING WHILE WORK IS IN PROGRESS ON OTHER SIX PLANTERS.

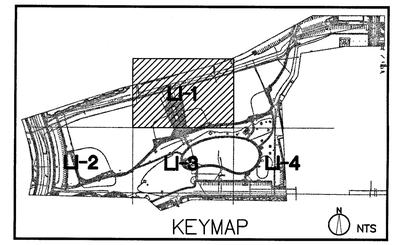
INSTALL NEW HEADS, LATERAL LINES, AND SWING JOINTS IN THE 6 PLANTERS SHOWN TO ACCOMMODATE NEW TREES. MATCH EXISTING EQUIPMENT IN PLANTERS FOR CONSISTENCY ACROSS SYSTEM.

NOTES:

1. ADDITIVE ALTERNATE 'B' INCLUDES INSTALLING POP-UP SUPPLEMENTARY IRRIGATION FOR THE NEW TREES (INCLUDING BUT NOT LIMITED TO TREE PLANTER SYSTEM A5) AND IS TO BE BID AS PART OF ADDITIVE ALTERNATE 'B'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D). REFER TO NOTES ON LANDSCAPE PLANTING PLANS FOR NEW IRRIGATION TO PROPOSED TREES. TREE LOCATIONS / IRRIGATION TO BE IDENTIFIED ON SITE BY LANDSCAPE ARCHITECT.

2. REFER TO SHEETS LI-5 AND LI-6 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

3. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION OR MODIFICATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LI-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 20 OF 31 SHEETS

WBS S-00763

APPROVED _____ FOR CITY ENGINEER — DATE 3/14/13

APPROVED KEVIN OLMER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE, PROJECT MANAGER

232-1723 COSM7 COORDINATE

1868-6284 COSS8 COORDINATE

CONTRACTOR _____ DATE STARTED _____

INSPECTOR _____ DATE COMPLETED _____

36496-20-D

CONSULTANT

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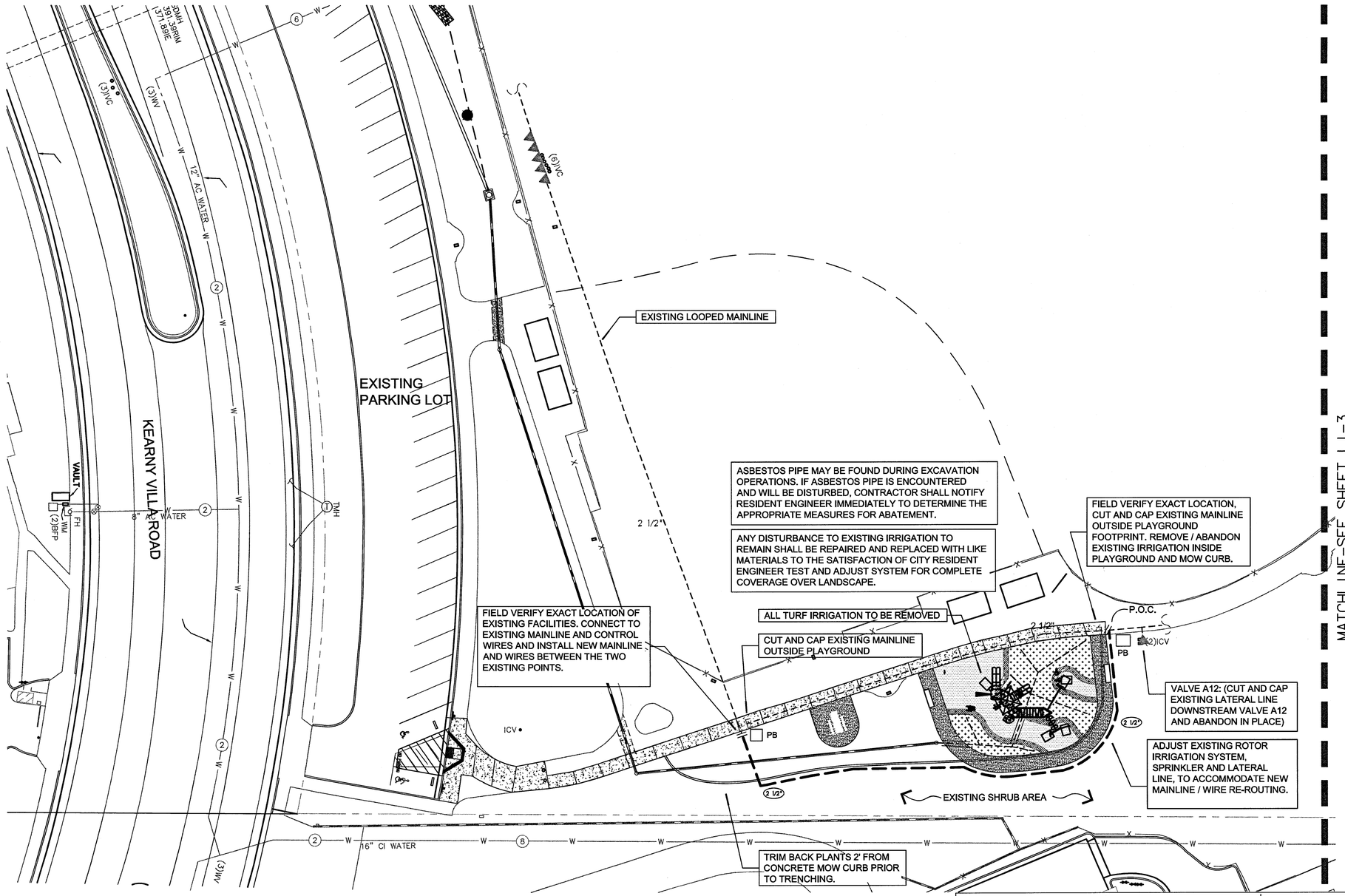
REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

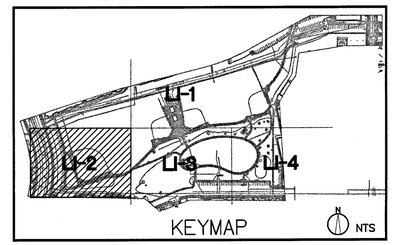


NOTES:

1. REFER TO SHEETS LI-5 AND LI-6 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

2. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION OR MODIFICATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.

3. REFER TO LANDSCAPE PLANTING PLANS FOR NEW IRRIGATION TO PROPOSED TREES. TREE LOCATIONS / IRRIGATION TO BE IDENTIFIED ON SITE BY LANDSCAPE ARCHITECT.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LI-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 21 OF 31 SHEETS

APPROVED _____ DATE 3/4/13
FOR CITY ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

WBS S-00763

KEVIN OLIVER
SECTION HEAD

SHEILA BOSE
PROJECT MANAGER

232-1723
CCDSD COORDINATE

1868-6284
CCDSD COORDINATE

36496-21-D

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

CONSULTANT

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fax 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET LI-1

MATCHLINE-SEE SHEET LI-2

MATCHLINE-SEE SHEET LI-4

KEEP EXISTING TREE PLANTER IRRIGATION FUNCTIONING WHILE WORK IS IN PROGRESS ON OTHER SIX PLANTERS.

KEEP EXISTING TREE PLANTER IRRIGATION FUNCTIONING WHILE WORK IS IN PROGRESS ON OTHER SIX PLANTERS.

12" PVC

8" PVC SD

8" PVC

6" PVC SD

SDD 338.76TG 585.06E

SDD 569.21TG 534.31E

SDD 594.75TG 891.05E

SDD 596.02TG 891.04E

CONTROLLERS 'A', 'B', AND 'C' LOCATED IN THIS AREA

CONTROLLER 'D' LOCATED IN THIS AREA

AT EXISTING ROTOR, REPLACE INTERNAL SPRINKLER ASSEMBLY. REPLACE EXISTING NOZZLE WITH A NEW NOZZLE AND ADJUST TO PART CIRCLE. SEE ARC OF COVERAGE.

AT EXISTING ROTOR, REPLACE INTERNAL SPRINKLER ASSEMBLY. REPLACE EXISTING NOZZLE WITH A NEW NOZZLE AND ADJUST TO PART CIRCLE. SEE ARC OF COVERAGE.

NEW ROTORS. ADJUST TO PART CIRCLES.

1-1/2" VALVE D11 43 gpm

AT EXISTING ROTOR, REPLACE INTERNAL SPRINKLER ASSEMBLY. REPLACE EXISTING NOZZLE WITH A NEW NOZZLE AND ADJUST TO PART CIRCLE. SEE ARC OF COVERAGE.

NEW ROTOR. ADJUST TO PART CIRCLE.

NEW ROTOR. ADJUST TO PART CIRCLE.

REMOVE / ABANDON LATERALS AND EXISTING ROTOR AS INDICATED. CUT AND CAP OUTSIDE OF PICNIC AREA FOR LATER RECONNECTION.

AT EXISTING ROTOR, REPLACE INTERNAL SPRINKLER ASSEMBLY. REPLACE EXISTING NOZZLE WITH A NEW NOZZLE AND ADJUST TO PART CIRCLE. SEE ARC OF COVERAGE.

1-1/2" VALVE D12 45 gpm

EXISTING BOOSTER PUMP

P.O.C.

EXISTING 34' RADIUS

EXISTING 37' RADIUS

IRRIGATION

WATERMAIN

ICV

(2)ICV

(4)ICV

(2)BFP

WMH

WV

WM

WF

WB

4" WATERMAIN

2" WATERMAIN

HURLBUT STREET

16" CI WATER

(3)WV

IT IS UNDERSTOOD THAT THE ORIGINAL IRRIGATION DESIGN OVERSPRAYS ON WALKWAYS THROUGHOUT THE PARK. THE INTENT OF THE UPDATED DESIGN IS MODIFY THE EXISTING IRRIGATION IN ORDER TO KEEP OVERSPRAY OFF THE NEW GROUP PICNIC AREA, YET KEEP THE COVERAGE OF THE ORIGINAL DESIGN. IN DOING THIS, OVERSPRAY ON THE WALKWAYS IS STILL PRESENT, BUT NOT ON NEW GROUP PICNIC AREA.

ALL SPRINKLERS INDICATING NEW NOZZLES ARE TO ALSO BE EQUIP WITH NEW INTERNAL SPRINKLER ASSEMBLIES. CONTRACTOR TO ADJUST THROWS SO NO OVERSPRAY, PONDING OR RUN-OFF IS PRESENT, ON, OR NEAR NEW CONCRETE PICNIC AREA PADS.

CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF SPRINKLER ARC COVERAGE NECESSARY FOR THE CONDITIONS IN THE FIELD TO THE SATISFACTION OF THE RESIDENT ENGINEER.

ASBESTOS PIPE MAY BE FOUND DURING EXCAVATION OPERATIONS. IF ASBESTOS PIPE IS ENCOUNTERED AND WILL BE DISTURBED, CONTRACTOR SHALL NOTIFY RESIDENT ENGINEER IMMEDIATELY TO DETERMINE THE APPROPRIATE MEASURES FOR ABATEMENT.

.

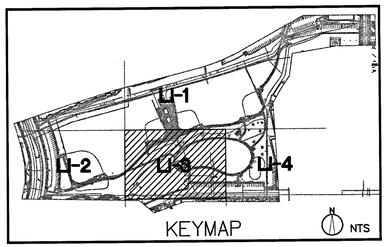
NOTES:

1. ALL WORK INDICATED WITH EXISTING ROTOR IRRIGATION SYSTEMS D11 AND D12 ARE TO BE BID AS PART OF ADDITIVE ALTERNATE 'C'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D).

2. ADDITIVE ALTERNATE 'B' INCLUDES INSTALLING POP-UP SUPPLEMENTARY IRRIGATION FOR THE NEW TREES (INCLUDING BUT NOT LIMITED TO TREE PLANTER SYSTEM A5) AND IS TO BE BID AS PART OF ADDITIVE ALTERNATE 'B'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D). REFER TO NOTES ON LANDSCAPE PLANTING PLANS FOR NEW IRRIGATION TO PROPOSED TREES. TREE LOCATIONS / IRRIGATION TO BE IDENTIFIED ON SITE BY LANDSCAPE ARCHITECT.

3. REFER TO SHEETS LI-5 AND LI-6 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

4. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION OR MODIFICATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LI-3

PLANS FOR THE CONSTRUCTION OF

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 22 OF 31 SHEETS

WBS S-00763

APPROVED _____ FOR CITY ENGINEER

3/14/13 DATE

APPROVED BY KEVIN OLIVER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOBE PROJECT MANAGER

232-1723 COBEF COORDINATE

1868-6284 COBSB COORDINATE

36496-22-D

CONTRACTOR _____ DATE STARTED _____

INSPECTOR _____ DATE COMPLETED _____

CONSULTANT

KTU+A
Planning + Landscape Architecture

3916 Normal Street
San Diego, CA 92103
619.294.4477
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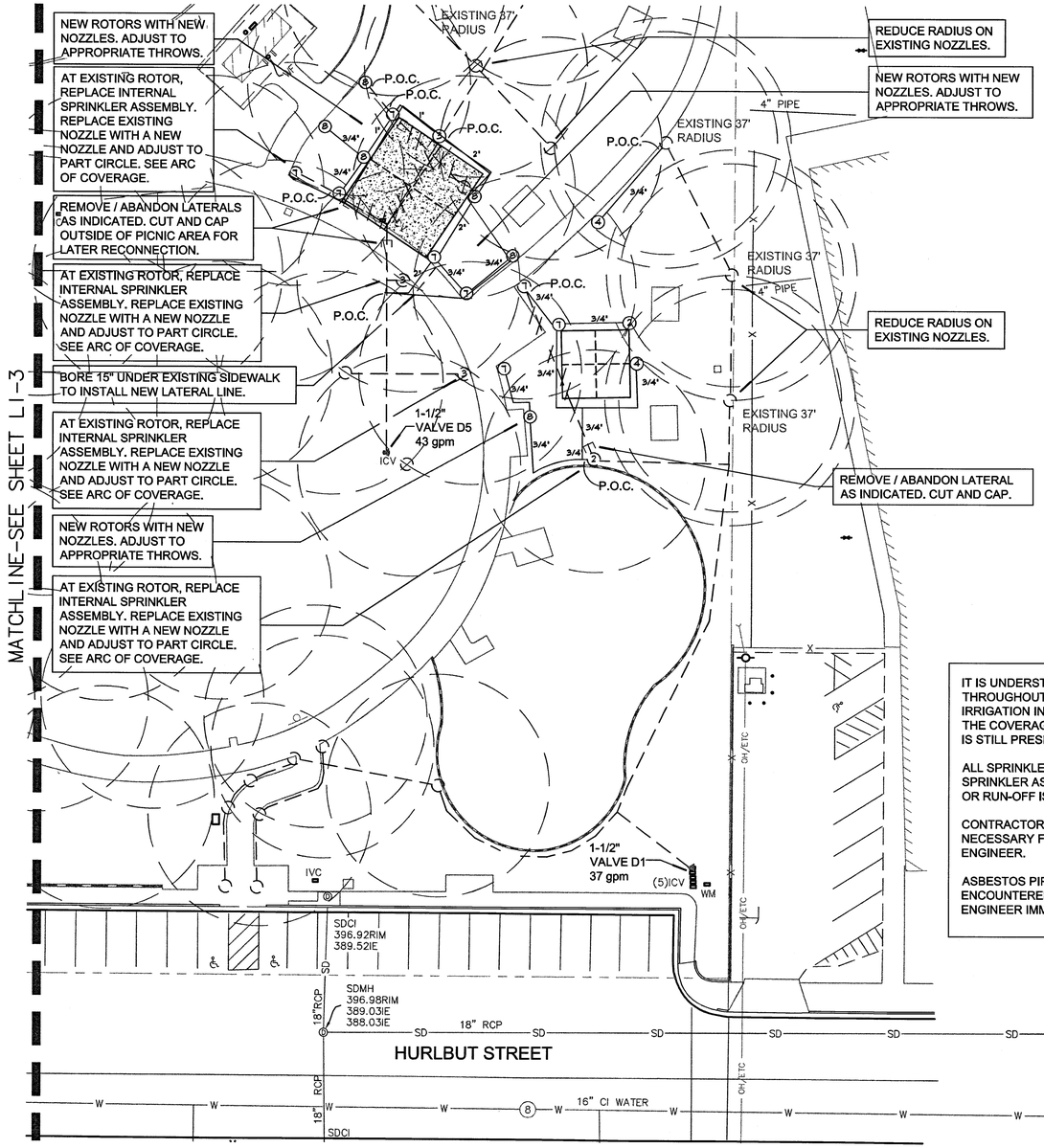
REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 8/28/13
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

1. ALL WORK INDICATED WITH EXISTING ROTOR IRRIGATION SYSTEM D5 IS TO BE BID AS PART OF ADDITIVE ALTERNATE 'E'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D).

2. ALL WORK INDICATED WITH EXISTING ROTOR IRRIGATION SYSTEM D1 IS TO BE BID AS PART OF ADDITIVE ALTERNATE 'D'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D).

3. ADDITIVE ALTERNATE 'B' INCLUDES INSTALLING POP-UP SUPPLEMENTARY IRRIGATION FOR THE NEW TREES AND IS TO BE BID AS PART OF ADDITIVE ALTERNATE 'B'. REFER TO BID ALTERNATIVE SCHEDULE ON LANDSCAPE CONSTRUCTION PLAN LC-5 (DWG NO. 36496-15-D).
REFER TO NOTES ON LANDSCAPE PLANTING PLANS FOR NEW IRRIGATION TO PROPOSED TREES. TREE LOCATIONS / IRRIGATION TO BE IDENTIFIED ON SITE BY LANDSCAPE ARCHITECT.

4. REFER TO SHEETS LI-5 AND LI-6 FOR IRRIGATION DETAILS, NOTES, AND LEGEND.

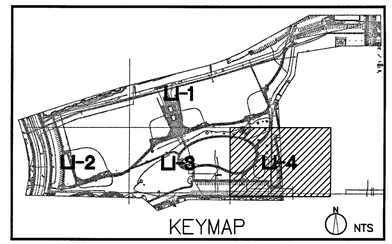
5. IRRIGATION SYSTEM SHOWN DIAGRAMMATICALLY. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY INSTALLATION OR MODIFICATION. CONTRACTOR SHALL REPLACE ALL IRRIGATION DISTURBED DURING CONSTRUCTION WITH SAME IN KIND AND SIZE.

IT IS UNDERSTOOD THAT THE ORIGINAL IRRIGATION DESIGN OVERSPRAYS ON WALKWAYS THROUGHOUT THE PARK. THE INTENT OF THE UPDATED DESIGN IS MODIFY THE EXISTING IRRIGATION IN ORDER TO KEEP OVERSPRAY OFF THE NEW GROUP PICNIC AREA, YET KEEP THE COVERAGE OF THE ORIGINAL DESIGN. IN DOING THIS, OVERSPRAY ON THE WALKWAYS IS STILL PRESENT, BUT NOT ON NEW GROUP PICNIC AREA.

ALL SPRINKLERS INDICATING NEW NOZZLES ARE TO ALSO BE EQUIP WITH NEW INTERNAL SPRINKLER ASSEMBLIES. CONTRACTOR TO ADJUST THROWS SO NO OVERSPRAY, PONDING OR RUN-OFF IS PRESENT, ON, OR NEAR NEW CONCRETE PICNIC AREA PADS.

CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF SPRINKLER ARC COVERAGE NECESSARY FOR THE CONDITIONS IN THE FIELD TO THE SATISFACTION OF THE RESIDENT ENGINEER.

ASBESTOS PIPE MAY BE FOUND DURING EXCAVATION OPERATIONS. IF ASBESTOS PIPE IS ENCOUNTERED AND WILL BE DISTURBED, CONTRACTOR SHALL NOTIFY RESIDENT ENGINEER IMMEDIATELY TO DETERMINE THE APPROPRIATE MEASURES FOR ABATEMENT.



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SCALE: 1"= 20'
NORTH

LI-4

CONSULTANT

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LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 23 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER 3/14/13 DATE
APPROVED KEVIN OLIVER SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE PROJECT MANAGER
232-1723 CCDSD COORDINATE
1868-6284 CCDSD COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-23-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

GENERAL IRRIGATION NOTES

1. THE IRRIGATION SYSTEM DESIGN IS BASED ON AN AVAILABLE BOOSTED WATER PRESSURE OF 80 PSI. BOOSTER PUMP IS LOCATED UP HILL FROM WATER SOURCE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING WATER PRESSURE PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION AND PROMPTLY REPORT ANY DIFFERENCES TO CITY RESIDENT ENGINEER.

2. THE IRRIGATION SYSTEM IS SHOWN DIAGRAMMATICALLY FOR CLARITY. LOCATE ALL PIPING, VALVES, BACKFLOW PREVENTION DEVICES, AND OTHER IRRIGATION EQUIPMENT WITHIN LANDSCAPE AREAS UNLESS NOTED OR DIRECTED OTHERWISE.

3. PRIOR TO ANY EXCAVATION OR TRENCHING LOCATE AND VERIFY ALL CABLES, CONDUITS, AND UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AN UNDERGROUND UTILITY LOCATING SERVICE TO LOCATE AND MARK ALL UTILITIES. THE CONTRACTOR WILL TAKE PROPER PRECAUTIONS NOT TO DAMAGE OR DISTURB SUCH UNDERGROUND UTILITIES. NOTIFY THE RESIDENT ENGINEER IMMEDIATELY IF A CONFLICT EXISTS BETWEEN SUCH OBSTACLES AND THE PROPOSED WORK. PROCEED IN SAME MANNER IF ROCK LAYERS OR ANY OTHER CONDITIONS ARE ENCOUNTERED UNDERGROUND.

4. THE CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT PROMPTLY TO THE ATTENTION OF THE CITY RESIDENT ENGINEER. SHOULD THE CONTRACTOR FAIL TO NOTIFY THE RESIDENT ENGINEER OF ANY DISCREPANCIES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS NECESSARY AT NO ADDITIONAL COST TO THE CITY.

5. IRRIGATION LINES SHALL BE INSTALLED IN LANDSCAPE AREAS WHEREVER POSSIBLE AND WITHIN 24" OF LANDSCAPE AREA EDGES UNLESS INDICATED OTHERWISE.

6. NO LOW HEAD DRAINAGE IS ALLOWED. CONTRACTOR SHALL CORRECT ANY LOW HEAD DRAINAGE PER THE DIRECTION OF THE CITY RESIDENT ENGINEER.

7. INSTALL FIXED ARC NOZZLES WHENEVER POSSIBLE. VARIABLE ARC NOZZLES SHALL ONLY BE USED IN AREAS WHERE FIXED ARC NOZZLES CANNOT ACHIEVE EFFECTIVE COVERAGE OR CAUSE EXCESSIVE OVER SPRAY. DURING THE FINAL CLOSEOUT PROCEDURES, NOZZLE CHANGES MAY BE REQUESTED AT NO ADDITIONAL EXPENSE TO THE CITY.

8. SHOULD THE CONTRACTOR MAKE NOZZLE CHANGES OR ADD HEADS AS A RESULT OF SITE OBSTACLES OR CONSTRUCTION CHANGES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATION AND ADJUSTMENTS IN PIPE SIZES. IN NO CASE SHALL FLOW VELOCITIES EXCEED 5 FEET PER SECOND.

9. ALL PLANTINGS SHALL BE FULLY WATERED IN UPON PLANTING. DO NOT RELY SOLELY UPON THE AUTOMATIC IRRIGATION SYSTEM. UTILIZE SUPPLEMENTAL HOSE WATERING AS REQUIRED, INITIALLY AND DURING THE PLANT ESTABLISHMENT PERIOD, AND AS DIRECTED ON PLANS, TO ENSURE ALL PLANTINGS RECEIVE ADEQUATE WATER TO THE ENTIRE ROOT ZONE.

10. THE WORK TO TAKE PLACE FOR THE AREAS REPRESENTED ON THESE PLANS IS TO REPLACE EXISTING IRRIGATION SYSTEMS WITHIN THE CONSTRUCTION AREA. THE EXISTING SYSTEMS ON THIS SITE WILL BE RETROFITTED IN AND AROUND SITE IMPROVEMENTS. THE EXACT LOCATION OF EXISTING EQUIPMENT, SPRINKLERS AND PIPELINES MAY BE DIFFERENT FROM THAT SHOWN HEREON. PRIOR TO CONSTRUCTION OR EXCAVATION, FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING IRRIGATION EQUIPMENT AND LINES, USING WIRE TRACING METHOD AND POT HOLING AS REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT, SEEK APPROVAL AND COORDINATE ALL WORK WITH THE CONSTRUCTION MANAGER PRIOR TO ANY EXCAVATION OR DISTURBANCE TO THE SITE, AND THROUGHOUT THE CONSTRUCTION PROCESS.

11. EXISTING IRRIGATION SYSTEM DEMOLITION WILL OCCUR WITHIN THE CONSTRUCTION ZONE AS IT PERTAINS TO MAINLINE,WIRES, VALVES AND SPRINKLERS. DISTURBANCE TO EXISTING IRRIGATION IS LIKELY TO OCCUR IN OTHER AREAS ADJACENT TO THE IMMEDIATE DRIVEWAY WIDENING AND BUILDING CONSTRUCTION ZONE. IT IS ESSENTIAL TO PROTECT IN PLACE ALL EXISTING IRRIGATION WATER METERS, BACKFLOW PREVENTERS, SHUT-OFF VALVES, IRRIGATION ZONE VALVES, MAINLINE AND WIRES, AND STAKE OUT THESE ITEMS TO WARN OTHERS TO AVOID DISTURBANCE.

12. PROTECT IRRIGATION SYSTEMS TO REMAIN TO THE GREATEST EXTENT POSSIBLE AND MAKE ANY ADJUSTMENTS NECESSARY AND AS DIRECTED ON PLANS FOR COMPLETE IRRIGATION COVERAGE OVER THE REPRESENTED PROPOSED PLANTING AREAS. ANY DAMAGE TO EXISTING LANDSCAPE OR IRRIGATION CAUSED BY OPERATIONS OF CONTRACTOR AND OTHER TRADES, SHALL BE REPAIRED OR REPLACED TO ORIGINAL OR IMPROVED CONDITION AT CONTRACTORS EXPENSE.

13. EXERCISE CARE WHEN TRENCHING AROUND EXISTING LANDSCAPE AND PROTECT EXISTING LANDSCAPE DURING ALL PHASES OF WORK. WHEN ENCOUNTERED, HAND TRENCH AROUND OR UNDER EXISTING PLANT/ TREE ROOTS OVER 2' IN DIAMETER. ALL DISTURBED AREAS SHALL MATCH APPEARANCE OF ADJACENT AREAS TO END OF WORK.

14. INSPECT THE PROJECT SITE PRIOR TO BEGINNING WORK, AND TO THE BEST OF ABILITIES, DETERMINE WHICH EXISTING IRRIGATION FACILITIES WILL BE AFFECTED BY DEMOLITION AND CONSTRUCTION.

15. TAKE APPROPRIATE ACTION PRIOR TO GRADING, TO ENSURE THAT EXISTING PRESSURIZED WATER LINES, LATERAL LINES AND IRRIGATION CONTROL WIRES ARE PROPERLY DISCONNECTED, RELOCATED AND/OR CAPPED TO PREVENT WATER SPILLAGE OR POTENTIAL HAZARDS.

16. HAVE QUALIFIED PERSONNEL ON SITE DURING THE DEMOLITION/TRENCHING OPERATIONS TO DISCONNECT AND CAP AND STAKE EXISTING IRRIGATION FACILITIES.

17. OBTAIN APPROVAL FROM THE RESIDENT ENGINEER FOR RELOCATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.

18. VERIFY EXACT LOCATIONS AND STAKE ALL DAMAGED. DISCONNECTED, CAPPED OR RELOCATED FACILITIES IN THE FIELD AFTER PIPELINE CONSTRUCTION HAS BEEN COMPLETED.

19. HAND IRRIGATE ALL EXISTING LANDSCAPED AREAS WHICH CANNOT BE IRRIGATED BY EXISTING FACILITIES AFFECTED BY THE IMPROVEMENTS UNTIL IRRIGATION SYSTEMS ARE RESTORED.

20. MODIFY EXISTING IRRIGATION SYSTEMS IN AREAS INDICATED ON THE PLANS. RELOCATED EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO: SPRINKLER HEADS, DISTRIBUTION LINES, AND IRRIGATION WIRE. ANY NEW EQUIPMENT WILL MATCH THE MANUFACTURER AND MODEL NUMBER OF EQUAL, OF EXISTING EQUIPMENT.

21. CHALK THE CONFIGURATION OF THE MODIFIED SYSTEM IN THE FIELD AND OBTAIN APPROVAL FROM THE RESIDENT ENGINEER PRIOR TO TRENCHING.

22. AFTER THE EXISTING IRRIGATION SYSTEM MODIFICATIONS ARE COMPLETE, CONTRACTOR SHALL CONDUCT A COVERAGE TEST IN THE PRESENCE OF THE CITY RESIDENT ENGINEER FOR FINAL APPROVAL.

23. REGULAR WATERING OF EXISTING LANDSCAPED AREAS ON THE PROJECT SHALL OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. NOTIFY WELL IN ADVANCE AND COORDINATE WORK WITH CONSTRUCTION MANAGER. ONLY DISRUPT WATER SERVICE FOR THE BRIEF MOMENT REQUIRED TO MAKE CONNECTIONS TO EXISTING MAINLINES.

24. PATCH AND REPAIR ALL EXISTING PLANTING DAMAGED BY INSTALLATION OF NEW IRRIGATION WORK. ALL REPAIRED AREAS SHALL MATCH ADJACENT AREAS. REPAIRED/REPLACED LANDSCAPE MATERIALS SHALL BE OF SAME TYPE/S AS THAT DISTURBED.

25. ASCERTAIN THE EXTENT OF ANY SIMULTANEOUS AND ESSENTIAL WORK BY OTHERS ON THE SITE. CONTRACTORS SHALL COORDINATE THEIR OPERATIONS AND SHALL COOPERATE TO MINIMIZE INTERFERENCE.

26. REFER TO THE DETAILS AND SPECIFICATIONS FOR FURTHER INFORMATION.

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER/MODEL NO./ NOZZLE	RADIUS	PSI	GPM	SDI
o	EXISTING SHRUB SPRINKLER	FIELD VERIFY	-	-	-	-
●	4" POP-UP SHRUB BUBBLER	RAIN BIRD 1804-SAM-5Q-B	5'	30	.50	103
NO SYMBOL	4" POP-UP TREE SPRAY	RAIN BIRD 1804-SAM-PRS-8Q	6'-8'	30	.25	103
②	POP-UP TURF ROTOR	HUNTER I-20-04 WITH 1.5 NOZ (ADJUSTABLE ARC)	23'-28'	45	1.5	103
③	POP-UP TURF ROTOR	HUNTER I-20-04 WITH 2.5 NOZ (ADJUSTABLE ARC)	26'-32'	45	2.5	103
④	POP-UP TURF ROTOR	HUNTER I-20-04 WITH 4.0 NOZ (ADJUSTABLE ARC)	30'-36'	45	4.0	103
①	POP-UP TURF ROTOR	HUNTER I-20-04 WITH .75SR NOZ (ADJUSTABLE ARC)	19'-25'	50	.75	103
⑧	POP-UP TURF ROTOR	HUNTER I-20-04 WITH 1.5SR NOZ (ADJUSTABLE ARC)	19'-25'	50	1.5	103
②	TURF ROTOR NOZZLE	HUNTER I-20-04, 1.5 NOZ W/ INTERNAL SPRINKLER KIT	23'-28'	45	1.5	103
③	TURF ROTOR NOZZLE	HUNTER I-20-04, 2.0 NOZ W/ INTERNAL SPRINKLER KIT	25'-30'	45	2.0	103
④	TURF ROTOR NOZZLE	HUNTER I-20-04, 3.0 NOZ W/ INTERNAL SPRINKLER KIT	28'-34'	45	3.0	103
⑤	TURF ROTOR NOZZLE	HUNTER I-20-04, 5.0 NOZ W/ INTERNAL SPRINKLER KIT	32'-38'	45	5.0	103
①	TURF ROTOR NOZZLE	HUNTER I-20-04, .75SR NOZ W/ INTERNAL SPRINKLER KIT	19'-25'	50	.75	103
◠	EXISTING SPRINKLER	FIELD VERIFY/MISC. MODEL NO'S EXIST	-	-	-	-

SYMBOL	DESCRIPTION	MANUFACTURER/MODEL NUMBER	REMARKS	SDI
P.O.C.	POINT OF CONNECTION	-	APPROXIMATE, FIELD VERIFY	-
▲	EXISTING VALVE	RAIN BIRD EFA-CP SERIES	APPROXIMATE, FIELD VERIFY	-
⊠	EXISTING CONTROLLER	IRRITROL MC-12 (A,B,C AND D)	APPROXIMATE, FIELD VERIFY	-
⊓	CUT AND CAP	-	APPROXIMATE, FIELD VERIFY	-
□P.B.	PULL BOX	BROOKS #3H-L	SEE PLAN & DETAIL	115
———	NON-PRESSURE LATERAL LINE	APPROVED - PVC SCH 40	FOR PIPE 3/4" & LARGER	110
– – –	EX. NON-PRESS. LATERAL LINE	APPROVED - PVC SCH 40	FOR PIPE 3/4" & LARGER	-
⧸⧸⧸	EX. NON-PRESS. LATERAL LINE	TO BE REMOVED / ABANDONED	SEE PLAN	-
– – –	EX. PRESSURE SUPPLY LINE	-	-	-
(1 1/2")	PRESSURE SUPPLY LINE	APPROVED - PVC SCH 40	FOR PIPE 1-1/2" AND SMALLER	110
(2 1/2")	PRESSURE SUPPLY LINE	APPROVED - PVC CL315	FOR PIPE 2" AND LARGER	110

CONSULTANT

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REGISTERED LANDSCAPE ARCHITECT — No. 2342 — Exp. 2/28/15 — STATE OF CALIFORNIA

LI-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION NOTES AND LEGEND

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 24 OF 31 SHEETS

WBS S-00763

APPROVED 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

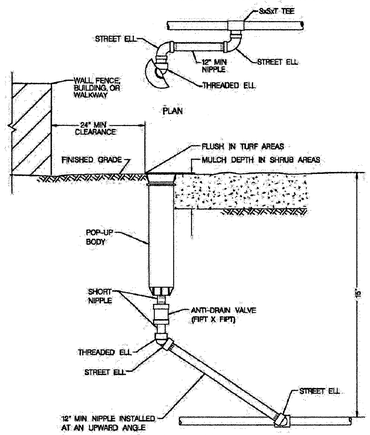
232-1723
ODEZ COORDINATE

1868-6284
ODEN COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-24-D

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

1. FITTINGS SHALL BE PVC SCH 40.
2. NIPPLES AND RISERS SHALL BE PVC SCH 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER OR IN ALL HEADS.
6. LATERAL DEPTH SHALL BE 18" WHEN 12" POP-UP BODIES ARE USED.

LEGEND ON PLANS

SHOW A NUMBER TO INDICATE TYPE HEAD

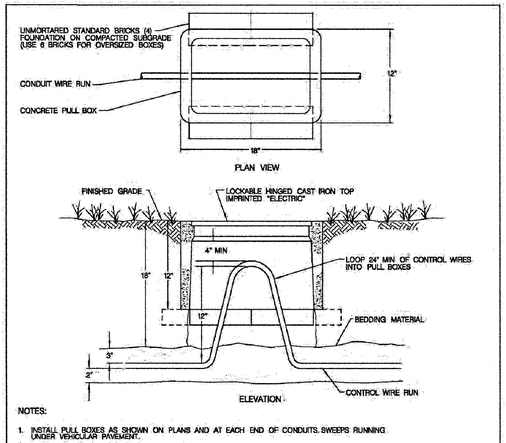
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	07/12

CITY OF SAN DIEGO – STANDARD DRAWING

ROTOR, SPRAY, OR BUBBLER POP-UP HEAD

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 66271 DATE 12/1/2012

DRAWING NUMBER **SDI-103**



NOTES:

1. INSTALL PULL BOXES AS SHOWN ON PLANS AND AT EACH END OF CONDUITS, SWEEPS RUNNING UNDER VEHICULAR PAVEMENT.
2. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
3. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.
4. SPLICES SHALL ONLY BE MADE IN PULL BOXES WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, SOLDERED WITH METALLIC ALLOY, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
5. SPARE WIRE ENDS SHALL BE INSULATED IN THE SAME MANNER AS WIRE SPLICES.
6. MINIMUM SIZE PULL BOX SHALL BE AS SHOWN ABOVE. LARGER BOXES MAY BE NECESSARY TO MEET 4" CLEARANCE REQUIRED.
7. NO SPLICES SHALL BE PERMITTED ON WIRE RUNS OF LESS THAN 300'.
8. THE LETTER "E" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE.

LEGEND ON PLANS

PB

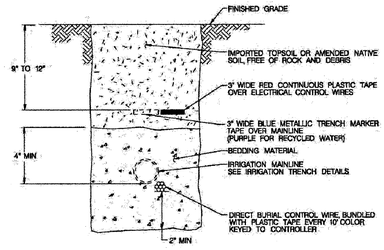
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	07/12

CITY OF SAN DIEGO – STANDARD DRAWING

ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICING NOTES

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 66271 DATE 12/1/2012

DRAWING NUMBER **SDI-115**



NOTES:

1. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.
2. WIRES WHICH RUN UNDER PAVED AREAS SHALL BE INSTALLED IN PVC CONDUIT TWICE THE DIAMETER OF THE WIRE BUNDLE (2" MINIMUM SIZE), EXTENDING 10" MINIMUM BEYOND EDGE OF PAVEMENT.
3. THE LETTER E SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE / CABLE.
4. WHEN CONTROL WIRING CANNOT BE INSTALLED IN A PIPE TRENCH, IT SHALL BE INSTALLED A MINIMUM 18" BELOW FINISH GRADE BUNDLED WITH PLASTIC TAPE.

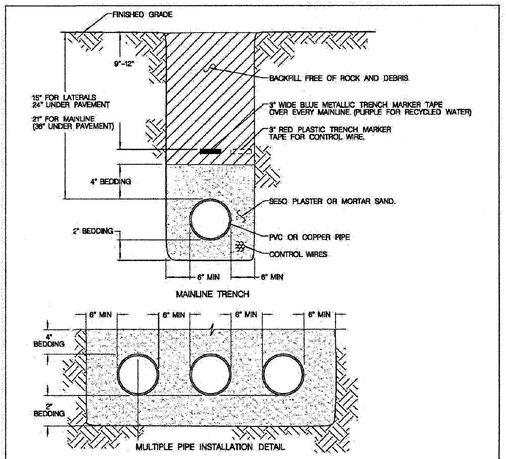
REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	07/12

CITY OF SAN DIEGO – STANDARD DRAWING

CONTROL WIRE INSTALLATION

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 66271 DATE 12/1/2012

DRAWING NUMBER **SDI-119**



NOTES:

1. BACKFILL MATERIAL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 90% MINIMUM.
2. PIPE SHALL LAY FREE IN THE TRENCH WITH NO INDUCED STRAIN AND WITH SUFFICIENT ALLOWANCE FOR EXPANSION AND CONTRACTION.
3. PVC PIPE UNDER PAVEMENT SHALL BE INSTALLED IN A SCH 40 PVC SLEEVE TWICE THE DIAMETER OF THE PIPE (2" MINIMUM SIZE) AND EXTEND 12" MINIMUM BEYOND THE EDGE OF PAVEMENT.
4. THE LETTER "W" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB/SIDEWALK) DIRECTLY ABOVE THE PRESSURE PIPELINE SLEEVE.
5. NO PVC PRESSURE PIPELINE SHALL BE INSTALLED WITHIN 3' OF ANY UTILITY, UNLESS OTHERWISE SPECIFIED.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	07/12

CITY OF SAN DIEGO – STANDARD DRAWING

IRRIGATION TRENCH PVC OR COPPER PIPE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
COORDINATOR R.C.E. 66271 DATE 12/1/2012

DRAWING NUMBER **SDI-110**

CABRILLO HEIGHTS NEIGHBORHOOD PARK– PARK IMPROVEMENTS

LI-6

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

IRRIGATION DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 25 OF 31 SHEETS

WBS S-00763

APPROVED: _____ 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

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CCDM7 COORDINATE

1868-6284
CCDS9 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-25-D

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REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

B C LP-6 ROOT BARRIER (6 PLANTERS TOTAL), ADDITIVE ALTERNATIVE 'B'

B TS-1, TOP SOIL (6 PLANTERS TOTAL), ADDITIVE ALTERNATIVE 'B'

KOE BIP 6 24" BOX B ADDITIVE ALTERNATIVE 'B'

MATCHLINE-SEE SHEET LP-3

NOTES:

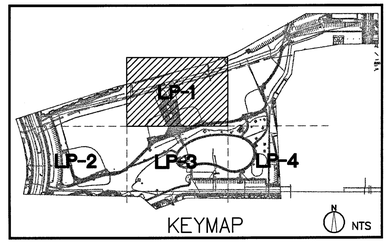
1. REFER TO SHEETS LP-5 AND LP-6 FOR PLANTING DETAILS, NOTES, AND LEGEND.

2. CONTRACTOR SHALL REPLACE ALL PLANTING DISTURBED DURING CONSTRUCTION SAME IN KIND AND SIZE.

3. TREES ARE LOCATED DIAGRAMMATICALLY. LANDSCAPE ARCHITECT SHALL FIELD VERIFY LOCATION OF TREES PRIOR TO PLANTING.

4. PROPOSED TREES SHALL BE LOCATED 15' FROM ALL EXISTING IRRIGATION HEADS.

5. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



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SCALE: 1"= 20'

NORTH

LP-1

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 26 OF 31 SHEETS

WBS S-00763

APPROVED 3/14/13
FOR CITY ENGINEER DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CCDSD COORDINATE

1868-6284
CCDSD COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-26-D

CONSULTANT

KTUA
Planning + Landscape Architecture
3916 Normal Street
San Diego, CA 92103
619.294.4477
fax • 619.294.9965

REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

NOTES:

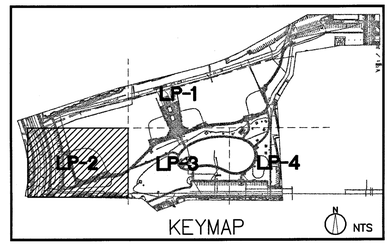
1. REFER TO SHEETS LP-5 AND LP-6 FOR PLANTING DETAILS, NOTES, AND LEGEND.

2. CONTRACTOR SHALL REPLACE ALL PLANTING DISTURBED DURING CONSTRUCTION SAME IN KIND AND SIZE.

3. TREES ARE LOCATED DIAGRAMMATICALLY. LANDSCAPE ARCHITECT SHALL FIELD VERIFY LOCATION OF TREES PRIOR TO PLANTING.

4. PROPOSED TREES SHALL BE LOCATED 15' FROM ALL EXISTING IRRIGATION HEADS.

5. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LP-2

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 27 OF 31 SHEETS

WBS S-00763

APPROVED: 3/14/13
FOR CITY ENGINEER — DATE

KEVIN OLIVER
SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE
PROJECT MANAGER

232-1723
CDM7 COORDINATE

1868-6284
CDM8 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-27-D

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REGISTERED LANDSCAPE ARCHITECT
No. 2342
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CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

MATCHLINE-SEE SHEET LP-1

MATCHLINE-SEE SHEET LP-2

MATCHLINE-SEE SHEET LP-4

REPAIR AND REPLACE ALL PLANTING (SAME IN SIZE AND KIND) DESTROYED DURING CONSTRUCTION

ULM PAR | 8 | 24" BOX | B
ADDITIVE ALTERNATE 'B'

TREE IN LAWN (TYP SYM) | B | LC-7 | B
ADDITIVE ALTERNATE 'B'

KOE BIP | 7 | 24" BOX | B
ADDITIVE ALTERNATE 'B'

REPAIR AND REPLACE ALL TURF DESTROYED DURING CONSTRUCTION, ADDITIVE ALTERNATE 'C' — C

C REPAIR AND REPLACE ALL TURF DESTROYED DURING CONSTRUCTION, ADDITIVE ALTERNATE 'C'

HURLBUT STREET

NOTES:

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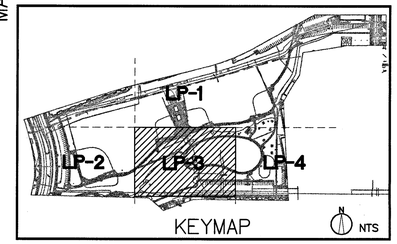
5. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LP-3

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 28 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER — DATE 3/14/13

KEVIN OLIVER, SECTION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

SHEILA BOSE, PROJECT MANAGER

232-1723 CONST COORDINATE

1868-6284 CCBIS COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

36496-28-D

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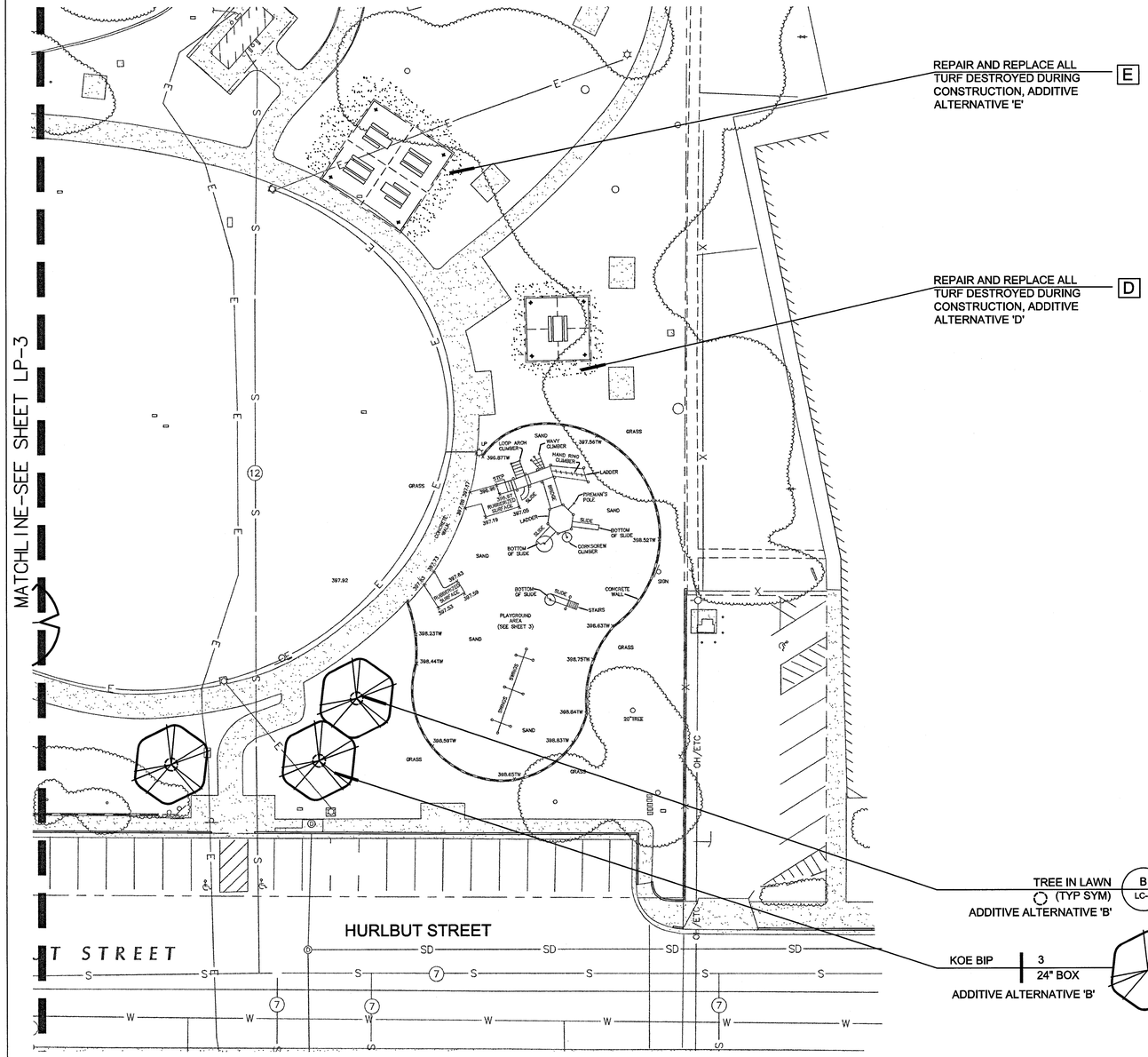
REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS



NOTES:

1. REFER TO SHEETS LP-5 AND LP-6 FOR PLANTING DETAILS, NOTES, AND LEGEND.

2. CONTRACTOR SHALL REPLACE ALL PLANTING DISTURBED DURING CONSTRUCTION SAME IN KIND AND SIZE.

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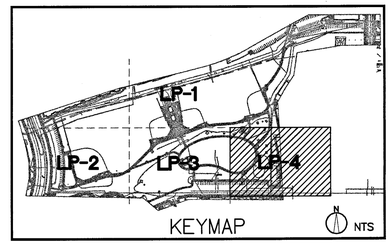
4. PROPOSED TREES SHALL BE LOCATED 15' FROM ALL EXISTING IRRIGATION HEADS.

5. REFER TO SHEET LC-5 FOR ADDITIVE ALTERNATE LEGEND.



0 10 20 40 60

SCALE: 1"= 20'

NORTH

LP-4

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 29 OF 31 SHEETS

APPROVED: _____ DATE: 3/4/13
FOR CITY ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS S-00763

KEVIN OLIVER
DIRECTION HEAD

SHEILA BOSE
PROJECT MANAGER

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CCB17 COORDINATE

1868-6284
CCB18 COORDINATE

36496-29-D

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REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
STATE OF CALIFORNIA

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING NOTES

1. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL MODIFIED LANDSCAPE AREAS.

2. TREES SUPPLIED TO THE PROJECT SHALL MEET THE FOLLOWING MINIMUM STANDARDS:
   A. TREES SHALL HAVE A STRAIGHT TRUNK WITH SYMMETRICAL CROWN.
   B. TREES SHALL HAVE A SUBSTANTIAL, SINGLE, CENTRAL LEADER.
   C. TREE BARK SHALL NOT BE DISCOLORED, SUNKEN, OR SWOLLEN AND SHALL BE FREE OF CUTS AND SCRAPES OR OTHER DAMAGE.
   D. TREES SHOWING GALLERIES, SUN SCALD, OR FROST DAMAGE WILL ON BE ACCEPTED.
   E. THE CALIPER OF THE TREE SHALL BE IN PROPORTION TO THE ROOT BALL.
   F. TREES WITH GIRDLING ROOTS WRAPPING AROUND THE TRUNK OR OTHERWISE ROOT BOUND WILL NOT BE ACCEPTED.
   G. TREE TRUNKS MORE THAN 10% OFF CENTER WILL NOT BE ACCEPTED.
   H. FRESHLY PRUNED TREES WILL NOT BE ACCEPTED.

3. EXACT LOCATIONS OF PLANT MATERIALS SHALL BE APPROVED BY THE CITY RESIDENT ENGINEER IN THE FIELD PRIOR TO INSTALLATION. RESIDENT ENGINEER RESERVES THE RIGHT TO ADJUST PLANTS TO EXACT LOCATION IN THE FIELD.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL PLANT COUNTS AND SQUARE FOOTAGES.

5. VERIFY LOCATIONS OF ALL PERTINENT SITE IMPROVEMENTS INSTALLED UNDER OTHER SECTIONS INCLUDE PIPING AND WIRING. IF ANY PART OF THESE PLANS CANNOT BE FOLLOWED DUE TO SITE CONDITIONS, CONTACT THE CITY LANDSCAPE REPRESENTATIVE FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

6. CONTRACTOR SHALL SUBMIT PHOTOS OF ALL PLANT MATERIAL TO CITY RESIDENT ENGINEER FOR APPROVAL. ANY SUBSTITUTIONS SHALL BE APPROVED BY CITY RESIDENT ENGINEER.

7. MINIMUM TREE SEPARATION DISTANCE:

   TRAFFIC SIGNAL, STOP SIGN - 20 FEET

   UNDERGROUND UTILITY LINES- 5 FEET
   (SEWER- 10 FEET)

   ABOVE GROUND UTILITY STRUCTURES- 10 FEET
   (TRANSFORMERS, HYDRANTS, UTILITY POLES, ETC.)

   DRIVEWAYS- 10 FEET

   INTERSECTIONS- 25 FEET
   (INTERSECTING CURB LINES OF TWO STREETS)

8. THE CONTRACTOR SHALL PROVIDE A 3" LAYER OF BARK MULCH AT ALL PLANTER AREAS WITHIN THE AREA OF WORK.

PLANTING LEGEND

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	MIN. HEIGHT	MIN. SPREAD	REMARKS	DETAIL
TREES								
16	KOE BIP	KOELREUTERIA BIPINNATA	CHINESE FLAME TREE	24" BOX	9'-10'	3'-4'	STRAIGHT TRUNK, FULL HEAD, GOOD COLOR	A, B, C
8	ULM PAR	ULMUS PARVIFOLIA 'TRUE GREEN'	TRUE GREEN ELM	24" BOX	9'-11'	3'-4'	STRAIGHT TRUNK, FULL HEAD, GOOD COLOR	A, B
LAWN								
-	TURF	GN-1 BY PACIFIC SOD		SOD	-	-	HEALTHY, GREEN, GOOD GROWING CONDITION- SEE SPECS	-

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

LP-5

PLANS FOR THE CONSTRUCTION OF:

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING NOTES AND LEGEND

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 30 OF 31 SHEETS

APPROVED _____ DATE 3/14/13
FOR CITY ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WBS S-00763

APPROVED KEVIN OLIVER, SECTION HEAD

SHEILA BOSE, PROJECT MANAGER

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1868-6284 CONTR COORDINATE

36496-30-D

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REGISTERED LANDSCAPE ARCHITECT
No. 2342
Exp. 2/28/15
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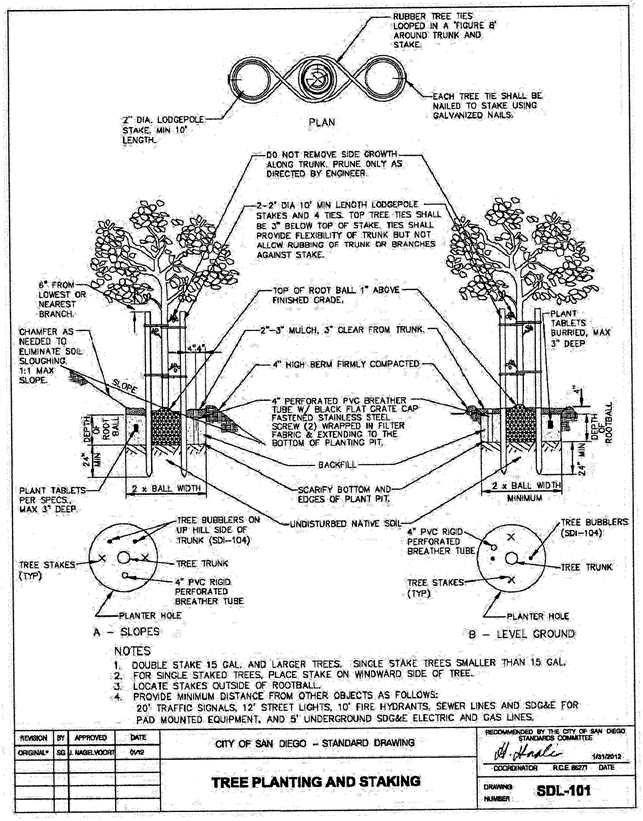


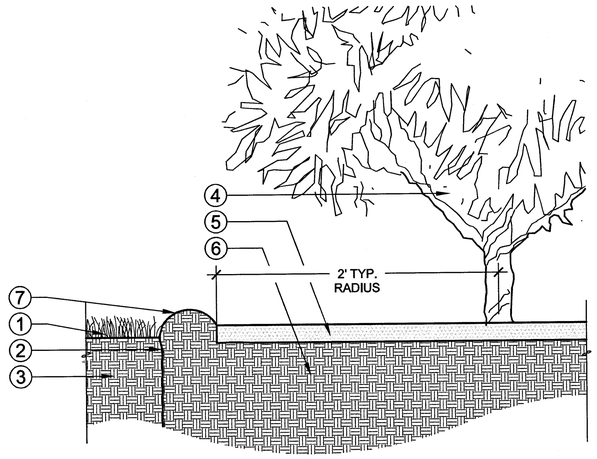
NOTES

1. DOUBLE STAKE 15 GAL. AND LARGER TREES. SINGLE STAKE TREES SMALLER THAN 15 GAL.
2. FOR SINGLE STAKED TREES, PLACE STAKE ON WINDWARD SIDE OF TREE.
3. LOCATE STAKES OUTSIDE OF ROOTBALL.
4. PROVIDE MINIMUM DISTANCE FROM OTHER OBJECTS AS FOLLOWS:
   20' TRAFFIC SIGNALS, 12' STREET LIGHTS, 10' FIRE HYDRANTS, SEWER LINES AND SDG&E FOR PAD MOUNTED EQUIPMENT, AND 5' UNDERGROUND SDG&E ELECTRIC AND GAS LINES.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	SD	J. NAGELVOORT	01/12	TREE PLANTING AND STAKING	COORDINATOR R.C.E. 85271 DATE 1/31/2012
					DRAWING NUMBER SDL-101

A TREE PLANTING

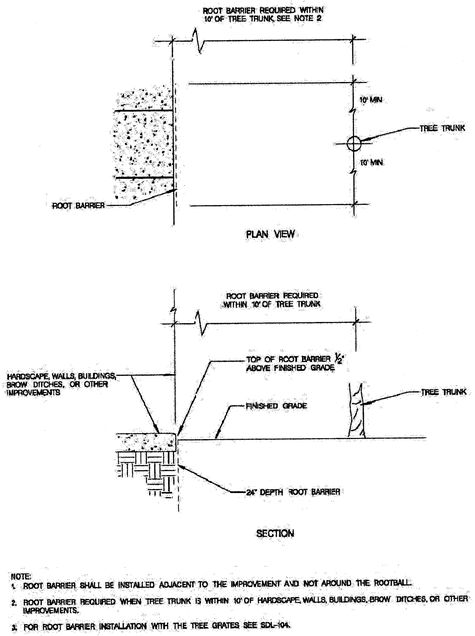
NTS



1. EXISTING LAWN
2. SHOVEL-CUT EDGE REFER DETAIL C THIS SHEET
3. SUBGRADE
4. TREE PLANTING, REFER DETAIL A THIS SHEET
5. 3" LAYER BARK MULCH
6. AMENDED SOIL
7. WATERING BERM, FERMLY COMPACTED

B TREE IN LAWN

NTS



NOTE:
1. ROOT BARRIER SHALL BE INSTALLED ADJACENT TO THE IMPROVEMENT AND NOT AROUND THE ROOTBALL.
2. ROOT BARRIER REQUIRED WHEN TREE TRUNK IS WITHIN 10' OF HARDSCAPE, WALLS, BUILDINGS, BROW DITCHES, OR OTHER IMPROVEMENTS.
3. FOR ROOT BARRIER INSTALLATION WITH THE TREE GRATES SEE SDL-104.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12	ROOT CONTROL BARRIER	COORDINATOR R.C.E. 85271 DATE 1/31/2012
					DRAWING NUMBER SDL-106

C ROOT BARRIER AT TREE PLANTING

SCALE: 1/4"=1'-0"

CONSULTANT

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REGISTERED LANDSCAPE ARCHITECT No. 2342 Exp. 2/28/13 STATE OF CALIFORNIA

LP-6

PLANS FOR THE CONSTRUCTION OF

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS

PLANTING DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 31 OF 31 SHEETS

WBS S-00763

APPROVED FOR CITY ENGINEER 3/14/13 DATE

KEVIN OLIVER SECTION HEAD

SHEILA BOSE PROJECT MANAGER

232-1723 CCBS# COORDINATE

1868-6284 COBSS COORDINATE

36496-31-D

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	KTU+A			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

CABRILLO HEIGHTS NEIGHBORHOOD PARK- PARK IMPROVEMENTS