

Meeting Date: 2/23/2016

Report Type: Consent

Report ID: 2016-00144

Title: Contract: New Market Drive Median Landscape (T15155000)

Location: 2501 New Market Drive, District 1

Recommendation: Pass a Motion: 1) approving the construction plans and specifications for New Market Drive Median Landscape (T15155000) project; 2) awarding the contract to Empire Landscaping, Inc. for an amount not to exceed \$516,600; and 3) authorizing the City Manager or City Manager's designee to execute the contract with Empire Landscaping, Inc. for an amount not to exceed \$516,600.

Contact: Dennis Day, Associate Landscape Architect, (916) 808-7633, Department of Parks and Recreation

Presenter: None

Department: Parks & Recreation Department

Division: Park Development Services

Dept ID: 19001121

Attachments:

- 1-Description/Analysis
- 2-Location Map
- 3-New Market Drive
- 4-Contract

City Attorney Review

Approved as to Form
Sheryl Patterson
2/12/2016 10:55:51 AM

Approvals/Acknowledgements

Department Director or Designee: Pamela Sloan - 2/4/2016 4:59:32 PM

Description/Analysis

Issue Detail: The Department of Parks and Recreation (Department) is seeking approval to award a contract to Empire Landscaping, Inc. for the construction of street median improvements on New Market Drive adjacent to North Natomas Regional Park and Inderkum High School. Department staff has designed and will manage construction of this project at the request of the Department of Public Works. The contract amount is \$516,600. The project will consist of grading, concrete flatwork, river cobble, decomposed granite paving, concrete curb, recycled composite header, automatic irrigation system, electrical, and landscaping. The project is expected to be completed by the end of spring 2016.

Policy Considerations: Sacramento City Code Chapter 3.60 requires competitive bidding for public projects. City Council action is required to approve contracts over \$100,000.

Economic Impacts: The indicated economic impacts are estimates calculated using a calculation tool developed by the Center for Strategic Economic Research (CSER). CSER utilized the IMPLAN input-output model (2009 coefficients) to quantify the economic impacts of a hypothetical \$1 million of spending in various construction categories within the City of Sacramento in an average one-year period. Actual impacts could differ significantly from the estimates and neither the City of Sacramento nor CSER shall be held responsible for consequences resulting from such differences.

This median landscape construction project, which totals \$516,600, is expected to create 2.07 total jobs (2.07 direct jobs and 0.88 indirect jobs). Furthermore, it will create \$318,967 in total economic output (\$201,047 of direct output and another \$117,920 of output through indirect and induced activities).

Environmental Considerations: The Environmental Services Manager has reviewed the project for compliance with the requirements of the California Environmental Quality Act (CEQA) and determined that it is exempt from the provisions of the CEQA pursuant to Class 4 and Section Number 15304 of the CEQA Guidelines, which exempts minor alterations to land to install landscaping.

Sustainability: The New Market Drive Median Landscape project has been reviewed for consistency with the goals, policies, and targets of the City's Sustainability Master Plan (SMP), and the 2030 General Plan. The landscape improvements are consistent with sustainable design through the use of recycled materials, drought-tolerant planting to minimize water use, and use of local vendors.

Committee/Commission Action: None

Rationale for Recommendation: The formal bidding process for the New Market Drive Median Landscape project was posted in accordance with City Code 3.60 and Administrative Policy AP-4002. The bids were received on November 25, 2015.

Staff received six bids and the results are listed below. The low bidder was based on the base bid plus three additive alternatives. The contract being awarded includes all three additives alternates as shown below:

<u>CONTRACTOR</u>	<u>BASE BID</u>	<u>ADDITIVE ALTERNATES</u>	<u>TOTAL BID</u>	<u>LBE %</u>
EMPIRE LANDSCAPING, INC.	\$446,600	\$70,000	\$516,600	13.4

JM SLOVER, INC.	\$426,000	\$93,400	\$519,400	13.2
SAENZ LANDSCAPE CONSTRUCTION	\$441,257	\$108,855	\$550,112	35.0
OLYMPIC LAND CONSTRUCTION	\$470,500	\$89,700	\$560,200	100
GREEN VALLEY LANDSCAPE	\$561,264	\$64,476	\$625,740	17.4
B & M BUILDERS	\$691,665	\$114,180	\$805,845	52.3

The Engineer's estimate for the base bid was \$451,519; with all additive alternates it was \$556,640.

Pursuant to City Code Section 3.60.020 and 3.60.360 E, it was determined that Empire Landscaping, Inc. had the lowest responsive bid and is a responsible bidder.

Financial Considerations: There are sufficient funds in the New Market Drive Median Landscape project (T15155000) to award the contract.

The Department of Public Works Street Maintenance Division will be responsible for the maintenance of the New Market Drive median landscape and the funding for maintenance is part of the Community Facilities District No. 3 (CFD 3) for North Natomas.

Local Business Enterprise (LBE): At an LBE percentage of 13.4%, Empire Landscaping, Inc. exceeded the 5% LBE participation requirement.



NORTH NATOMAS
 REGIONAL PARK

PROJECT AREA

New Market Drive

INDERKUM
 HIGH SCHOOL

PROJECT AREA

Inderkum High School

Via Ingolia



NEW MARKET DR. MEDIAN LANDSCAPE PLAN



Requires Council Approval: No YES Meeting: 2-23-16

Real Estate Other Party Signature Needed Recording Requested

General Information

Form with fields: Type: Public Project, PO Type: Formal Bid-Construction, Attachment: Original No., Original Doc Number, \$ Not to Exceed: \$516,600.00, Other Party: EMPIRE LANDSCAPING, INC., Project Name: NEW MARKET DRIVE MEDIAN LANDSCAPE, Deed: None/Included/Separate, Project Number: T15155000, Bid Transaction #: B16190021009, LBE: 5%

Department Information

Department: Parks and Recreation Division: PPDS
Project Mgr: DENNIS DAY Supervisor: GARY HYDEN
Contract Services: Tim Hopper Date: 10-29-15 Division Mgr: GARY HYDEN
PM Phone Number: 808-7633 Org Number: 19001121

Comment:

Review and Signature Routing

Table with columns: Department, Signature or Initial, Date. Rows for Project Mgr, Accounting, Contract Services, Supervisor, Division Manager.

Table with columns: City Attorney, Signature or Initial, Date. Row for City Attorney: Sheryl Patterson, 1-26-16

Call Tim Hopper x8173 Notify for Pick Up

Table with columns: Authorization, Signature or Initial, Date. Row for Pamela Sloan, Interim Department Director.

Contract Cover/Routing Form: Must Accompany ALL Contracts; however, is not part of the contract. (01-01-09)

For City Clerk Processing. Finalized: Initial, Date. Imaged: Initial, Date. Received: (City Clerk Stamp Here)

B16190021007

**CONTRACT SPECIFICATIONS
FOR
NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)**

Plans Attached

For Pre-Bid Information Call:
DENNIS DAY, Project Manager
(916) 808-7633

Bids to be received before
2:00 PM, Wednesday,
**NOVEMBER 25, 2015 PER
ADDENDUM #2**
New City Hall
Clerk's Public Counter
915 I Street, **5th Floor**
Sacramento, CA 95814

Estimated Construction Cost: \$451,519.00- \$556,640.00

Construction Time: SIXTY (60) WORKING DAYS PLUS ONE HUNDRED EIGHTY (180)
CALENDAR DAYS PLANT ESTABLISHMENT

LBE INFORMATION

The City of Sacramento's Local Business Development program establishes an annual local business enterprise (LBE) participation goal for City contracts, and authorizes City departments to require minimum LBE participation levels in individual contracts. Under City Code section 3.60.270, all bidding contractors must meet or exceed the minimum LBE participation requirement specified in the contract's bid specifications to qualify as a responsive bidder.

For information on meeting the City of Sacramento's Local Business Enterprise (LBE) project goals, please contact Veronica A. Smith at (916) 808-1046, or visit the City of Sacramento's small business web site at: <http://www.cityofsacramento.org/econdev/business-open/small-business-certification.cfm>

B16190021007

**CONTRACT SPECIFICATIONS
FOR
NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)**

Plans Attached

For Pre-Bid Information Call:
DENNIS DAY, Project Manager
(916) 808-7633

Bids to be received before
2:00 PM, Wednesday,
NOVEMBER 18, 2015
New City Hall
Clerk's Public Counter
915 I Street, **5th Floor**
Sacramento, CA 95814

Estimated Construction Cost: \$451,519.00- \$556,640.00

Construction Time: SIXTY (60) WORKING DAYS PLUS ONE HUNDRED EIGHTY (180)
CALENDAR DAYS PLANT ESTABLISHMENT

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**City of Sacramento
Formal Bid / Proposal Delivery Options**

Any vendor and/or consultant submitting an official bid or proposal to the City of Sacramento City Clerk's Office, shall select one of the following delivery options. To ensure responsive receipt of bids and/or proposals within established submission deadlines, address information must exactly match one of the below options.

Effective April 17, 2009, the City of Sacramento's receiving hours are 8am to Noon Monday through Friday. If sending bids via Option 2 - Expedited Services, the bid must be delivered prior to noon or it will not be delivered until the following business day. The City of Sacramento is not responsible for the late receipt of bids and/or proposals where the proposer did not adhere to one of the available delivery options.

Option	Service Provider and/or Service Types	Address
1.	United States Postal Service (USPS) - Regular First Class - Certified or Return Receipt - Priority - Express	Sacramento City Clerk's Office <i>Public Counter, New City Hall</i> <i>915 I Street, 5th Floor</i> Sacramento, CA 95812-2391
2.	Expedited Services – <u>Receiving Hours are 8am to Noon Monday through Friday</u> - FedEx - UPS - DHL	Sacramento City Clerk's Office <i>Public Counter, New City Hall</i> <i>915 I Street, 5th Floor</i> Sacramento, CA 95814-2604
3.	Personal Delivery - Hand Delivery - Courier	Sacramento City Clerk's Office <i>Public Counter, New City Hall</i> <i>915 I Street, 5th Floor</i> Sacramento, CA 95814

Sealed Proposals will be received by the City Clerk of the City of Sacramento at the office of the **City Clerk's Public Counter, New City Hall, 5th Floor**, located at 915 I Street between 9th and 10th Streets, up to the hour of **2:00 PM** on **NOVEMBER 18, 2015** and will be opened as soon thereafter as business allows, in the 2nd floor Hearing Room, Historic City Hall for:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

as set forth in the Contract Documents.

Proposals received and work performed thereunder shall comply with the requirements of Title 3 of the Sacramento City Code. Each Bid Proposal shall be accompanied by bid security of at least 10% of the sum of the Bid Proposal which conforms to the requirements of Section 7.0 of the Instructions to Bidders. The right to reject Proposals or to waive any error or omission in any Bid Proposal received is reserved by the City. Signed proposals shall be submitted on the printed forms contained in the Project Manual and enclosed in an envelope marked: Sealed Bid Proposal for:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

You can view and download the plans and Contract Documents from:

PLANET BIDS

<http://www.planetbids.com/portal/portal.cfm?CompanyID=15300#>

The contractor and all subcontractors shall comply with the rates of wages currently established by the Director of Industrial Relations under provisions of Sections 1773 of the Labor Code of the State of California, a copy of which is on file in the office of the City Clerk and available to any interested party on request. In accordance with Sacramento City Code Section 3.60.180 and Section 1771.5 of the California Labor Code, the payment of the general prevailing rate of per diem wages or the general prevailing rate of per diem wages for holiday and overtime is not required for any construction project of \$25,000 or less, or an alteration, demolition, repair, and maintenance project of \$15,000 or less. The City of Sacramento has an approved Labor Compliance Program. **The City uses an electronic system for the submission of Labor Compliance Reports, which became effective May 1, 2007.** The contractor and every lower-tier subcontractor shall submit certified payrolls and labor compliance documentation electronically at the discretion of and in the manner specified by the City of Sacramento.

Electronic submittal is via a web-based system, accessed on the World Wide Web by a web browser. Each contractor and subcontractor is given a Log On identification and password to access the City of Sacramento's reporting system.

Use of the system may entail additional data entry of weekly payroll information including; employee identification, labor classification, total hours worked and hours worked on this project, wage and benefit rates paid, etc. The contractor's payroll and accounting software might be capable of generating a 'comma delimited file' that will interface with the software.

Department of Industrial Relations Registration and Reporting Requirements (SB 854)

Labor Code Section 1725.5 (enacted by SB 854) requires all contractors bidding on this contract, all subcontractors listed in a bid for this contract, and any contractor or subcontractor performing any work under this contract, to be currently registered with the California Department of Industrial Relations (DIR), as specified in Labor Code Section 1725.5. Labor Code Section 1771.1 (enacted by SB 854) provides that a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal (subject to the requirements of Section 4104 of the Public Contract Code), or engage in the performance of any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code Section

1725.5. Every bidding contractor shall list the contractor's current DIR registration number, and the current DIR registration number of all listed subcontractors, on the Subcontractor and Local Business Enterprise (LBE) Participation Verification Form included in the contractor's bid.

Pursuant to Labor Code Section 1771.1(b): (1) any bid received from a contractor that is not currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5 **shall be rejected as non-responsive**; and (2) any bid listing one or more subcontractors on the bidder's Subcontractor and Local Business Enterprise (LBE) Participation Verification Form that are not currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5, **shall be rejected as non-responsive**, unless the listing was an inadvertent error and any of the conditions specified in Labor Code Section 1771.1(c) apply.

This contract also is subject to compliance monitoring and enforcement by the DIR. For all contracts awarded on or after April 1, 2015, California Labor Code Section 1771.4 (enacted by SB 854) requires the contractor and all subcontractors to furnish electronic payroll records directly to the Labor Commissioner (in addition to City staff via the City's electronic system).

A Fact Sheet summarizing the provisions of SB 854 is attached. This is provided solely for informational purposes, and does not in any way affect the contractor's and subcontractors' obligation to comply in all respects with the provisions of SB 854, including the provisions referenced above, as well as all other applicable laws and regulations.

The contractor shall disseminate these provisions to every lower-tier subcontractor and vendor required to provide labor compliance documentation.

All questions regarding the City's Labor Compliance Program should be directed to the Department's contracts staff or the Labor Compliance Officer at (916) 808-4011.

Pursuant to Sacramento City Code Section 3.60.190, all contractors and subcontractors shall comply with Section 1777.5 et seq., of the California Labor Code governing the employment of apprentices. Pursuant to Sacramento City Code Section 3.60.250 and Public Contract Code Section 22300, any contract awarded pursuant to this invitation to bid shall contain a provision permitting the substitution of securities for monies withheld to ensure performance under the contract, in accordance with the requirements and form specified by the City.

Bid protests must be filled and maintained in accordance with the provisions of Sections 3.60.460 through 3.60.560 of the Sacramento City Code. Bid protests that do not comply with Sections 3.60.460 through 3.60.560 of the Sacramento City Code shall be invalid and shall not be considered. A bid protest fee of \$750.00 is required at the time of filing. The term "bid protest" includes any bid protest that (1) claims that one or more bidders on this contract should be disqualified or rejected for any reason, (2) contests a City staff recommendation to award this contract to a particular bidder, or (3) contests a City staff recommendation to disqualify or reject one or more bidders on this contract. A copy of Sections 3.60.460 through 3.60.560 of the Sacramento City Code may be obtained from the Project Manager, or from the City Clerk, located at 915 I Street, 5th Floor, Sacramento, CA 95814.

NEW PUBLIC WORKS CONTRACTOR REGISTRATION LAW [SB 854]
FACT SHEET

SB 854, a budget trailer bill that was signed into law on June 20, 2014, and became effective immediately, made several significant changes to laws pertaining to the administration and enforcement of prevailing wage requirements by the Department of Industrial Relations (DIR). Among other things, SB 854 established a new public works contractor registration program to replace prior Compliance Monitoring Unit (CMU) and Labor Compliance Program (LCP) requirements for bond-funded and other specified public works projects. The fees collected through this new program will be used to fund all of DIR's public works activities, including compliance monitoring and enforcement, the determination of prevailing wage rates, public works coverage determinations, and hearing enforcement appeals.

Essentials of public works contractor registration program:

- Contractors will be subject to a registration and annual renewal fee that has been set initially at \$300. The fee is non-refundable and applies to all contractors and subcontractors who intend to bid or perform work on public works projects (as defined under the Labor Code).
- Contractors will apply and pay the fee online and must meet minimum qualifications to be registered as eligible to bid and work on public works projects:
 - Must have workers' compensation coverage for any employees and only use subcontractors who are registered public works contractors.
 - Must have Contractors State License Board license if applicable to trade.
 - Must have no delinquent unpaid wage or penalty assessments owed to any employee or enforcement agency.
 - Must not be under federal or state debarment.
 - Must not be in prior violation of this registration requirement once it becomes effective. However, for the first violation in a 12 month period, a contractor may still qualify for registration by paying an additional penalty.
- The registration fee is not related to any project. It is more like a license that enables the registrant to bid on and perform public works.

- DIR will post a list of registered contractors and subcontractors on its website so that awarding bodies and contractors will be able to comply with requirements to only use registered contractors and subcontractors.
- Various protections are built in so that
 - A contractor won't be in violation for working on a private job that is later determined to be public work;
 - The inadvertent listing of an unregistered subcontractor on a bid won't necessarily invalidate that bid;
 - A contract with an unregistered contractor or subcontractor is subject to cancellation but is not void as to past work;
 - An unregistered contractor or subcontractor can be replaced with one who is registered;
 - A contractor whose registration lapses will have a 90 day grace period within which to pay a late fee and renew.
- Registrations will begin after July 1, 2014, once the registration system is ready to go online. The preferred method of payment will be by credit card.
- The requirement to list only registered contractors and subcontractors on bids becomes effective on March 1, 2015. The requirement to only use registered contractors and subcontractors on public works projects applies to all projects awarded on or after April 1, 2015.

Essentials of Public Works Enforcement Fund:

All contractor registration fees will go into the State Public Works Enforcement Fund and be used to fund the following items --

- administration of contractor registration requirement
- all DIR costs for administering and enforcing public works laws
- Labor Commissioner's enforcement of other Labor Code violations on monitored public works projects.

DIR will no longer charge awarding bodies for prevailing wage compliance monitoring and enforcement by the CMU. (*Note: DIR will continue to bill and collect fees from awarding agencies for CMU services provided through June 20, 2014.*)

Related changes in DIR's administration and enforcement of public works requirements:

- Requirements to use CMU or specified alternative (labor compliance program or project labor agreement) for state bond-funded and other specified projects have been eliminated and replaced by requirements that apply to all public works projects (as defined under the Labor Code).
- Awarding bodies are *now* required to submit PWC-100 (contract award notice) for all public works projects. (*This requirement previously applied to about 90% of all projects.*)
- Contractors and subcontractors on *all* public works projects will be required to submit certified payroll records (CPRs) to the Labor Commissioner unless excused from this requirement.
 - This requirement will be phased in as follows:
 - Applies immediately to public works projects that have already been under CMU monitoring, *i.e.* contractors on ongoing projects that have been submitting CPRs to the CMU will continue doing so
 - Will apply to any new projects awarded on or after April 1, 2015
 - May apply to other projects as determined by Labor Commissioner
 - Will apply to all public works projects, new or ongoing, on and after January 1, 2016
 - The Labor Commissioner may make exception to this requirement for
 - Projects covered by qualifying project labor agreement
 - Projects undertaken by one of four remaining awarding bodies with legacy LCPs (Caltrans, City of Los Angeles, County of Sacramento, and Los Angeles Unified School District), so long as those LCPs remain approved by DIR
 - CPRs will be furnished online (as is done currently for CMU). DIR intends to continue making improvements to this process, including creating a means for general contractors to have online access to the CPRs submitted by their subcontractors.
- Requirements for awarding bodies to adopt and enforce a DIR-approved LCP are now limited to: (1) public works projects awarded prior to January 1, 2012 that were under a preexisting LCP requirement; and (2) projects funded in whole or in part by Proposition 84.

**CALIFORNIA LABOR CODE RELATING TO APPRENTICES ON PUBLIC
WORKS PROJECTS**

See following links: www.dir.ca.gov and/or www.leginfo.ca.gov

h:\documents\contract mgmt\new market drive median landscape\contract docs_planet bids\08-california labor code relating to apprentices on public works projects.docx

REQUIREMENTS OF THE NON-DISCRIMINATION IN EMPLOYEE BENEFITS CODE

INTRODUCTION

The Sacramento Non-Discrimination In Employee Benefits Code (the "Ordinance"), codified as Sacramento City Code Chapter 3.54, prohibits City contractors from discriminating in the provision of employee benefits between employees with spouses and employees with domestic partners, and between the spouses and domestic partners of employees.

APPLICATION

The provisions of the Ordinance apply to any contract or agreement (as defined below), between a Contractor and the City of Sacramento, in an amount exceeding \$100,000.00. The Ordinance applies to that portion of a contractor's operations that occur: (i) within the City of Sacramento; (ii) on real property outside the City of Sacramento if the property is owned by the City or if the City has a right to occupy the property; or (iii) at any location where a significant amount of work related to a City contract is being performed.

The Ordinance does not apply: to subcontractors or subcontracts of any Contractor or contractors; to transactions entered into pursuant to cooperative purchasing agreements approved by the Sacramento City Council; to legal contracts of other governmental jurisdictions or public agencies without separate competitive bidding by the City; where the requirements of the ordinance will violate or are inconsistent with the terms or conditions of a grant, subvention or agreement with a public agency or the instructions of an authorized representative of any such agency with respect to any such grant, subvention or agreement; to permits for excavation or street construction; or to agreements for the use of City right-of-way where a contracting utility has the power of eminent domain.

DEFINITIONS

As set forth in the Ordinance, the following definitions apply:

"Contract" means an agreement for public works or improvements to be performed, or for goods or services to be purchased or grants to be provided, at the expense of the City or to be paid out of moneys deposited in the treasury or out of the trust money under the control or collected by the City. "Contract" also means a written agreement for the exclusive use ("exclusive use" means the right to use or occupy real property to the exclusion of others, other than the right reserved by the fee owner) or occupancy of real property for a term exceeding 29 days in any calendar year, whether by singular or cumulative instrument, (i) for the operation or use by others of real property owned or controlled by the City for the operation of a business, social, or other establishment or organization, including leases, concessions, franchises and easements, or (ii) for the City's use or occupancy of real property owned by others, including leases, concessions, franchises and easements.

"Contract" shall not include: a revocable at-will use or encroachment permit for the use of or encroachment on City property regardless of the ultimate duration of such permit; excavation, street construction or street use permits; agreements for the use of City right-of-way where a contracting utility has the power of eminent domain; or agreements governing the use of City property that constitute a public forum for activities that are primarily for the purpose of espousing or advocating causes or ideas and that are generally protected by the First Amendment to the United States Constitution or that are primarily recreational in nature.

"Contractor" means any person or persons, firm partnership or corporation, company, or combination thereof, that enters into a Contract with the City. "Contractor" does not include a public entity.

"Domestic Partner" means any person who has a currently registered domestic partnership with a governmental entity pursuant to state or local law authorizing the registration.

"Employee Benefits" means bereavement leave; disability, life, and other types of insurance; family medical leave; health benefits; membership or membership discounts; moving expenses; pension and retirement benefits; vacation; travel benefits; and any other benefit given to employees. "Employee benefits" shall not include benefits to the extent that the application of the requirements of this chapter to such benefits may be preempted by federal or state.

CONTRACTOR'S OBLIGATION TO PROVIDE THE CITY WITH DOCUMENTATION AND INFORMATION

Contractor shall provide the City with documentation and information verifying its compliance with the requirements of the Ordinance within ten (10) days of receipt of a request from the City. Contractors shall keep accurate payroll records, showing, for each City Contract, the employee's name, address, Social Security number, work classification, straight time pay rate, overtime pay rate, overtime hours worked, status and exemptions, and benefits for each day and pay period that the employee works on the City Contract. Each request for payroll records shall be accompanied by an affidavit to be completed and returned by the Contractor, as stated, attesting that the information contained in the payroll records is true and correct, and that the Contractor has complied with the requirements of the Ordinance. A violation of the Ordinance or noncompliance with the requirements of the Ordinance shall constitute a breach of contract.

EMPLOYER COMPLIANCE CERTIFICATE AND NOTICE REQUIREMENTS

(a) All contractors seeking a Contract subject to the Ordinance shall submit a completed Declaration of Compliance Form (attachment "A"), signed by an authorized representative, with each proposal, bid or application. The Declaration of Compliance shall be made a part of the executed contract, and will be made available for public inspection and copying during regular business hours.

(b) The Contractor shall give each existing employee working directing on a City contract, and (at the time of hire), each new employee, a copy of the notification provided as attachment "B."

(c) Contractor shall post, in a place visible to all employees, a copy of the notice provided as attachment "C."

**DECLARATION OF COMPLIANCE
Equal Benefits Ordinance**

EMPIRE LANDSCAPING, INC.

Name of Contractor

118 HICKORY LANE, DAVIS, CA 95616

Address

The above named contractor ("Contractor") hereby declares and agrees as follows:

1. I have read and understand the Requirements of the Non-Discrimination In Employee Benefits Code (the "Requirements") provided to me by the City of Sacramento

("City") in connection with the City's request for proposals or other solicitations for the performance of services, or for the provision of commodities, under a City contract or agreement ("Contract").

2. As a condition of receiving the City Contract, I agree to fully comply with the Requirements, as well as any additional requirements that may be specified in the City's Non-Discrimination in Employee Benefits Code codified at Chapter 3.54 of the Sacramento City Code (the "Ordinance").

3. I understand, to the extent that such benefits are not preempted or prohibited by federal or state law, employee benefits covered by the Ordinance, are any of the following:

- a. Bereavement Leave
- b. Disability, life, and other types of insurance
- c. Family medical leave
- d. Health benefits
- e. Membership or membership discounts
- f. Moving expenses
- g. Pension and retirement benefits
- h. Vacation
- i. Travel benefits
- j. Any other benefit offered to employees

I agree that should I offer any of the above listed employee benefits, that I will offer those benefits, without discrimination between employees with spouses and employees with domestic partners, and without discrimination between the spouses and domestic partners of such employees.

4. I understand that I will not be considered to be discriminating in the provision or application of employee benefits under the following conditions or circumstances:

DECLARATION OF COMPLIANCE
Equal Benefits Ordinance

- a. In the event that the actual cost of providing a benefit to a domestic partner or spouse, exceeds the cost of providing the same benefit to a spouse or domestic partner of an employee, I will not be required to provide the benefit, nor shall it be deemed discriminatory, if I require the employee to pay the monetary difference in order to provide the benefit to the domestic partner or to the spouse.
- b. In the event I am unable to provide a certain benefit, despite taking reasonable measures to do so, if I provide the employee with a cash equivalent, I will not be deemed to be discriminating in the application of that benefit.
- c. If I provide employee benefits neither to employee's spouses nor to employee's domestic partners.
- d. If I provide employee benefits to employees on a basis unrelated to marital or domestic partner status.
- e. If I submit, to the Program Coordinator, written evidence of making reasonable efforts to end discrimination in employee benefits by implementing policies which are to be enacted before the first effective date after the first open enrollment process following the date the Contract is executed with the City.

I understand that any delay in the implementation of such policies may not exceed one (1) year from the date the Contract is executed with the City, and applies only to those employee benefits for which an open enrollment process is applicable.

- f. Until administrative steps can be taken to incorporate, in the infrastructure, nondiscrimination in employee benefits

The time allotted for these administrative steps will apply only to those employee benefits for which administrative steps are necessary and may not exceed three (3) months from the date the Contract is executed with the City.
- g. Until the expiration of a current collective bargaining agreement(s) where, in fact, employee benefits are governed by a collective bargaining agreement(s).
- h. I take all reasonable measures to end discrimination in employee benefits by either requesting the union(s) involved agree to reopen the agreement(s) in order for me to take whatever steps are necessary to end discrimination in employee benefits or by my ending discrimination in employee benefits without reopening the collective bargaining agreement(s).

DECLARATION OF COMPLIANCE
Equal Benefits Ordinance

- i. In the event I cannot end discrimination in employee benefits despite taking all reasonable measures to do so, I provide a cash equivalent to eligible employees for whom employee benefits (as listed previously), are not available.

Unless otherwise authorized in writing by the City Manager, I understand this cash equivalent must begin at the time the union(s) refuse to allow the collective bargaining agreement(s) to be reopened or no longer than three (3) months from the date the Contract is executed with the City.

- 5. I understand that failure to comply with the provisions of Section 4. (a) through 4. (i), above, will subject me to possible suspension and/or termination of this Contract for cause; repayment of any or all of the Contract amount disbursed by the City; debarment for future contracts until all penalties and restitution have been paid in full; deemed ineligible for future contracts for up to two (2) years; the imposition of a penalty, payable to the City, in the sum of \$50.00 for each employee, for each calendar day during which the employee was discriminated against in violation of the provisions of the Ordinance.
- 6. I understand and do hereby agree to provide each current employee and, within ten (10) days of hire, each new employee, of their rights under the Ordinance. I further agree to maintain a copy of each such letter provided, in an appropriate file for possible inspection by an authorized representative of the City. I also agree to prominently display a poster informing each employee of these rights.
- 7. I understand that I have the right to request an exemption to the benefit provisions of the Ordinance when such a request is submitted to the Procurement Services Division, in writing with sufficient justification for resolution, prior to contract award.

I further understand that the City may request a waiver or exemption to the provisions or requirements of the Ordinance, when only one contractor is available to enter into a contract or agreement to occupy and use City property on terms and conditions established by the City; when sole source conditions exist for goods, services, public project or improvements and related construction services; when there are no responsive bidders to the Ordinance requirements and the contract is for essential goods or services; when emergency conditions with public health and safety implications exist; or when the contract is for specialized legal services if in the best interest of the City.

- 8. In consideration of the foregoing, I shall defend, indemnify and hold harmless, the City, its officers and employees, against any claims, actions, damages, costs (including reasonable attorney fees), or other liabilities of any kind arising from any violation of the Requirements or of the Ordinance by me.

**DECLARATION OF COMPLIANCE
Equal Benefits Ordinance**

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am authorized to bind the Contractor to the provisions of this Declaration.



Signature of Authorized Representative

1-20-2016
Date

Ahmet Gulcu
Print Name

President
Title



**YOUR RIGHTS UNDER THE CITY OF SACRAMENTO'S
NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS
ORDINANCE**

On (date), your employer (the "Employer") entered into a contract with the City of Sacramento (the "City") for (contract details), and as a condition of that contract, agreed to abide by the requirements of the City's Non-Discrimination In Employee Benefits By City Contractors Ordinance (Sacramento City Code Section 3.54).

The Ordinance does not require the Employer to provide employee benefits. The Ordinance does require that if certain employee benefits are provided by the Employer, that those benefits be provided without discrimination between employees with spouses and employees with domestic partners, and without discrimination between the spouse or domestic partner of employees.

The Ordinance covers any employee working on the specific contract referenced above, but only for the period of time while those employees are actually working on this specific contract.

The included employee benefits are:

- Bereavement leave
- Disability, life and other types of insurance
- Family medical leave
- Health benefits
- Membership or membership discounts
- Moving expenses
- Pension and retirement benefits
- Vacation
- Travel benefits
- Any other benefits given to employees

(Employee Benefits does not include benefits that may be preempted by federal or state law.)

If you feel you have been discriminated or retaliated against by your employer in the terms and conditions of your application for employment, or in your employment, or in the application of these employee benefits, because of your status as an applicant or as an employee protected by the Ordinance, or because you reported a violation of the Ordinance, and after having exhausted all remedies with your employer,

You May . . .

- Submit a written complaint to the City of Sacramento, Contract Services Unit, containing the details of the alleged violation. The address is:

City of Sacramento
Contract Services Unit
915 I St., 2nd Floor
Sacramento, CA 95814

- Bring an action in the appropriate division of the Superior Court of the State of California against the Employer and obtain the following remedies:
 - Reinstatement, injunctive relief, compensatory damages and punitive damages
 - Reasonable attorney's fees and costs



YOUR RIGHTS UNDER THE CITY OF SACRAMENTO'S NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

If your employer provides employee benefits, they must be provided to those employees working on a City of Sacramento contract without discriminating between employees with spouses and employees with domestic partners.

The included employee benefits are:

- Bereavement leave
- Disability, life and other types of insurance
- Family medical leave
- Health benefits
- Membership or membership discounts
- Moving expenses
- Pension and retirement benefits
- Vacation
- Travel benefits
- Any other benefits given to employees

If you feel you have been discriminated against by your employer . . .

You May . . .

- o Submit a written complaint to the City of Sacramento, Contract Services Unit, containing the details of the alleged violation. The address is:

City of Sacramento
Contract Services Unit
915 I St., 2nd Floor
Sacramento, CA 95814
- o Bring an action in the appropriate division of the Superior Court of the State of California against the employer and obtain reinstatement, injunctive relief, compensatory damages, punitive damages and reasonable attorney's fees and costs.

Discrimination and Retaliation Prohibited.

If you feel you have been discriminated or retaliated against by your employer in the terms and conditions of your application for employment, or in your employment, because of your status as an applicant or as an employee protected by the Ordinance, or because you reported a violation of this Ordinance . . .

You May Also . . .

Submit a written complaint to the City of Sacramento, Contract Services Unit, at the same address, containing the details of the alleged violation.

B16190021007

BID PROPOSAL FORMS

PLEASE REMOVE AND
COMPLETE
THE FOLLOWING DOCUMENTS
AND
SUBMIT AS
THE BID PROPOSAL
PACKAGE

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

B16190021007

ADDENDUM #2

November 16, 2015

To all Potential Bidders:

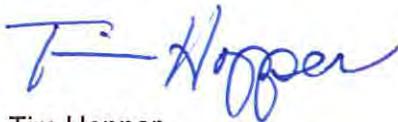
Attached hereto are addenda items, which shall be incorporated into the Invitation for Bid for above noted project. These changes shall be considered as part of the original documents, as if they were originally provided therein, and as such shall be used as contractual documents. All other terms, conditions, and specifications of the Invitation for Bid remain unchanged. Bidders must acknowledge receipt of this addendum prior to the hour and date specified in the bid request, or as amended, by one of the following methods:

- (a) By acknowledging receipt, in the proposal response submitted; or
- (b) By separate letter which includes a reference to the Invitation for Bid and addendum number.

Failure to acknowledge receipt of this addendum in one of the above methods and cause acknowledgment to be received by the City Clerk Office at 915 I Street, Sacramento, CA 95814, prior to the hour and date specified in the Request for Proposal, **may result in rejection of your offer.** If by virtue of this addendum you decide to change a proposal already submitted, such change may be made by letter, provided such letter makes reference to the Invitation for Bid number and this addendum, and is received prior to the opening hour and date specified.

For any questions related to this Addendum, contact me at thopper@cityofsacramento.org or at 916.808.8173 for contractual questions. For technical questions contact the project manager, DENNIS DAY, at dday@cityofsacramento.org or at 916.808.7633.

Very truly yours,



Tim Hopper
Contracts & Compliance Specialist

Bid Number: B16190021007

ADDENDUM #2 DATE: November 16, 2015

NEW MARKET DR. MEDIAN LANDSCAPE (PN: T15155000)

Addendum #2 includes:

THE BID DUE DATE HAS CHANGED TO NOVEMBER 25, 2015.

UNCHANGED PORTIONS OF THE PLANS AND SPECIAL PROVISIONS REMAIN IN EFFECT.

Cc: File

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

B16190021007

ADDENDUM #1

November 12, 2015

To all Potential Bidders:

Attached hereto are addenda items, which shall be incorporated into the Invitation for Bid for above noted project. These changes shall be considered as part of the original documents, as if they were originally provided therein, and as such shall be used as contractual documents. All other terms, conditions, and specifications of the Invitation for Bid remain unchanged. Bidders must acknowledge receipt of this addendum prior to the hour and date specified in the bid request, or as amended, by one of the following methods:

- (a) By acknowledging receipt, in the proposal response submitted; or
- (b) By separate letter which includes a reference to the Invitation for Bid and addendum number.

Failure to acknowledge receipt of this addendum in one of the above methods and cause acknowledgment to be received by the City Clerk Office at 915 I Street, Sacramento, CA 95814, prior to the hour and date specified in the Request for Proposal, **may result in rejection of your offer.** If by virtue of this addendum you decide to change a proposal already submitted, such change may be made by letter, provided such letter makes reference to the Invitation for Bid number and this addendum, and is received prior to the opening hour and date specified.

For any questions related to this Addendum, contact me at thopper@cityofsacramento.org or at 916.808.8173 for contractual questions. For technical questions contact the project manager, DENNIS DAY, at dday@cityofsacramento.org or at 916.808.7633.

Very truly yours,



Tim Hopper
Contracts & Compliance Specialist

NEW MARKET DR. MEDIAN LANDSCAPE (PN: T15155000)

Addendum #1 includes:

1. **Revised Bid Proposal Form** – The bid proposal form has been revised to eliminate Bid Item 1 –City Building Permit Inspection Coordination, which is not required, since there will be no City Building permit.
2. **Revised Schedule of Values Form** – The schedule of values form has been revised to eliminate Bid Item 1 – City Building Permit Inspection Coordination.

3. **Plan - Correction:**

On sheet L5, L6 and L7, Irrigation Plans, replace the entire plan sheets with the revised sheets L5, L6 and L7 Irrigation Plans, with a revised dated 11/10/15, attached.

4. **Specification - Correction:**

In the Specifications, the entire **Item No. 1 – City Building Permit Coordination** specification is eliminated, since there will be no City Building permit issued on this project.

In the Specifications, for **Item No. 15 – Irrigation Controller**, replace the entire bid item specification with the following revised specification:

Item No. 15 – Irrigation Controller

This item shall consist of furnishing and installing a 24-volt Central Control System as shown on the plans in conformance with Section 34 of the Standard Specifications and these Special Provisions.

A. **Central Computer Software**

- a. The Central Computer software shall have the ability to communicate with and control up to 9,999 controllers, from a single or multiple computer location(s).
- b. The software shall be capable of operating with multiple communication modes and shall allow for mixed modes within the same system.
- c. The software for the Central Computer shall allow for the uploading and downloading of all programs and log data by controller or groups of controllers.
- d. All programming shall be capable at the Central Computer as well as at each individual field controller.
- e. The software shall allow direct, real-time access to run stations, run programs, check for flows, check master valve operation, and turn controllers on or off.
- f. The software shall be an intuitive Windows-based menu driven format and shall not conflict with any other software programs running on the same computer.
- g. Weather data from an ET gage, weather station, and/or a Tipping Rain Bucket shall be uploaded automatically and redistributed to all field units. Each individual field controller shall then calculate station run times based on the % of ET dialed

in for each station and the programmed precipitation rate for each station. The system shall still allow the operator the opportunity to use his expertise and input to have each station adjust automatically to compensate for different types of soils, grasses, plant materials, exposures, etc.

- h. Failure of the central computer system or communication links to the field controller shall not affect normal, water management and/or flow management operation of irrigation controllers.
- i. Water usage data shall be automatically retrieved monthly from each controller and written to text files for easy placement into windows graphing programs.
- j. The software shall be able to poll any controller with a Tipping Rain Bucket or weather station throughout various times of the day and/or night and automatically turn off all controllers due to an operator set rain amount, communicating on the system instantly.
- k. The software shall allow all program data, log data, summary data and alert data for each controller to be selectively printed by controller, by group, or by manager.
- l. The software shall allow users to view and/or override any changes made at irrigation controllers. The user can identify who accessed any field unit, what was done, and when the user left, through the use of a multi-level access control feature.
- m. Alerts shall print each day based on operator-set filters. This feature shall print only program changes, communication status and problem flags selected by the operator. The software shall report alarm conditions at a minimum to include the following:
 - 1. Communication failures and successes (identifies type of problem, time, and location).
 - 2. High or excessive, low flow and no flow conditions with the time (AM/PM) of the occurrence for each individual valve.
 - 3. Main line breaks during scheduled irrigation as well as all other times when flow exceeds user set parameters.
 - 3. Manual watering and manual operation by station and time in the field controller.
 - 4. Current (amperage) alarms by station and time, both high and low, and output shorts due to solenoid failure.
- n. The software program shall be able to provide and print a water usage report per station, per controller, per month, per year in gallons or HCF, the total as well as in the following categories: programmed irrigation, test and manual, radio remote usage, and non-controller (quick coupler, hose bib usage, bleeding valves manually, etc.).
- o. The software program shall be able to provide and print a water management report including graph depicting by month the amount of irrigation water used compared to a monthly allotment in HCF or gallons, and ET weather demand for the month, with a percent savings without the need to export data to any formatting program in order to produce said reports.

B. Field Equipment

1. Controllers - All controllers shall have the following specifications and capabilities:
 - a. Shall be installed per manufacturer's specifications, and as specified herein.
 - b. Shall be capable of fully automatic, semi-automatic, and manual operation using a keypad that is an integrated part of the controller. Each controller shall be capable of storing irrigation schedules, monitor and manage flow all without the Central Computer (i.e. if the Central Computer is turned off, removed, or if communication from/to the Central Computer fails, the field controllers will continue to perform weather and flow management functions).
 - c. Backlit display shall have a minimum of sixteen (16) lines by forty (40) characters so that scrolling through menus is minimized. The display shall allow the user to easily move from screen to screen through an intuitive, self-prompting display so that it is easier for the user to program, read and understand the controller. The controller shall display an area description for each station including the station's location, the type of plant material irrigated and type of irrigation equipment used.
 - d. The controller shall have the built-in capacity for sensing flow via a flow meter input and utilizing a master valve without the addition of sensor boards, decoders, or other pieces of equipment.
 - e. There shall be a minimum of seven (7) regular irrigation programs with individual station cycle and soak watering, plus two additional syringe/propagation programs each with minimum of six (6) start times, adjustable station run times and with automatic programming capability up to a specific date. When the date is reached the controller shall automatically cease irrigating the manual program.
 - f. The controller shall have a water budget feature that provides monthly water volume allotments proportionate to historical evapo-transpiration (ET) which is interactive with all programs, and able to alert the user (via on screen alarms) when the controllers' water usage is more than the user set water budget.
 - g. A full year master schedule to allow twelve (12) month programming shall be a standard feature of the controller.
 - h. Programming shall be based on a seven (7), fourteen (14), twenty-one (21) or twenty-eight (28) day scheduling and shall be able to irrigate in minutes and as a % of ETo.
 - i. The controller shall be able to receive real-time weather data directly from an ET gage and tipping rain bucket, and as a stand-alone controller automatically use the data to calculate appropriate run times for each station without use of a central control system.
 - j. The controller shall be able to irrigate with the use of soil moisture sensing whereas the soil moisture sensor overrides programmed irrigation minutes, or minutes calculated when using real-time weather data. The soil moisture sensor used with the irrigation control system shall be by the same manufacturer.

- k. The controller shall have flow management capability as a standard feature whereas the controller shall learn each station's expected GPM flow rate automatically at night over several irrigations, and use the mainline GPM capacity programmed, to operate up to four (4) valves at the same time plus the master valve to shorten the water window.
- l. Alerts shall be able to be processed and responded to at both the field controller location and at the Central Computer location.
- m. When an alert, such as High Flow is indicated on the controller, the station with the High Flow shall still attempt to come on each watering cycle and then shut off, rather than having the alert keep the station off until someone clears the alert from the central computer or at the field controller.
- n. The controller shall have built-in amperage meter to accurately measure and diagnose valve solenoid electrical problems such as "no current", "station short", "under current", "over current", etc.
- o. The controller shall have an irrigation test program or "walk-thru" program that has a delay time to allow a user to walk to a certain area before valves come on. The controller shall then manually water a sequence of predetermined stations for set program times. The programmable delay time shall be an integral part of the irrigation test program. The controller shall be capable of operating a test program without affecting the controller's normal program station times or without terminating a regular watering schedule.
- p. The system shall be capable of allowing the user to make changes to the irrigation program via either at the Central Computer or at the field controller without requiring the user to go back to the Central Computer to accept the change.
- q. The controller shall allow for operator-set water window, which prevents irrigation from continuing beyond a set end time. Remaining run-times shall be carried in a hold-over table and shall be applied at the next scheduled irrigation with the system prioritizing which valve to operate based on accumulated ET and the hold-over time.
- r. The system shall provide a multi-level access control up to four (4) levels for controlling who programs what at each controller. The controller shall have the ability to track and report on when an access code or "individual" user logged into the controller, what keys were pushed while there, and when an access code logged out of the controller. These shall be date and time stamped.
- s. The controller shall be able to display for the user a detailed water usage report categorizing for each month the usage during scheduled irrigation, test and manual key operation, and for non-controller usage such as bleeding valves on manually, using quick couplers or hose bibs.
- t. Optional Radio Remote receiver board shall be built-in the controller and a hand-held radio remote transmitter will be supplied so that the end user can trouble shoot valves remotely without having to go the controller itself. The hand-held transmitter shall display operational information such as valve on, gallon per minute flow rate and electrical draw in amps.

- u. The field controller(s) shall be capable of utilizing a single mode or a combination of modes of hardwire cable, standard telephone, Ethernet, point-to-point spread spectrum radio, local radio in the 450-470 MHz range, fiber optic modems, or GPRS wireless modem application as communication links to the central computer. The field controllers shall be capable of directly receiving, storing, and operating commands downloaded from the central computer.

2. Controller Enclosures

- a. The enclosure shall be of a vandal and weather resistant nature manufactured entirely of 304-grade stainless steel, and the top shall be 12 gauge and the body 14 gauge. The main housing shall be louvered upper and lower body to allow for cross flow ventilation. A stainless steel backboard shall be provided for the purpose of mounting electronic and various other types of equipment. The backboard shall be mounted on four stainless steel bolts that will allow for removal of the backboard.
- b. The 38-inch height with flip top shall provide easy access for programming from a standing position under normal installations.
- c. The pre-assembled vandal resistant enclosure shall come complete with lightning and surge protection and all terminals shall be factory labeled. The pre-assembled enclosure shall come provided with an On/Off switch to isolate the controller along with a GFI receptacle. An optional radio antenna shall be pre-mounted and connected on SSE-R enclosure. The enclosure shall include 2-7/8", 1-1/2" thick, 6-pin cylinder, die-cast steel padlock with unique shackles design.
- d. Factory pre-assembled enclosure with controller shall carry a full UL listing.
- e. The enclosure and installed equipment within shall carry a five (5) year warranty.

3. Flow Meters

- a. The flow meter shall use two #14 AWG; one red, and one black in 1" PVC conduit to connect to the irrigation controller. The maximum wire run between flow meter and controller shall be 2000 ft. The flow meter shall send low voltage digital pulses back to the controller and therefore all electrical connections must be waterproof and shall resist any moisture entry.
- b. It is intended that all wire runs between the controller and flow meter shall be direct pulls and shall have no splices. If wire splices are unavoidable, they shall be installed in a valve box with Spears DS-100 connectors with Spears sealant or 3M Scotchlok No. 3570 connector sealing pack used, with valve boxes properly labeled.
- c. Each flow meter shall have the following characteristics:
 - 1. Housing to be a Sch 80 polyvinyl chloride tee or bronze tee
 - 2. Have a pulsing output that operates at 9VDC and a pulse rate that is proportionate to the GPM
 - 3. Fully compatible with the internal interface at each field controller

4. Powered by the controller
 5. Replaceable metering insert shall feature a six-bladed design with a proprietary, non-magnetic sensing mechanism
 6. Supplied by the same manufacturer as the irrigation controller.
- d. Several controllers, up to twelve shall be able to share one or multiple points of connection with multiple flow sensors when each controller has been specified with the –FL (*FLOWSENSE™*) option. This option shall allow several controllers to share the irrigation programs and flow information for:
1. Monitoring of system flows.
 2. Shortening water windows by maximizing the number of valves on without exceeding system flow capacity.
 3. Turning OFF valves with excessive flow rates due to broken lateral lines.
 4. Tracking water usage and comparing to a water budget.
 5. Eliminating relays when sharing pumps and master valves.
 6. Working in the field without the need for a central computer.
- e. The communication method between controllers specified with the –FL (*FLOWSENSE™*) option shall be either hardwire cable or spread spectrum radio. The hardwire cable shall be a 4 conductor communication cable known as Paige P-7171-D in conduit. The controllers shall be specified with the –M communication option. The radio link shall be spread spectrum and the controllers shall be specified with the –SR communication option when hardwire is not feasible or cost effective. This allows the user to link several controllers with unlicensed frequency hopping radios. A radio survey conducted by the manufacturer is required prior to installation to confirm proper communication.
- f. The hardwire and radio link options for the *FLOWSENSE™* option shall be mixed on a project to create the most efficient system possible. g. A field controller shall be able to interface and read up to three flow meters varying in size when the controller is specified as a –F option

4. Weather Monitoring

- a. The Central Control system shall include a remote connected ET gage where shown on the plans and specifications. The ET measuring device shall be powered by the selected field controller. ET is measured directly in 0.01" increments and pulses from the gage shall be sent directly to the field controller. The daily, on-site ET data shall be stored in a 28-day table in the controller.
- b. Paige P-7171-D cable shall be installed in conduit and shall be run from the location of the ET gage back to the controller. Maximum length of cable shall be 1,000 feet. Wire runs shall be direct pulls without underground splices.

- c. The top surface of the gage shall be 3'4" above grade. The location shall be representative of the area to be irrigated, free of any obstructions to sunlight and wind. The location of the gage shall be located in an area where water from sprinkler heads does not hit the top surface of the gage. Manufacturer shall be called for assistance in correct placement of the ET Gage.
- d. A vandal-resistant stainless-steel enclosure shall be used to protect the ET gage. The ET gage shall be mounted on a poured concrete base 18"x18"x 6" with the enclosure metal base and stake embedded into the slab. The horizontal plate shall be one inch (1") below the poured concrete, and the finish grade shall be two inches (2") below top of the concrete base.
- e. The Central Control system shall include a remote connected Tipping Rain Bucket where shown on the plans and specifications. The rain measuring device shall be wired using the 60' of 2-conductor cable supplied with the Tipping Rain Bucket to the selected field controller designated as a -RB model. The cable should be installed in conduit and the connections are to be made at a terminal strip inside the enclosure. Maximum length of cable run shall be 200 feet.
- f. The Rain Bucket shall accurately measure rainfall in 0.01" increments by means of a tipping and emptying device mounted below the center of the collection dish.
- g. The controller shall provide the following programming parameters for rain:

Stop Irrigation after x.xx inches

Maximum Rain in One Hour is x.xx inches

Maximum Rain in 24 Hours is x.xx inches

Let Rain only build up to x.xx inches
- h. The system shall be able to interface with a complete weather station and shall be manufactured by Campbell Scientific, model 106 or equal with Loggernet software and necessary Datalogger hardware or equal.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Irrigation Controller as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

THE ORIGINAL BID DUE DATE OF NOVEMBER 18, 2015, REMAINS THE SAME.

UNCHANGED PORTIONS OF THE PLANS AND SPECIAL PROVISIONS REMAIN IN EFFECT.

Park Planning and Development Services

CONTRACTOR NAME: _____

**TO THE HONORABLE CITY COUNCIL
 SACRAMENTO, CALIFORNIA:**

In compliance with the Contract Documents, the undersigned hereby proposes to furnish all required labor, materials, supervision, transportation, equipment, services, taxes and incidentals required for:

**NEW MARKET DR. MEDIAN LANDSCAPE
 (T15155000)**

in the City and County of Sacramento, California.

The Work is to be done in strict conformity with the Contract Documents now on file in the Office of the City Clerk, for the following sum:

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total
1	Not Used	1	LS	N/A	N/A
2	Clearing and Grubbing	1	LS	\$	\$
3	Erosion and Sediment Control	1	LS	\$	\$
4	Traffic Control	1	LS	\$	\$
5	Site Grading	1	LS	\$	\$
6	Aggregate Base to Place	1	LS	\$	\$
7	Stabilized Decomposed Granite Pavement to Place	1	LS	\$	\$
8	6" Concrete Mow Strip to Construct	1	LS	\$	\$
9	18" Colored Concrete Band to Construct	1	LS	\$	\$
10	River Cobbles to Place	1	LS	\$	\$
11	Header Board to Place	1	LS	\$	\$

Park Planning and Development Services

12	Irrigation Water Tap, Meter and Backflow Preventer	1	LS	\$	\$
13	Electrical System to Install	1	LS	\$	\$
14	Automatic Irrigation System	1	LS	\$	\$
15	Irrigation Controller	1	LS	\$	\$
16	Booster Pump to Install	1	LS	\$	\$
17	Trees to Plant (15 Gal.)	1	LS	\$	\$
18	Trees to Plant (24" Box)	1	LS	\$	\$
19	Shrub and Groundcover Areas to Plant	1	LS	\$	\$
20	Landscape Weed Fabric to Place	1	LS	\$	\$
21	Bark Mulch to Place	1	LS	\$	\$
22	Plant Establishment (180 Days)	1	LS	\$	\$
BASE BID SUBTOTAL					\$

ADDITIVE ALTERNATES BID ITEMS

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Total
A1	Street Corner Paving, Irrigation and Landscaping	1	LS	\$	\$
A2	California Fan Palms (15' BTH)	2	EA	\$	\$
A3	Additional Corner Irrigation and Landscaping	1	LS	\$	\$
ADDITIVE ALTERNATE SUBTOTAL					\$
BASE BID PLUS ADDITIVE ALTERNATES TOTAL					\$

CONTRACTOR NAME: _____

TOTAL \$ _____

Park Planning and Development Services

SCHEDULE

If awarded the Contract, the undersigned agrees to sign said Contract and furnish the necessary surety bonds and insurance certificates within ten (10) days after receipt of the notice of award of the Contract, and to begin work within fifteen (15) days after the issuance of the Notice to Proceed by the City.

It is understood that this Bid Proposal is based upon completion of the Work within a period of **SIXTY (60) WORKING DAYS PLUS A ONE HUNDRED EIGHTY (180) CALENDAR DAYS PLANT ESTABLISHMENT PERIOD**. The Contractor shall refer to Section 1.B Completion Time of the Special Provisions for calculation of the completion date.

DETERMINATION OF LOW BIDDER

SPECIAL CONDITION: THE DETERMINATION OF THE LOW BIDDER WILL BE BASED ON THE BASE BID AND ALL ADDITIVE ALTERNATES. HOWEVER, THE CONTRACT AWARD MAY NOT INCLUDE ALL OF THE ADDITIVE ALTERNATIVES. THE CITY RESERVES THE RIGHT TO SELECT WHICH ADDITIVE ALTERNATIVES, IF ANY, TO INCLUDE IN THE CONTRACT AWARD IN ADDITION TO THE BASE BID WORK.

CORRECTING BID PROPOSAL: In determining the amount bid by each bidder, the City shall disregard mathematical errors in addition, subtraction, multiplication, and division that appear obvious on the face of the Bid Proposal. When such a mathematical error appears on the face of the Bid Proposal, the City shall have the right to correct such error and to compute the total amount bid by said bidder on the basis of the corrected figure or figures.

When an item price is required to be set forth in the Bid Proposal, and the total for the item set forth separately does not agree with a figure which is derived by multiplying the item price times the Engineer's estimate of the quantity of work to be performed for said item, the item price shall prevail over the sum set forth as the total for the item unless, in the sole discretion of the City, such a procedure would be inconsistent with the policy of the bidding procedure. The total paid for each such item of work shall be based upon the item price and not the total price. Should the Bid Proposal contain only total price for the item and the item price is omitted, the City shall determine the item price by dividing the total price for the item by the Engineer's Estimate of the estimated quantities of work to be performed as items of work.

If the Bid Proposal contains neither the item price nor the total price for the item, then it shall be deemed incomplete and the Bid Proposal shall be disregarded.

BIDDER'S DECLARATION

The undersigned has examined the location of the proposed Work, the local conditions at the place where the Work is to be done, is familiar with the Contract Documents and is familiar and expressly agrees to the liquidated damages provision of the Contract Documents. The undersigned has checked carefully all of the foregoing figures and understands that the City of Sacramento will not be responsible for any errors or omissions on the part of the undersigned in making up this Bid Proposal.

Park Planning and Development Services

Enclosed is Bid Proposal Guarantee, as required, consisting of a bidder's bond or other acceptable security for not less than ten percent (10%) of the amount Bid Proposal.

The undersigned agrees that all addenda received and acknowledged herein shall become a part of and be included in this Bid Proposal. This Bid Proposal includes the following addenda:

Add. #	_____	DATE	_____
Add. #	_____	DATE	_____
Add. #	_____	DATE	_____

NOTE: State whether your concern is a corporation, a co-partnership, private individual, or individuals doing business under a firm name. If the Bidder is a corporation, the Bid Proposal must be executed in the name of the corporation and must be signed by a duly authorized officer of the corporation. If the Bidder is a partnership, the Bid Proposal must be executed in the name of the partnership and one of the partners must subscribe their signature thereto as the authorized representative of the partnership.

AMOUNT OF BID PROPOSAL GUARANTEE ENCLOSED:

(\$ _____) not less than ten percent (10%) of amount Bid Proposal

<p><u>FOR CITY USE ONLY</u></p> <p>BID BOND SECURITY</p> <p><input type="checkbox"/> Properly Signed</p> <p><input type="checkbox"/> Improperly Signed</p> <p><input type="checkbox"/> Not Included</p> <p><input type="checkbox"/> Not Required</p> <p>TYPE OF DEPOSIT</p> <p><input type="checkbox"/> Bid Bond</p> <p><input type="checkbox"/> Cashier/Certified Check</p> <p><input type="checkbox"/> Other _____</p> <p>Initial: _____</p>

CONTRACTOR:

By: _____
(Signature)

(Print or Type)

Title _____

Address _____

Telephone No. _____

Fax No. _____

EMAIL ADDRESS _____

Date _____

PLEASE PRINT CLEARLY AS BID RESULTS WILL BE SENT VIA EMAIL

Contractor's License No. _____

Type _____

Expiration Date _____

Tax I.D. Nos. - Fed. _____

State _____

CITY OF SACRAMENTO
Department of Parks and Recreation

ADDENDUM 1-Revised Bid Proposal (11/12/15)
Page 5 of 5

Park Planning and Development Services

City of Sacramento Business Operation Tax Certificate No. _____
(City will not award contract if Certificate Number is missing.)

ADDENDUM 1-REVISED SCHEDULE OF VALUES (11/12/15)



PROJECT NAME: NEW MARKET DR. MEDIAN LANDSCAPE

CONTRACT NO: T15155000

CITY PROJ. NO: T15155000

FUNDING: x

CONTRACTOR: x

ADDRESS: x

PHONE NO: (916) x

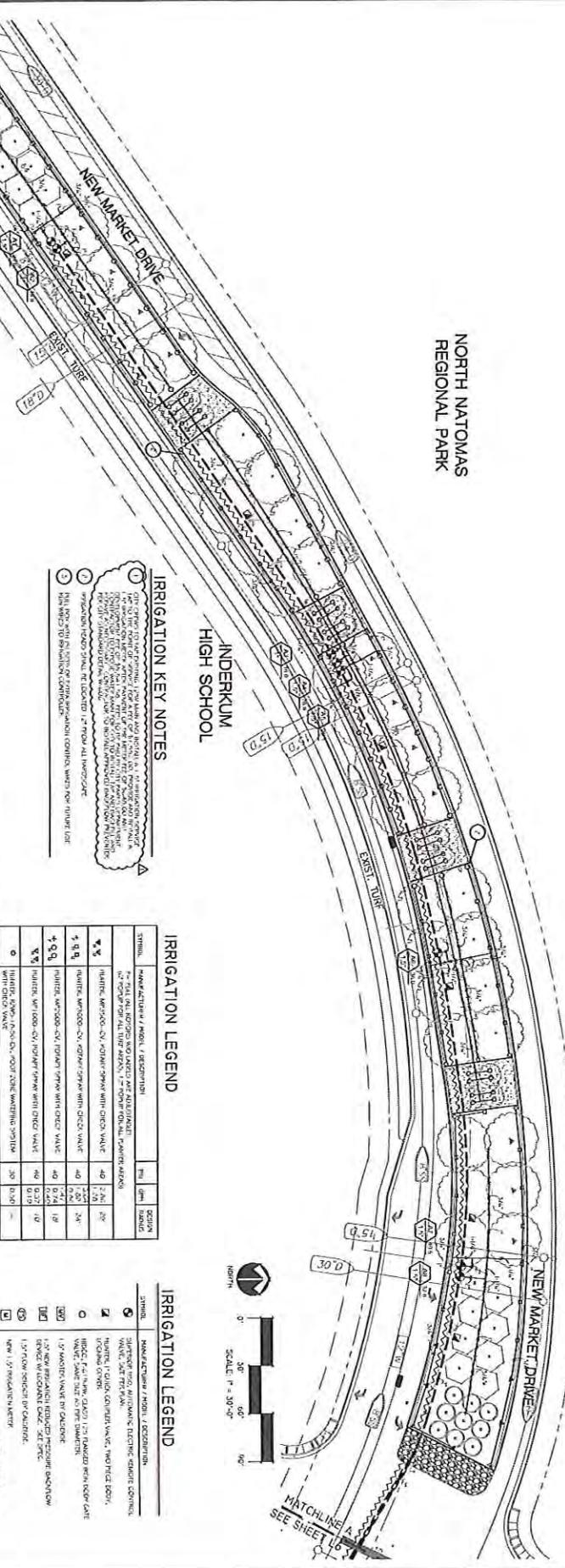
Pay Request Number 1
 Work Performed Thru 1/31/2001
 Date Pay Request was Submitted 2/1/2001
 Number of Contract Days Expended 30

Item No	Item Description	Original Contract Quantity	Unit	Unit Price	Original Contract Amount	CCO Adjusted Quantities	Previously Paid		This Estimate		Total Work Completed		Balance of Contract	
							Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
1	Not Used	N/A	LS											
2	Clearing and Grubbing	1	LS										1.00	
3	Erosion and Sediment Control	1	LS										1.00	
4	Traffic Control	1	LS										1.00	
5	Site Grading	1	LS										1.00	
6	Aggregate Base to Place	1	LS										1.00	
7	Stabilized Decomposed Granite Pavement to Place	1	LS										1.00	
8	6" Concrete Mow Strip to Construct	1	LS										1.00	
9	18" Wide Colored Concrete Band	1	LS										1.00	
10	River Cobbles to Place	1	LS										1.00	
11	Header Board to Place	1	LS										1.00	
12	Irrigation Water Tap, Meter and Backflow Preventer	1	LS										1.00	
13	Electrical System to Install	1	LS										1.00	
14	Automatic Irrigation System	1	LS										1.00	
15	Irrigation Controller	1	LS										1.00	
16	Booster Pump to Install	1	LS										1.00	
17	Trees to Plant (15 Gal.)	1	LS										1.00	
18	Trees to Plant (24" Box)	1	LS										1.00	
19	Shrub and Groundcover Areas to Plant	1	LS										1.00	
20	Landscape Weed Fabric to Install	1	LS										1.00	
21	Bark Mulch to Place	1	LS										1.00	
22	Plant Establishment (180 Days)	1	LS										1.00	
A1	Street Corner Paving, Irrigation and Landscaping	1	LS										1.00	
A2	California Fan Palms (15' BTH)	2	EA										2.00	
A3	Additional Corner Irrigation and Landscaping	1	LS										1.00	
51	CCOF#1												1.00	

Item No	Item Description	Original Contract Quantity	Unit	Unit Price	Original Contract Amount	CCO Adjusted Quantities	Previously Paid		This Estimate		Total Work Completed		Balance of Contract		
							Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity
35	CCO#2												1.00	\$1.00	
36	CCO#3												1.00	\$1.00	
37	CCO#4												1.00	\$1.00	
Original Contract Amount															
CCO Adjusted Contract Amount								Previous Total	Total This Estimate		Total to Date		Balancing Total		\$3.00
								Previously Paid							

NORTH NATOMAS REGIONAL PARK

INDERKUM HIGH SCHOOL



IRRIGATION KEY NOTES

- 1. ALL VALVES AND DEVICES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE IRRIGATION CONTRACT DOCUMENTS AND THE IRRIGATION CONTRACT DOCUMENTS SHALL BE MAINTAINED IN ACCORDANCE WITH THE IRRIGATION CONTRACT DOCUMENTS.
- 2. THE IRRIGATION CONTRACT DOCUMENTS SHALL BE MAINTAINED IN ACCORDANCE WITH THE IRRIGATION CONTRACT DOCUMENTS.

IRRIGATION LEGEND

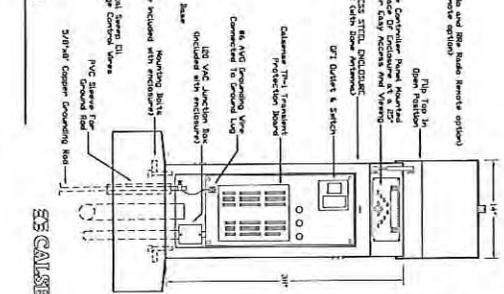
SYMBOL	NAME / DESCRIPTION	INCH	DEPTH	SETBACK
1	VALVE	4.0	24"	24"
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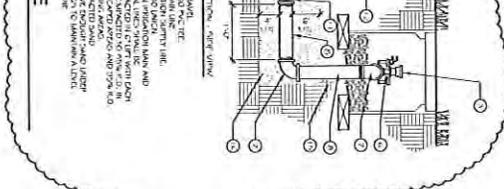
1 IRRIGATION CONTROLLER

NOT TO SCALE



2 REMOTE CONTROL VALVE

NOT TO SCALE



SEE SHEETS L6 FOR IRRIGATION NOTES.

Know what's below. Call before you dig.

811

LANDSCAPE ARCHITECT

SCALE: 1/8" = 1'-0"

DATE: 11/15/2018

PROJECT: NEW MARKET DR. MEDIAN LANDSCAPE

CLIENT: CITY OF SACRAMENTO

DESIGNER: J. WINTERKORN

CAD FILE

SCALE: 1/8" = 1'-0"

DATE: 11/15/2018

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CAD FILE

SCALE: 1/8" = 1'-0"

DATE: 11/15/2018

PROJECT: NEW MARKET

Park Planning and Development Services

CONTRACTOR NAME: Empire Landscaping Inc
 TO THE HONORABLE CITY COUNCIL
 SACRAMENTO, CALIFORNIA:

In compliance with the Contract Documents, the undersigned hereby proposes to furnish all required labor, materials, supervision, transportation, equipment, services, taxes and incidentals required for:

**NEW MARKET DR. MEDIAN LANDSCAPE
 (T15155000)**

in the City and County of Sacramento, California.

The Work is to be done in strict conformity with the Contract Documents now on file in the Office of the City Clerk, for the following sum:

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total
1	Not Used	1	LS	N/A	N/A
2	Clearing and Grubbing	1	LS	\$ 20,000	\$ 20,000
3	Erosion and Sediment Control	1	LS	\$ 10,000	\$ 10,000
4	Traffic Control	1	LS	\$ 5,000	\$ 5,000
5	Site Grading	1	LS	\$ 10,000	\$ 10,000
6	Aggregate Base to Place	1	LS	\$ 10,000	\$ 10,000
7	Stabilized Decomposed Granite Pavement to Place	1	LS	\$ 20,000	\$ 20,000
8	6" Concrete Mow Strip to Construct	1	LS	\$ 5,000	\$ 5,000
9	18" Colored Concrete Band to Construct	1	LS	\$ 54,000	\$ 54,000
10	River Cobbles to Place	1	LS	\$ 10,000	\$ 10,000
11	Header Board to Place	1	LS	\$ 5,000	\$ 5,000

Park Planning and Development Services

12	Irrigation Water Tap, Meter and Backflow Preventer	1	LS	\$	\$	
				<u>30.000</u>	<u>30.000</u>	
13	Electrical System to Install	1	LS	\$	\$	
				<u>30.000</u>	<u>30.000</u>	
14	Automatic Irrigation System	1	LS	\$	\$	
				<u>100.000</u>	<u>100.000</u>	
15	Irrigation Controller	1	LS	\$	\$	
				<u>25.000</u>	<u>25.000</u>	
16	Booster Pump to Install	1	LS	\$	\$	
				<u>25.000</u>	<u>25.000</u>	
17	Trees to Plant (15 Gal.)	1	LS	\$	\$	
				<u>6.600</u>	<u>6.600</u>	
18	Trees to Plant (24" Box)	1	LS	\$	\$	
				<u>27.000</u>	<u>27.000</u>	
19	Shrub and Groundcover Areas to Plant	1	LS	\$	\$	
				<u>30.000</u>	<u>30.000</u>	
20	Landscape Weed Fabric to Place	1	LS	\$	\$	
				<u>5.000</u>	<u>5.000</u>	
21	Bark Mulch to Place	1	LS	\$	\$	
				<u>10.000</u>	<u>10.000</u>	
22	Plant Establishment (180 Days)	1	LS	\$	\$	
				<u>9.000</u>	<u>9.000</u>	
BASE BID SUBTOTAL					\$	<u>446.600</u>

ADDITIVE ALTERNATES BID ITEMS

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Total	
A1	Street Corner Paving, Irrigation and Landscaping	1	LS	\$	\$	
				<u>35.000</u>	<u>35.000</u>	
A2	California Fan Palms (15' BTH)	2	EA	\$	\$	
				<u>7,500</u>	<u>15.000</u>	
A3	Additional Corner Irrigation and Landscaping	1	LS	\$	\$	
				<u>20.000</u>	<u>20.000</u>	
ADDITIVE ALTERNATE SUBTOTAL					\$	<u>70.000</u>

BASE BID PLUS ADDITIVE ALTERNATES TOTAL \$ 516.600

CONTRACTOR NAME: Empire Landscaping Inc. TOTAL \$ 516.600

Park Planning and Development Services

SCHEDULE

If awarded the Contract, the undersigned agrees to sign said Contract and furnish the necessary surety bonds and insurance certificates within ten (10) days after receipt of the notice of award of the Contract, and to begin work within fifteen (15) days after the issuance of the Notice to Proceed by the City.

It is understood that this Bid Proposal is based upon completion of the Work within a period of **SIXTY (60) WORKING DAYS PLUS A ONE HUNDRED EIGHTY (180) CALENDAR DAYS PLANT ESTABLISHMENT PERIOD**. The Contractor shall refer to Section 1.B Completion Time of the Special Provisions for calculation of the completion date.

DETERMINATION OF LOW BIDDER

SPECIAL CONDITION: THE DETERMINATION OF THE LOW BIDDER WILL BE BASED ON THE BASE BID AND ALL ADDITIVE ALTERNATES. HOWEVER, THE CONTRACT AWARD MAY NOT INCLUDE ALL OF THE ADDITIVE ALTERNATIVES. THE CITY RESERVES THE RIGHT TO SELECT WHICH ADDITIVE ALTERNATIVES, IF ANY, TO INCLUDE IN THE CONTRACT AWARD IN ADDITION TO THE BASE BID WORK.

CORRECTING BID PROPOSAL: In determining the amount bid by each bidder, the City shall disregard mathematical errors in addition, subtraction, multiplication, and division that appear obvious on the face of the Bid Proposal. When such a mathematical error appears on the face of the Bid Proposal, the City shall have the right to correct such error and to compute the total amount bid by said bidder on the basis of the corrected figure or figures.

When an item price is required to be set forth in the Bid Proposal, and the total for the item set forth separately does not agree with a figure which is derived by multiplying the item price times the Engineer's estimate of the quantity of work to be performed for said item, the item price shall prevail over the sum set forth as the total for the item unless, in the sole discretion of the City, such a procedure would be inconsistent with the policy of the bidding procedure. The total paid for each such item of work shall be based upon the item price and not the total price. Should the Bid Proposal contain only total price for the item and the item price is omitted, the City shall determine the item price by dividing the total price for the item by the Engineer's Estimate of the estimated quantities of work to be performed as items of work.

If the Bid Proposal contains neither the item price nor the total price for the item, then it shall be deemed incomplete and the Bid Proposal shall be disregarded.

BIDDER'S DECLARATION

The undersigned has examined the location of the proposed Work, the local conditions at the place where the Work is to be done, is familiar with the Contract Documents and is familiar and expressly agrees to the liquidated damages provision of the Contract Documents. The undersigned has checked carefully all of the foregoing figures and understands that the City of Sacramento will not be responsible for any errors or omissions on the part of the undersigned in making up this Bid Proposal.

Park Planning and Development Services

City of Sacramento Business Operation Tax Certificate No.
(City will not award contract if Certificate Number is missing.)

142353

**LOCAL BUSINESS ENTERPRISE (LBE)
PARTICIPATION REQUIREMENTS**
(For City Contracts without federal funds)

I. LBE PARTICIPATION REQUIREMENT

On April 3, 2012, the Sacramento City Council adopted a Local Business Enterprise (LBE) Preference Program to provide enhanced opportunities for the participation of LBEs in the City's contracting and procurement activities. On November 19, 2013, City Council increased the LBE preference percentage from 2% to 5% and authorized City departments to require minimum LBE participation levels in specific contracts. Under City Code section 3.60.270, when the bid specifications for a City contract establish a minimum participation level for LBEs, no bidder on the contract shall be considered responsive unless its bid meets the minimum LBE participation level required by the bid specifications.

The City has established a minimum 5% participation level for LBEs on certain contracts of \$100,000 or more as illustrated below.

When Does the LBE Program Apply?

	Contracts Under \$100,000			Contracts \$100,000 or More			
	Supplies / Non-Professional	Professional	Public Projects	Supplies	Non-Professional	Professional	Public Projects
5% LBE Preference Applies to Bid Evaluation?	Yes	Yes	Yes	No	No	Yes	No
5% Minimum Participation Requirement? *	No	No	No	No	Yes	Yes	Yes

* Requirement may be waived by the City Manager or the City Manager's designee (e.g. Department Directors)

II. LBE QUALIFICATION

- A. To meet the LBE participation requirement, bidders must meet the requirements for an LBE prior to the deadline for submission of bids.
- B. Local Business Enterprise means a business enterprise, including but not limited to, a sole proprietorship, partnership, limited liability company, corporation, or other business entity that has a legitimate business presence in the City or unincorporated areas of Sacramento County. Proof of legitimate business presence in the City or unincorporated areas of Sacramento County shall include:

1. Be an established business entity operating in the City or unincorporated County of Sacramento for at least twelve (12) consecutive months prior to submission of bid; and
2. Having either :
 - a. a principal business office or workspace; or
 - b. regional, branch, or satellite office with at least one full-time employee located and operating legally in the city or unincorporated county of Sacramento.

III. LBE PARTICIPATION LEVEL REQUIREMENTS

- A. LBE Participation: The percentage of LBE participation is determined based on the dollar value of the work to be performed. LBE credit may be obtained by utilizing LBE qualified subcontractors or suppliers as outlined below.
- B. Participation Credit: To receive credit for participation: (1) an LBE subcontractor must be responsible for the execution of a distinct element of the work, must possess any license or certification required for the work, and must actually perform, manage, or supervise the work without subcontracting or otherwise shifting any portion of the work to another subcontractor; and (2) an LBE supplier must furnish materials or equipment that the supplier sells as a recurring, although not necessarily primary, part of its business, and that are necessary for performance of the work.
- C. Suppliers: Credit for an LBE supplier of materials or equipment is counted as 100% of the amount paid to the supplier for the materials or equipment. To receive this credit, LBE suppliers must be listed on the bidder's Subcontractor and LBE Participation Verification Form.
- D. Subcontractors (including truckers): To receive credit for an LBE subcontractor, the subcontractor must be listed on the bidder's Subcontractor and LBE Participation Verification Form.
 - Truckers: Credit for an LBE trucker is counted as 100% of the amount paid to the trucker for trucking services, not including any amount paid to the trucker for the cost of any materials or equipment being transported by the trucker.

IV. LBE REQUIREMENTS FOR CONTRACTOR

- A. LBE Records: The Contractor shall maintain records of all subcontracts with verified LBE subcontractors and records of materials purchased from verified LBE suppliers for one year after receiving final payment from the City. Such records shall show the name and business address of each LBE subcontractor or supplier and the total dollar amount actually paid to each LBE subcontractor or supplier.

No later than 30 days after completion of the work performed under the contract, a summary of these records shall be prepared, certified correct by the Contractor's authorized representative and furnished to the City. The Contractor shall provide such

other information, records, reports, certifications or other documents as may be required by the City, to determine compliance with any provision of the LBE program or these specifications.

- B. Performance of LBE Subcontractors and Suppliers: The LBEs listed by the Contractor shall perform the work and supply the materials or equipment for which they are listed, unless the Contractor has received prior written authorization from the City to perform the work with other forces or to obtain the materials or equipment from other sources. Reasons for requesting such authorization would include:
1. The listed LBE fails to execute a written contract based upon the general terms, conditions, plans, and specifications for the project.
 2. The listed LBE becomes bankrupt or insolvent.
 3. The listed LBE subcontractor fails to meet the bond requirements of the Contractor.
 4. The work performed or the materials or equipment provided by the listed LBE are unsatisfactory or are not in accordance with the plans and specifications, or the listed LBE fails to perform its contractual obligations.
 5. It would be in the best interest of the City.
- C. Subcontractor Substitution: No substitution of an LBE subcontractor shall be made at any time without compliance with the Subletting and Subcontracting Fair Practices Act. If an LBE subcontractor is unable to perform successfully and is to be replaced, the Contractor shall make reasonable efforts to replace the original LBE subcontractor with another verified LBE subcontractor. The new LBE subcontractor must be verified at the time of substitution.
- D. Reporting and Utilization Requirements and Sanctions: Failure to provide specific information, records, reports, certifications, or any other documents required for compliance with these specifications, or failure to utilize one or more LBEs in substantial compliance with the LBE utilization indicated in the Contractor's bid (unless otherwise authorized by the City as provided herein, or when such failure results from changes to the work approved by the City), shall be considered a breach of the contract. A deduction may be made from the contract amount and the deduction shall be not more than 10% of the value of the work or materials or equipment that the subject LBE(s) were listed to perform or provide in the Contractor's bid, and shall also be deducted from any payment due to the Contractor. This is in addition to any deduction that may be made under any other provision of the contract, the Sacramento City Code, or State law.
- E. Hearing and Review of Division Manager Decision: Prior to making a deduction pursuant to Section IV (D), above, the City shall provide written notice of the proposed

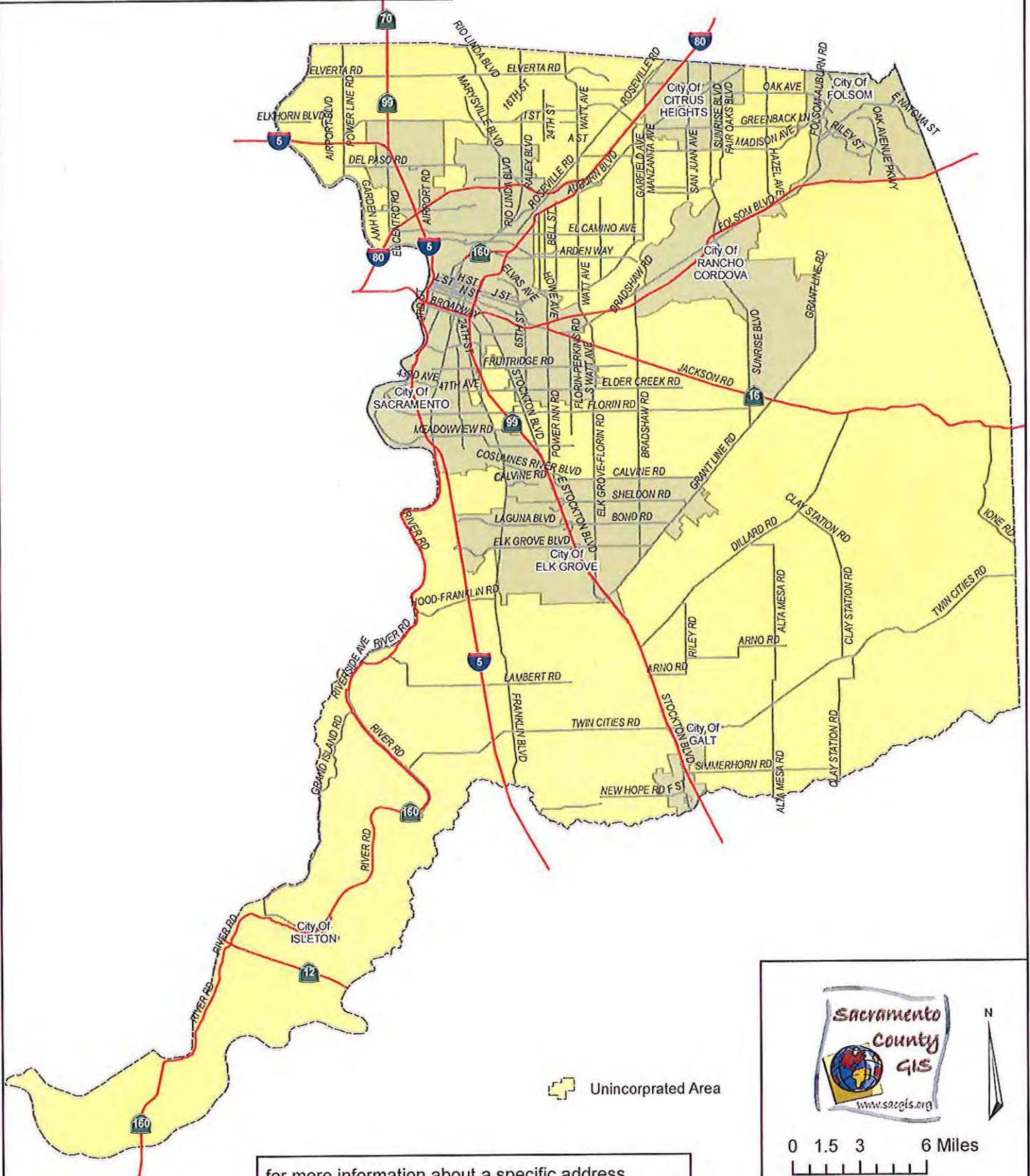
deduction to the Contractor. The Contractor may, no later than five working days after receiving such notice, provide a written request to the City for a hearing to contest the proposed deduction. Upon receipt of a timely written request from the Contractor, the City shall schedule a hearing before the Division Manager (as defined in the City's Standard Specifications for Public Construction), and written notice of the date, time and location of the hearing shall be provided to the Contractor not less than five working days prior to the date of the hearing. The hearing shall be conducted in the manner specified in Section 4-8 of the Standard Specifications, and the Division Manager shall prepare and forward to the Contractor a written decision as soon as practicable after the hearing. The Division Manager's decision shall be subject to review in accordance with the provisions of Section 4-9 of the Standard Specifications. Failure to request such review in compliance with the requirements set forth in Section 4-9 shall constitute acceptance of the Division Manager's decision by the Contractor.

The written notices and requests described above shall be provided by registered or certified mail (return receipt requested), by facsimile, by personal delivery, or by any other method that provides reliable evidence of the date of receipt. Written notice provided by facsimile shall be deemed received on the date that it is transmitted and transmission is confirmed by the transmitting machine. Written notice provided by personal delivery shall be deemed received on the date of delivery.

V. DEFINITIONS

- A. Local Business Enterprise (LBE): A business enterprise, including but not limited to, a sole proprietorship, partnership, limited liability company, corporation, or any other business entity that has a legitimate business presence in the city or unincorporated county of Sacramento.
- B. Contractor: The sole proprietorship, partnership, limited liability company, corporation, or any other business entity entering into a contract with the City of Sacramento.
- C. Subcontractor: The sole proprietorship, partnership, limited liability company, corporation, or other business entity entering into a contract with the prime contractor to perform a portion of the work.
- D. Supplier: The sole proprietorship, partnership, limited liability company, corporation, or other business entity to provide materials, equipment, or supplies necessary for performance of the work.
- E. Proposal: Any response to a City solicitation for Proposals or Qualifications.
- F. Bid: Any response to a City solicitation for bids.
- G. Waiver: Request to department director to waive or reduce LBE participation requirement.

UNINCORPORATED AREAS



for more information about a specific address
 visit our Assessor Parcel Viewer at www.sacgis.org



0 1.5 3 6 Miles

Doc Date: December, 2010

KNOW ALL MEN BY THESE PRESENTS,

That we, EMPIRE LANDSCAPING, INC.

as Principal, and TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA

a corporation duly organized under the laws of the State of Connecticut and duly licensed to become sole surety on bonds required or authorized by the State of California, as Surety, are held and firmly bound unto the City of Sacramento, hereinafter called the City, in the penal sum of ten percent (10%) of the (BASE OR LUMP SUM) Proposal of the Principal above named, or other amount as set forth in the Invitation to Bidders, submitted by said Principal to the City for the Work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH

That whereas the Principal has submitted the above-mentioned Proposal to the City, for which Proposals are to be opened at the Department of City Clerk, City of Sacramento, located at **915 I Street, Historic City Hall, 2nd Floor Hearing Room, Sacramento, CA 95814** up to the hour of 2:00 p.m. on **NOVEMBER 18, 2015** for the Work specifically described as follows:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

NOW, THEREFORE, if the aforesaid Principal is awarded the Contract and within the time and manner required under the Contract Documents, enters into a written Contract, in the prescribed form, in accordance with the Proposal, and files two (2) bonds with the City, one to guarantee faithful performance and the other to guarantee payment for labor and materials, and files the required insurance policies with the City, all as required by the Contract Documents or by law, then the obligation shall be null and void; otherwise it shall be and remain in full force and effect.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court, which sums shall be additional to the principal amount of this bond.

IN WITNESS THEREOF We have hereunto set our hands and seal this 4th day of November, 2015.

EMPIRE LANDSCAPING, INC.
(Contractor) (Seal)
By [Signature]
Title President

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
(Surety) (Seal)
By [Signature]
Title Karen Amin, Attorney-in-Fact
Agent Name and Address ALLIANT INSURANCE SERVICES, INC.
1949 W. Kettleman Lane Ste. 200, Lodi, CA 95242
Agent Phone # (209) 333-1136
Surety Phone # (916) 852-5272
California License # 0C36861

ORIGINAL APPROVED AS TO FORM:

City Attorney

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Joaquin)

On November 4, 2015 before me, Jennifer Loper, Notary Public
(insert name and title of the officer)

personally appeared Karen Amin,
who proved to me on the basis of satisfactory evidence to be the person(x) whose name(x) 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(x), or the entity upon behalf of which the person(x) 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 Jennifer Loper (Seal)





POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 228630

Certificate No. 006160340

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Daniel M. Connolly, Karen Amin, David Schnapp, and Jennifer Loper

of the City of Lodi, State of California, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 22nd day of January, 2015.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 22nd day of January, 2015, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 4th day of November, 2015

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

MINIMUM QUALIFICATIONS QUESTIONNAIRE

Sacramento City Code Section 3.60.020 authorizes the Sacramento City Council to adopt standard minimum qualifications for bidders on competitively bid public works construction projects, and requires, among other provisions, that a bidder meet such minimum qualifications at the time of bid opening in order to bid. On July 31, 2007, the City Council adopted Resolution No. 2007-574 establishing these standard minimum qualifications. Pursuant to City Code section 3.60.020, a bidder failing to meet these minimum qualifications at the time of bid opening shall not be considered a responsible bidder for purposes of bidding on the subject project.

All bidders must demonstrate compliance with the minimum qualifications established by Resolution No. 2007-574 by completing all of the questions contained in this questionnaire. Bidder responses shall be limited to those operating business units, offices, branches and/or subsidiary divisions of the bidder that will be involved with the performance of any project work if awarded the contract. If a bidder answers "yes" to any single question, fails to submit a fully completed questionnaire, or submits false information, this will result in a determination that the minimum qualifications are not met, and the bidder shall not be considered a qualified bidder for purposes of bidding on this contract. If two or more entities submit a bid on a contract as a Joint Venture, each entity within the Joint Venture must separately meet these minimum qualifications for the Joint Venture to be considered a qualified bidder.

The City of Sacramento ("City") shall make its determination on the basis of the submitted questionnaire, as well as any relevant information that is obtained from others or as a result of investigation by the City. While it is the intent of this questionnaire to assist the City in determining whether bidders possess the minimum qualifications necessary to submit bids on the City's competitively bid public works construction contracts, the fact that a bidder submits a questionnaire demonstrating that it meets these minimum qualifications shall not in any way limit or affect the City's ability to: (1) review other information contained in the bid submitted by the bidder, and additional relevant information, and determine whether the contractor is a responsive and/or responsible bidder; or (2) establish pre-qualification requirements for a specific contract or contracts.

By submitting this questionnaire, the bidder consents to the disclosure of its questionnaire answers: (i) to third parties for purposes of verification and investigation; (ii) in connection with any protest, challenge or appeal of any action taken by the City; and (iii) as required by any law or regulation, including without limitation the California Public Records Act (Calif. Gov't Code sections 6250 et seq.). Each questionnaire must be signed under penalty of perjury in the manner designated at the end of the form, by an individual who has the legal authority to bind the bidder submitting the questionnaire. If any information provided by a bidder becomes inaccurate, the bidder shall immediately notify the City and provide updated accurate information in writing, under penalty of perjury.

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

QUESTIONNAIRE

NOTICE: For firms that maintain other operating business units, offices, branches and/or subsidiary divisions that will not be involved with the performance of any project work if the firm is awarded the contract, references hereafter to "your firm" shall mean only those operating business units, offices, branches and/or subsidiary divisions that will be involved with the performance of any project work.

All of the following questions regarding "your firm" refer to the firm (corporation, partnership or sole proprietor) submitting this questionnaire, as well as any firm(s) with which any of your firm's owners, officers, or partners are or have been associated as an owner, officer, partner or similar position within the last five years

The firm submitting this questionnaire shall not be considered a responsible bidder if the answer to any of these questions is "yes", or if the firm submits a questionnaire that is not fully completed or contains false information.

1. Classification & Expiration Date(s) of California Contractor's License Number(s) held by firm:

2. Has a contractor's license held by your firm and/or any owner, officer or partner of your firm been revoked at anytime in the last five years?

Yes No

3. Within the last five years, has a surety firm completed a contract on your firm's behalf, or paid for completion of a contract to which your firm was a party, because your firm was considered to be in default or was terminated for cause by the project owner?

Yes No

4. At the time of submitting this minimum qualifications questionnaire, is your firm ineligible to bid on or be awarded a public works contract, or perform as a subcontractor on a public works contract, pursuant to either California Labor Code section 1777.1 (prevailing wage violations) or Labor Code section 1777.7 (apprenticeship violations)?

Yes No

5. At any time during the last five years, has your firm, or any of its owners, officers or partners been convicted of a crime involving the awarding of a contract for a government construction project, or the bidding or performance of a government contract?

Yes No

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

6. Answer either subsection A or B, as applicable:

A. Your firm has completed three or more government construction contracts in Sacramento County within the last five years: Within those five years, has your firm been assessed liquidated damages on three or more government construction contracts in Sacramento County for failure to complete contract work on time?

NOTE: If there is a pending administrative or court action challenging the assessment of liquidated damages on a government contract within the last five years, you need not include that contract in responding to this question.

Yes

No

Not applicable

OR

B. Your firm has not completed at least three government construction contracts in Sacramento County within the last five years: Within the last three years, has your firm been assessed liquidated damages on three or more government construction contracts for failure to complete contract work on time?

NOTE: If there is a pending administrative or court action challenging an assessment of liquidated damages on a government contract within the last three years, you need not include that contract in responding to this question.

Yes

No

Not applicable

7. In the last three years has your firm been debarred from bidding on, or completing, any government agency or public works construction contract for any reason?

NOTE: If there is a pending administrative or court action challenging a debarment, you need not include that debarment in responding to this question.

Yes

No

8. Has CAL OSHA assessed a total of three or more penalties against your firm for any "serious" or "willful" violation occurring on construction projects performed in Sacramento County at any time within the last three years?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes

No

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

9. Answer either subsection A or B, as preferred:

A. In the last three years has your firm had a three year average Workers' Compensation experience modification rate exceeding 1.1?

Yes No

OR

B. In the last three years has your firm had a three-year average incident rate for total lost workday cases exceeding 10?

NOTE: Incident rates represent the number of lost workday cases per 100 full-time workers and is to be calculated as: $(N/EH) \times 200,000$, where

N = number of lost workday cases (as defined by the U.S. Dept. of Labor, Bureau of Labor Statistics)
EH = total hours worked by all employees during the calendar year
200,000 = base for 100 equivalent full-time working (working 40 hours per week, 50 weeks per year)

Yes No

10. In the past three years, has the federal EPA, Region IX or a California Air Quality Management District or Regional Water Quality Control Board assessed penalties three or more times, either against your firm, or against the project owner for a violation resulting in whole or in part from any action or omission by your firm on a project on which your firm was a contractor in Sacramento County?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

11. In the past three years, has the federal EPA, Region IX or a California Air Quality Management District or Regional Water Quality Control Board assessed a single penalty of \$100,000 or more, either against your firm, or against the project owner for a violation resulting in whole or in part from any action or omission by your firm on a project on which your firm was the contractor in Sacramento County?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

12. In the past three years, have civil penalties been assessed against your firm pursuant to California Labor Code 1777.7 for violation of California public works apprenticeship requirements, three or more times?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

13. In the past three years, has a public agency in California withheld contract payments or assessed penalties against your firm for violation of public works prevailing wage requirements, three or more times?

NOTE: If there is a pending administrative or court action appealing a withholding or penalty assessment, you need not include that withholding or penalty assessment in responding to this question.

Yes No

14. Has your firm been assessed penalties for violation of public works prevailing wage requirements in California, in an aggregate amount for the past three years of \$50,000 or more?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

FOR CITY CLERK USE ONLY

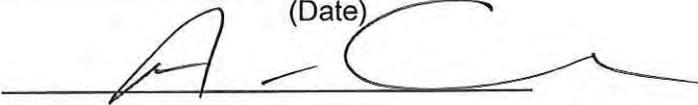
RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

VERIFICATION AND SIGNATURE

I, the undersigned, certify and declare that I have read all the foregoing answers to this Minimum Qualifications Questionnaire, and know their contents. The matters stated in these Questionnaire answers are true of my own knowledge and belief, except as to those matters stated on information and belief, and as to those matters I believe them to be true. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signed at Davis CA, on 11-17-2015
(Location) (Date)

Signature: 

Print name: Ahmet Gulcu

Title: President

NOTE: If two or more entities submit a bid on a contract as a Joint Venture, each entity within the Joint Venture must submit a separate Minimum Qualifications Questionnaire.

FOR CITY CLERK USE ONLY

RESOLUTION NO.: 2007-574

DATE ADOPTED: July 31, 2007

Green Contracting Survey (Voluntary)

The City of Sacramento and the Sacramento Metropolitan Air Quality District (SMAQMD) are conducting a joint pilot project to help meet Federal Clean Air Standards for the Sacramento region.

Attached is a Green Contracting Fleet Inventory Form. Please complete the form, remove it from the bid package and return it to SMAQMD in the postage paid envelope provided with the bid package. Please do not return the Green Contracting Fleet Inventory Form to the City of Sacramento with the bid documents or otherwise.

A limited amount of funds and other financial incentives may be available to qualified contractors participating in this joint project to assist qualified contractors with upgrading and/or replacing equipment and/or trucks.

Completing and returning the Green Contracting Fleet Inventory Form is strictly voluntary.

DRUG-FREE WORKPLACE POLICY AND AFFIDAVIT

BID PROPOSAL MAY BE DECLARED NONRESPONSIVE IF THIS FORM (COMPLETED) IS NOT ATTACHED.
Pursuant to City Council Resolution CC90-498 dated 6/26/90 the following is required.

The undersigned contractor certifies that it and all subcontractors performing under this Agreement will provide a drug-free workplace by:

1. Publishing a "Drug-Free Workplace" statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Establishing a Drug-Free Awareness Program to inform employees about:
 - a. The dangers of drug abuse in the workplace.
 - b. The contractor's policy of maintaining a drug-free workplace.
 - c. Any available drug counseling, rehabilitation, and employee assistance program.
 - d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
3. Notify employees that as a condition of employment under this Agreement, employees will be expected to:
 - a. Abide by the terms of the statement.
 - b. Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace.
4. Making it a requirement that each employee to be engaged in the performance of the Agreement be given a copy on the "Drug-Free Workplace" statement.
5. Taking one of the following appropriate actions, within thirty (30) days of receiving notice from an employee or otherwise receiving such notice, that said employee has received a drug conviction for a violation occurring in the workplace:
 - a. Taking appropriate disciplinary action against such an employee, up to and including termination; or
 - b. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement or other appropriate agency.

* I certify that no person employed by this company, corporation, or business has been convicted of any criminal drug statute violation on any job site or project where this company, corporation or business was performing was within three years of the date of my signature below.

EXCEPTION:

Date	Violation Type	Place of Occurrence

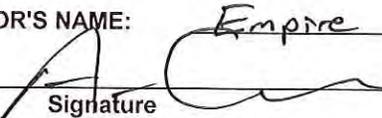
If additional space is required use back of this form.

* The above statement will also be incorporated as a part of each subcontract agreement for any and all subcontractors selected for performance on this project.

IN THE EVENT THIS COMPANY, CORPORATION, OR BUSINESS IS AWARDED THIS CONSTRUCTION AGREEMENT, AS A RESULT OF THIS BID; THE CONTRACTOR WITH HIS/HER SIGNATURE REPRESENTS TO THE CITY THAT THE INFORMATION DISCLOSED IN THIS DOCUMENT IS COMPLETE AND ACCURATE. IT IS UNDERSTOOD AND AGREED THAT FALSE CERTIFICATION IS SUBJECT TO IMMEDIATE TERMINATION BY THE CITY.

The Representations Made Herein On This Document Are Made Under Penalty Of Perjury.

CONTRACTOR'S NAME: Empire Landscaping Inc.

BY:  President Date: 11-17-15

Signature

Title

Effects of violations: a. Suspension of payments under the Agreement. b. Suspension or termination of the Agreement. c. Suspension or debarment of the contractor from receiving any Agreement from the City of Sacramento for a period not to exceed five years.

SACRAMENTO

Subcontractor and Local Business Enterprise Participation Form For Public Projects over \$100,000 (use only base bid amount to estimate dollar value) THIS FORM MUST BE SUBMITTED WITH THE SEALED BID PROPOSAL

To be eligible for award of this contract, the bidder shall list the business entities used to attain the 5% LBE requirement. Additionally, the bidder shall list all other subcontractors who perform work, render service, or provide materials in an amount in excess of one-half of 1 percent of the total bid amount. In the case of bids for the construction of streets and highways, including bridges, subcontractors whose subcontract value exceeds one-half of 1 percent of the total bid or ten thousand dollars (\$10,000), whichever is greater, shall be listed. Estimated dollar values shall be provided for all work / services listed. The failure to attain the 5% LBE participation or the inclusion of false information or the omission of required information will render the bid non-responsive.

Prime Contractor Name	Empire Landscaping Inc.	Date	11-17-15
Prime Contractor Address	118 Hickory Ln Davis CA 95616	Bid Amount	\$ 516,600
REQUIRED) Prime Contractor DIR Registration #	1000010158	Is Prime LBE?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Business Name	Subcontractor DIR Registration # (subject to verification)	LBE?	Type of Work, Services, or Supplies to be provided to complete contract	Estimated Dollar Value of Work, Services or Supplies to be Performed of Provided
John Deere Landscapes (Site One) # 147317 6500 Elver Ave Sacramento CA Larry Hood 916-967-5128	Supplies	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	whole irrigation system materials	\$ 60,000
	Subcontractor DIR Registration # (subject to verification)	LBE?	Type of Work, Services, or Supplies to be provided to complete contract	Estimated Dollar Value of Work, Services or Supplies to be Performed of Provided
		Yes <input type="checkbox"/> No <input type="checkbox"/>		\$
	Subcontractor DIR Registration # (subject to verification)	LBE?	Type of Work, Services, or Supplies to be provided to complete contract	Estimated Dollar Value of Work, Services or Supplies to be Performed of Provided
		Yes <input type="checkbox"/> No <input type="checkbox"/>		\$

BY AND ATTACH ADDITIONAL SHEETS AS NECESSARY I hereby certify that each subcontractor listed on this Subcontractor and LBE Participation Form has been notified that it has been listed and has consented in writing to its name being submitted for this contract. The Prime Contractor also certifies that it will notify each subcontractor listed on this Form in writing if the contract award is made to the Prime Contractor, and will make all documentation relevant to the subcontractor and LBE Participation available to City of Sacramento upon request. The Prime Contractor further certifies that all of the information contained in this Form is true and correct and acknowledges that the City will rely on the accuracy of this information in awarding the contract.

MUNICIPAL OF FIRM:

--

MUST BE POSTED IN CONSPICUOUS PLACE

142353

142353

CITY OF
SACRAMENTO

BUSINESS OPERATIONS TAX CERTIFICATE

Business Name	EMPIRE LANDSCAPING	FROM	TO
Business Address	118 HICKORY LN	Mo. Day Yr.	Mo. Day Yr.
Owner	GULCU, AHMET	07/01/2015	06/30/2016
Type of Business	LANDSCAPING		Expires
Tax Classification	401		

CITY OF SACRAMENTO

EMPIRE LANDSCAPING
118 HICKORY LN
DAVIS, CA 95616-4711

VOID
IF NOT BY 2015
VALIDATED

TOTAL
PAID: \$32.00

THIS STUB MAY BE
FOLDED/DETACHED
BEFORE POSTING

This certificate is not to be construed as a business license or imply that the City of Sacramento has investigated, or approves or recommends, the holder of this certificate. Any representation to the contrary is fraudulent. (This certificate must be renewed within 30 days of expiration).

B16190021007

FOLLOWING FORMS TO BE FILLED OUT

AND SIGNED

ONLY

IF AWARDED CONTRACT

AGREEMENT
(Construction Contract Over \$25,000)

THIS AGREEMENT, dated for identification _____, 20__, is made and entered into between the CITY OF SACRAMENTO, a municipal corporation ("City"), and EMPIRE LANDSCAPING, 118 HICKORY LANE, DAVIS, CA 95616("Contractor"), in the amount of: FIVE HUNDRED SIXTEEN THOUSAND SIX HUNDRED DOLLARS AND NO CENTS (\$516,600.00).

The City and Contractor hereby mutually agree as follows:

1. CONTRACT DOCUMENTS

The Contract Documents, sometimes also referred to as the "Contract," consist of the following items, which are hereby incorporated by reference as if set forth in full in this Agreement:

- The Notice to Contractors
- The Proposal Form submitted by the Contractor
- The Instructions to Bidders
- The Local Business Enterprise (LBE) Requirements
- The Requirements for the Non-Discrimination in Employee Benefits by City Contractors Ordinance and the Declaration of Compliance
- The City's Reference Guide for Construction Contracts
- The Addenda, if any
- This Agreement
- The Standard Specifications
- The Special Provisions
- The Plans and Technical Specifications
- The drawings and other data and all developments thereof prepared by City pursuant to the Contract
- Any modifications of any of the foregoing made or approved by City, including but not limited to duly authorized change orders.

Unless specifically noted otherwise, references to the "Standard Specifications" shall mean and refer to the Standard Specifications for Public Construction of the City of Sacramento approved by the Sacramento City Council on June 4, 2007 (Resolution No. 2007-350), and any subsequent amendments thereto approved by the Sacramento City Council or the Sacramento City Manager. Work called for in any one Contract Document and not mentioned in another is to be performed and executed as if mentioned in all Contract Documents. The table of contents, titles and headings contained in the Contract Documents are provided solely to facilitate reference to various provisions of the Contract Documents and in no way affect or limit the interpretation of the provisions to which they refer.

2. DEFINITIONS

Unless otherwise specifically provided herein, all words and phrases defined in the Standard Specifications shall have the same meaning and intent in this Agreement.

3. AGREEMENT CONTROLS

In the event of a conflict between any of the terms and conditions set forth in this Agreement and the terms and conditions set forth in other Contract Documents, the terms and conditions set forth in this Agreement shall prevail, except that the provisions of any duly authorized change order shall prevail over any conflicting provisions of this Agreement.

4. SCOPE OF CONTRACT

Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, material and transportation necessary to perform and complete in a good and workmanlike manner to the satisfaction of City, all the Work called for in the Contract Documents entitled:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

Including the Work called for in the following alternative bid items described in the Proposal Form:

THREE ADDITIVE ALTERNATES

Contractor agrees to perform such Work in the manner designated in and in strict conformity with the Contract Documents.

5. CONTRACT AMOUNT AND PAYMENTS

City agrees to pay and Contractor agrees to accept, as complete payment for the above Work, in accordance with the schedule and procedures set forth in the Contract Documents and subject to deductions, withholdings and additions as specified in the Contract Documents, a total sum that shall not exceed the total bid amount set forth in Contractor's Proposal Form. In addition, subject to deductions, withholdings and additions as specified in the Contract Documents, payment for individual items of the Work shall be computed as follows:

- A. For items of the Work for which a lump sum price is specified in Contractor's Proposal Form, Contractor shall be paid the lump sum price(s) specified in Contractor's Proposal Form; and
- B. For items of the Work for which a unit price is specified in Contractor's Proposal Form, Contractor shall be paid the sum computed at such unit price, or computed at a different price if such different price is determined by City in accordance with the Standard Specifications, based on the actual amount of each such item performed and/or furnished and incorporated in the Work; provided that in no event shall the total sum for a unit price item exceed the total bid amount set forth for such item in the Contractor's Proposal Form, unless authorized by Change Order.

6. PROGRESS PAYMENTS

Subject to the terms and conditions of the Contract, City shall cause payments to be made upon demand of Contractor as follows:

- A. On or about the first of the month, the Engineer shall present to the Contractor a statement showing the amount of labor and materials incorporated in the Work through the twentieth (20) calendar day of the preceding month. After both Contractor and Engineer approve the statement in writing, and the City's labor compliance officer provides written approval, the City shall issue a certificate for ninety-five (95) percent of the amount it shall find to be due, subject to any deductions or withholdings authorized or required under the Contract or any applicable Laws or Regulations.
- B. No inaccuracy or error in said monthly estimates shall operate to release Contractor from damages arising from such Work or from enforcement of each and every provision of the Contract Documents, and City shall have the right subsequently to correct any error made in any estimate for payment.
- C. Contractor shall not be paid for any defective or improper Work.
- D. The remaining five (5) percent of the value of the Work performed under the Contract, if unencumbered and subject to any deductions or withholdings authorized or required under the Contract or any applicable Laws or Regulations, shall be released not later than sixty (60) days after completion and final acceptance of the Work by City. Acceptance by Contractor of the final payment shall constitute a waiver of all claims against the City arising under the Contract Documents, except for disputed claims in stated amounts that the Contractor specifically reserves in writing, but only to the extent that the Contractor has complied with all procedures and requirements applicable to the presentation and processing of such claim(s) under the Contract Documents. Contractor shall be entitled to substitute securities for retention or to direct that payments of retention be made into escrow, as provided in Public Contract Code Section 22300, upon execution of the City's Escrow Agreement for Security Deposits in Lieu of Retention.
- E. The parties agree that, for purposes of the timely progress payment requirements specified in Public Contract Code Section 20104.50, the date that the City receives a statement jointly approved by the Contractor and the Engineer as provided above shall be deemed to constitute the date that City receives an undisputed and properly submitted payment request from the Contractor. Progress payments not made within 30 days after this date may be subject to payment of interest as provided in Public Contract Code Section 20104.50.
- F. This Contract is subject to compliance monitoring and enforcement by the California Department of Industrial Relations, as specified in California Labor Code section 1771.4.

7. RETENTION OF SUMS CHARGED AGAINST CONTRACTOR

When, under the provisions of this Contract or any applicable Laws or Regulations, City is authorized or required to withhold, deduct or charge any sum of money against Contractor, City may deduct and retain the amount of such charge from the amount of the next succeeding progress estimate(s), or from any other moneys due or that may become due Contractor from City. If, on completion or termination of the Contract, sums due Contractor are insufficient to pay City's charges, City shall have the right to recover the balance from Contractor or its Sureties.

8. COMMENCEMENT AND PROSECUTION OF WORK

Contractor shall commence the Work not later than fifteen (15) working days after the date of the written Notice to Proceed from City to Contractor and shall diligently prosecute the Work to final completion. The phrase "commence the Work" means to engage in a continuous program on-site including, but not limited to, site clearance, grading, dredging, land filling and the fabrications, erection, or installation of the Work. The Notice to Proceed shall be issued within fifteen (15) calendar days following execution of the Agreement by the City and the filing by Contractor of the required Bonds and proof of insurance, provided that the Engineer may delay issuance of the Notice to Proceed if the Engineer determines in the Engineer's sole discretion that conditions on the site of the Work are unsuitable for commencement of the Work. After the Notice to Proceed is issued, the continuous prosecution of Work by Contractor shall be subject only to Excusable Delays as defined in this Agreement.

9. TIME OF COMPLETION

The entire Work shall be brought to completion in the manner provided for in the Contract Documents on or before SIXTY (60) WORKING DAYS PLUS ONE HUNDRED EIGHTY (180) CALENDAR DAYS PLANT ESTABLISHMENT from the date of the Notice to Proceed (hereinafter called the "Completion Date") unless extensions of time are granted in accordance with the Contract Documents.

Failure to complete the entire Work by the Completion Date and in the manner provided for in the Contract Documents shall subject Contractor to liquidated damages as provided in this Agreement. Time is and shall be of the essence in the performance of the Contract and the Work.

10. PAYMENTS DO NOT IMPLY ACCEPTANCE OF WORK

The payment of any progress payment, or the acceptance thereof by Contractor, shall not constitute acceptance of the Work or any portion thereof and shall in no way reduce the liability of Contractor to replace unsatisfactory work or material, whether or not the unsatisfactory character of such work or material was apparent or detected at the time such payment was made.

11. ACCEPTANCE NOT RELEASE

Contractor shall correct immediately any defective or imperfect work or materials that may be discovered before final acceptance of the entire Work, whether or not such defect or imperfection was previously noticed or identified by the City. The inspection of the Work, or any part thereof, shall not relieve Contractor of any of its obligations to perform satisfactory work as herein specified.

Failure or neglect on the part of City or any of its officers, employees or authorized agents to discover, identify, condemn or reject defective or imperfect work or materials shall not be construed to imply an acceptance of such work or materials, if such defect or imperfection becomes evident at any time prior to final acceptance of the entire Work, nor shall such failure or neglect be construed as barring City from enforcing Contractor's warranty(ies) or otherwise recovering damages or such a sum of money as may be required to repair or rebuild the defective or imperfect work or materials whenever City may discover the same, subject only to any statutes of limitation that may apply to any such claim.

12. CITY'S RIGHT TO TAKE POSSESSION OF THE WORK IN WHOLE OR IN PART

The City shall have the right at any time to enter upon the Work and perform work not covered by this Contract, or to occupy and use a portion of the Work, prior to the date of the final acceptance of the Work as a whole, without in any way relieving Contractor of any obligations under this Contract.

13. NO WAIVER OF REMEDIES

Neither the inspection by City, its officers, employees or agents, nor any certificate or other approval for the payment of money, nor any payment for, nor acceptance of the whole or any part of the Work by City, nor any extensions of time, nor any position taken by City, its officers, employees or its agents shall operate as a waiver of any provision of the Contract Documents nor of any power herein reserved to City or any right to damages herein provided, nor shall any waiver of any breach of this Agreement be held to be a waiver of any other or subsequent breach. All remedies provided in the Contract Documents shall be taken and construed as cumulative; in addition to each and every other remedy herein provided, the City shall have any and all equitable and legal remedies that it would in any case have.

14. WARRANTY

Except as otherwise expressly provided in the Contract Documents, and excepting only items of routine maintenance, ordinary wear and tear and unusual abuse or neglect by City, Contractor warrants and guarantees all Work executed and all supplies, materials and devices of whatsoever nature incorporated in or attached to the Work, or otherwise provided as a part of the Work pursuant to the Contract, to be absolutely free of all defects of workmanship and materials for a period of one year after final acceptance of the entire Work by the City. Contractor shall repair or replace all work or material, together with any

other work or material that may be displaced or damaged in so doing, that may prove defective in workmanship or material within this one year warranty period without expense or charge of any nature whatsoever to City.

In the event that Contractor shall fail to comply with the conditions of the foregoing warranty within ten (10) days after being notified of the defect in writing, City shall have the right, but shall not be obligated, to repair, or obtain the repair of, the defect and Contractor shall pay to City on demand all costs and expense of such repair. Notwithstanding anything herein to the contrary, in the event that any defect in workmanship or material covered by the foregoing warranty results in a condition that constitutes an immediate hazard to public health or safety, or any property interest, or any person, City shall have the right to immediately repair, or cause to be repaired, such defect, and Contractor shall pay to City on demand all costs and expense of such repair. The foregoing statement relating to hazards to health, safety or property shall be deemed to include both temporary and permanent repairs that may be required as determined in the sole discretion and judgment of City.

In addition to the above, the Contractor shall make a written assignment of all manufacturer's and other product warranties to the City, prior to completion and final acceptance of the Work by City.

The Contractor's Performance Bond shall secure the performance of the Contractor's obligations under this Section 14, and the Contractor and its Surety shall be jointly and severally liable for these obligations.

15. LIQUIDATED DAMAGES IF WORK NOT COMPLETED ON TIME

- A. The actual fact of the occurrence of damages and the actual amount of the damages that City would suffer if the entire Work, and/or any specified portion thereof, were not completed within the time(s) specified herein are dependent upon many circumstances and conditions that could prevail in various combinations, and for this reason, it is impracticable and extremely difficult to fix the actual damages. Damages that City would suffer in the event of such delay include: loss of the use of the project; expenses of prolonged assignment to the project of an architectural and/or engineering staff; prolonged costs of administration, inspection, and supervision; increased operational expenses and/or impaired operation of other facilities dependent upon completion of the project; and the loss and inconvenience suffered by the public within the City of Sacramento by reason of the delay in the completion of the project or portion thereof. Accordingly, the parties agree, and by execution of this Agreement, Contractor acknowledges that it understands and agrees, that the amount(s) set forth herein as liquidated damages reflect the parties' best efforts at the time of entering into the Contract to estimate the damages that may be incurred by City and the public due to the Contractor's delay in completion of the Work and/or any specified portion thereof, and shall be presumed to be the amount of damages sustained by the failure of Contractor to complete the entire Work and/or any specified portion thereof within the time(s) specified herein.

- B. Contractor shall pay liquidated damages to City for failure to complete the entire Work by the Completion Date (as extended in accordance with the Contract Documents, if applicable) in the amount of \$1,000.00 for each calendar day after the Completion Date (as extended in accordance with the Contract Documents, if applicable), continuing to the time at which the entire Work is completed. Such amount is the actual cash value agreed upon by the City and Contractor as the loss to City and the public resulting from Contractor's default.

The parties agree, and by execution of this Agreement, Contractor acknowledges that it understands and agrees, that the foregoing provisions provide for the imposition of liquidated damages from the Completion Date (as extended in accordance with the Contract Documents, if applicable) until the date of completion of the entire Work as determined by the Engineer in accordance with Section 8-4 of the Standard Specifications, whether or not the Work or any portion thereof is claimed or determined to be substantially complete prior to such date of completion.

- C. In the event Contractor shall become liable for liquidated damages, City, in addition to all other remedies provided by law, shall have the right to withhold any and all payments that otherwise would be or become due Contractor until the liability of Contractor under this section is finally determined. City shall have the right to use and apply such payments, in whole or in part, to reimburse City for all liquidated damages due or to become due to City. Any remaining balance of such payments shall be paid to Contractor only after discharge in full of all liability incurred by Contractor under this section or otherwise under any provision of the Contract Documents or any applicable Law or Regulation. If the sum so retained by City is not sufficient to discharge all such liabilities of Contractor, Contractor shall continue to remain liable to City until all such liabilities are satisfied in full. No failure by City to withhold any payment as specified above shall in any manner be construed to constitute a release of any such liabilities nor a waiver of the City's right to withhold payment for such liabilities.

16. INDEMNITY AND HOLD HARMLESS

- A. Contractor shall defend, hold harmless and indemnify the City, its officers, employees, and agents, and each and every one of them, from and against any and all actions, damages, costs, liabilities, claims, demands, losses, judgments, penalties, costs and expenses of every type and description, whether arising on or off the site of the Work, including, but not limited to, any fees and/or costs reasonably incurred by City's staff attorneys or outside attorneys and any fees and expenses incurred in enforcing this provision (hereafter collectively referred to as "Liabilities"), including but not limited to Liabilities arising from personal injury or death, damage to personal, real or intellectual property or the environment, contractual or other economic damages, or regulatory penalties, arising out of or in any way connected with performance of or failure to perform the Work by the Contractor, any subcontractor or agent, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may

be liable, whether or not (i) such Liabilities are caused in part by a party indemnified hereunder, or (ii) such Liabilities are litigated, settled or reduced to judgment; provided that the foregoing indemnity does not apply to liability for damages for death or bodily injury to persons, injury to property, or other loss, damage or expense to the extent arising from (i) the sole negligence or willful misconduct of, or defects in design furnished by, City, its agents, servants, or independent contractors who are directly responsible to City, or (ii) the active negligence of City.

- B. The existence or acceptance by City of any of the insurance policies or coverages described in this Agreement shall not affect or limit any of City's rights under this Section 16, nor shall the limits of such insurance limit the liability of Contractor hereunder. The provisions of this Section 16 shall survive any expiration or termination of the Contract.

17. CONTRACTOR SHALL ASSUME RISKS

Until the completion and final acceptance by City of all Work under this Contract, the Work shall be under Contractor's responsible care and charge, and Contractor, at no cost to City, shall rebuild, repair, restore and make good all injuries, damages, re-erections, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the Work.

18. GENERAL LIABILITY OF CONTRACTOR

Except as otherwise herein expressly stipulated, Contractor shall perform all the Work and furnish all the labor, materials, tools, equipment, apparatus, facilities, transportation, power and light, and appliances, necessary or proper for performing and completing the Work herein required in the manner and within the time herein specified. The mention of any specific duty or liability of Contractor shall not be construed as a limitation or restriction of any general liability or duty of Contractor, and any reference to any specific duty or liability shall be construed to be solely for the purpose of explanation.

19. INSURANCE

During the entire term of the Contract, Contractor shall maintain the insurance coverage described in this Section 19.

Full compensation for all premiums that Contractor is required to pay for the insurance coverage described herein shall be included in the compensation specified for the Work performed by Contractor under this Contract. No additional compensation will be provided for Contractor's insurance premiums. Any available insurance proceeds in excess of the specified minimum limits and coverages shall be available to the City.

It is understood and agreed by the Contractor that its liability to the City shall not in any way be limited to or affected by the amount of insurance coverage required or carried

by the Contractor in connection with this Contract.

A. Minimum Scope & Limits of Insurance Coverage

- (1) Commercial General Liability Insurance providing coverage at least as broad as ISO CGL Form 00 01 on an occurrence basis for bodily injury, including death, of one or more persons, property damage, and personal injury, arising out of activities performed by or on behalf of Contractor and its subcontractors, products and completed operations of Contractor and its subcontractors, and premises owned, leased, or used by Contractor and its subcontractors, with limits of not less than one million dollars (\$1,000,000) per occurrence. The policy shall provide contractual liability and products and completed operations coverage for the term of the policy.
- (2) Automobile Liability Insurance providing coverage at least as broad as ISO Form CA 00 01 for bodily injury, including death, of one or more persons, property damage, and personal injury, with limits of not less than one million dollars (\$1,000,000) per accident. The policy shall provide coverage for owned, non-owned, and/or hired autos as appropriate to the operations of the Contractor.

No automobile liability insurance shall be required if Contractor completes the following certification:

"I certify that a motor vehicle will not be used in the performance of any work or services under this agreement." _____
(Contractor initials)

- (3) Workers' Compensation Insurance with statutory limits, and Employers' Liability Insurance with limits of not less than one million dollars (\$1,000,000). The Workers' Compensation policy shall include a waiver of subrogation in favor of the City.

No Workers' Compensation insurance shall be required if Contractor completes the following certification:

"I certify that my business has no employees, and that I do not employ anyone. I am exempt from the legal requirements to provide Workers' Compensation insurance." _____
(Contractor initials)

B. Additional Insured Coverage

- (1) Commercial General Liability Insurance: The City, its officials, employees, and volunteers shall be covered by policy terms or endorsement as additional insureds as respects general liability arising out of: activities performed by or on behalf of Contractor and its subcontractors; products and completed operations of Contractor and its subcontractors; and premises owned, leased, or used by Contractor and its subcontractors.
- (2) Automobile Liability Insurance: The City, its officials, employees, and volunteers shall be covered by policy terms or endorsement as additional insureds as respects auto liability.

C. Other Insurance Provisions

The policies are to contain, or be endorsed to contain, the following provisions:

- (1) Contractor's insurance coverage, including excess insurance, shall be primary insurance as respects City, its officials, employees, and volunteers. Any insurance or self-insurance maintained by City, its officials, employees, or volunteers shall be in excess of Contractor's insurance and shall not contribute with it.
- (2) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to City, its officials, employees, or volunteers.
- (3) Coverage shall state that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- (4) City will be provided with thirty (30) days written notice of cancellation or material change in the policy language or terms.

D. Acceptability of Insurance

Insurance shall be placed with insurers with a Bests' rating of not less than A:VI. Self-insured retentions, policy terms or other variations that do not comply with the requirements of this Section 3 must be declared to and approved by the City in writing prior to execution of this Contract.

E. Verification of Coverage

- (1) Contractor shall furnish City with certificates and required endorsements evidencing the insurance required. The certificates and endorsements shall be forwarded to the City representative named in Exhibit A. Copies of policies shall be delivered to the City on demand. Certificates of

insurance shall be signed by an authorized representative of the insurance carrier.

- (2) For all insurance policy renewals during the term of this Contract, Contractor shall send insurance certificates reflecting the policy renewals directly to:

City of Sacramento

c/o Ebix RCS

Reference #: (This number will be provided by EBIX after Contract approval.)

PO Box 257

Portland, MI 48875-0257

Insurance certificates also may be faxed to (770) 325-3340, or e-mailed to:

CertsOnly-Portland@ebix.com

- (3) The City may withdraw its offer of contract or cancel this Contract if the certificates of insurance and endorsements required have not been provided prior to execution of this Contract. The City may withhold payments to Contractor or cancel the Contract if the insurance is canceled or Contractor otherwise ceases to be insured as required herein.

F. Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance coverage that meets the minimum scope and limits of insurance coverage specified in subsection A, above.

20. FAILURE TO MAINTAIN BONDS OR INSURANCE

If, at any time during the performance of this Contract, Contractor fails to maintain any item of the bonds and/or insurance required under the Contract in full force and effect, Contractor shall immediately suspend all work under the Contract and notify City in writing of such failure. After such notice is provided, or if City discovers such failure and notifies Contractor, the City thereafter may withhold all Contract payments due or that become due until notice is received by City that such bonds and/or insurance have been restored in full force and effect and that the premiums therefor have been paid for a period satisfactory to the Division of Risk Management. Contractor shall not resume work until notified by City to do so, and the City shall have no responsibility or liability for any costs incurred by Contractor as a result of such suspension of Work.

In addition to the foregoing, any failure to maintain any item of the required bonds and/or insurance at any time during the performance of this Contract will be sufficient cause for termination of the Contract by City.

The Contractor shall be solely responsible for, and shall defend, indemnify and hold harmless the City, its officers, employees and agents against and from, any and all damages, claims, losses, actions, costs or other expenses of any kind incurred by any party as a direct or indirect result of any suspension of Work or termination of the Contract under the provisions of this Section.

21. EXCUSABLE DELAYS

For the purpose of these Contract Documents, the term "Excusable Delay" shall mean, and is limited to, delay caused directly by: acts of God; acts of a public enemy; fires; inclement weather as determined by the Engineer; riots; insurrections; epidemics; quarantine restrictions; strikes; lockouts; sitdowns; acts of a governmental agency; priorities or privileges established for the manufacture, assemble, or allotment of materials necessary in the Work by order, decree or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the Work ordered by City insofar as they necessarily require additional time in which to complete the Work; the prevention of Contractor from commencing or prosecuting the Work because of the acts of others, excepting Contractor's subcontractors or suppliers; or the prevention of Contractor from commencing or prosecuting the Work because of a Citywide failure of public utility service.

The term "Excusable Delay" shall specifically not include: (i) any delay that could have been avoided by the exercise of care, prudence, foresight and diligence on the part of Contractor; (ii) any delay in the prosecution of any part of the Work that does not constitute a Controlling Operation, whether or not such delay is unavoidable; (iii) any reasonable delay resulting from time required by City for review of any Contractor submittals and for the making of surveys, measurements and inspection; and, (iv) any delay arising from an interruption in the prosecution of the Work on account of reasonable interference by other Contractors employed by City that does not necessarily prevent the completion of the entire Work within the time specified. Excusable Delays, if any, shall operate only to extend the Completion Date (not in excess of the period of such delay as determined by City) and shall not under any circumstances increase the amount City is required to pay Contractor except as otherwise provided in these Contract Documents.

22. CONTRACTOR TO SERVE NOTICE OF DELAYS

Whenever Contractor foresees any delay in the prosecution of the Work, and in any event as soon as possible (not to exceed a period of ten (10) calendar days) after the initial occurrence of any delay that Contractor regards as or may later claim to be an Excusable Delay, the Contractor shall notify the Engineer in writing of such delay and its cause, in order that the Engineer: (i) may take immediate steps to prevent if possible the occurrence or continuance of the delay; or (ii) if this cannot be done, may determine whether the delay is to be considered excusable, how long it continues, and to what extent the prosecution

and completion of the Work are delayed thereby. Said written notice shall constitute an application for an extension of time only if the notice requests such an extension and sets forth the Contractor's estimate of the additional time required together with a full description of the cause of the delay relied upon.

After the completion of any part or whole of the Work, the Engineer, in estimating the amount due Contractor, will assume that any and all delays that may have occurred in its prosecution and completion were not Excusable Delays, except for such delays for which the Contractor has provided timely written notice as required herein, and that the Engineer has found to be excusable. Contractor shall not be entitled to claim Excusable Delay for any delay for which the Contractor failed to provide such timely written notice.

23. EXTENSION OF TIME

If the Contractor complies with Section 22, above, and the Engineer finds a delay claimed by the Contractor to be an Excusable Delay, the Contractor shall be allowed an extension of time to complete the Work that is proportional to the period of Excusable Delay determined by the Engineer, subject to the approval by City of a change order granting such time extension. During a duly authorized extension for an Excusable Delay, City shall not charge liquidated damages against the Contractor for such delay.

If the City extends the time to complete the Work as provided herein, such extension shall in no way release any warranty or guarantee given by Contractor pursuant to the provisions of the Contract Documents, nor shall such extension of time relieve or release the sureties of the Bonds provided pursuant to the Contract Documents. By executing such Bonds, the Sureties shall be deemed to have expressly agreed to any such extension of time. The granting of any extension of time as provided herein shall in no way operate as a waiver on the part of City of its rights under this Contract, excepting only extension of the Completion Date for such period of Excusable Delay as may be determined by the Engineer and approved by a duly authorized change order.

24. NO PAYMENT FOR DELAYS

No damages or compensation of any kind shall be paid to Contractor or any subcontractor because of delays in the progress of the Work whether or not such delays qualify for extension of time under this Agreement; except that this provision shall not preclude the recovery of damages for a delay caused by the City that is unreasonable under the circumstances and that is not within the contemplation of the parties, provided that the Contractor timely submits all such written notice(s) and fully complies with such other procedures as may be specified in the Contract Documents or any Laws or Regulations for Contractor to claim damages for such delay.

25. CHANGES IN THE WORK

Changes in the Work authorized or directed in accordance with the Contract Documents and extensions of time of completion made necessary by reason thereof shall not in any way release any warranty or guarantee given by Contractor pursuant to the provisions of

the Contract Documents, nor shall such changes in the Work relieve or release the Sureties on Bonds provided pursuant to the Contract Documents. By executing such Bonds, the Sureties shall be deemed to have expressly agreed to any such change in Work and to any extension of time made by reason thereof.

26. TERMINATION AFTER COMPLETION DATE

In addition to any other rights City may have, if any services or work required under the Contract (including but not limited to punch list items) are not completed as of the Completion Date (as adjusted by any extensions of time for Excusable Delays granted pursuant to the Contract Documents), City may terminate the Contract at any time after the Completion Date (as adjusted by any extensions of time for Excusable Delays granted pursuant to the Contract Documents), by providing a written notice to Contractor specifying the date of termination. Such notice also may specify conditions or requirements that Contractor must meet to avoid termination of the Contract on such date. If Contractor fails to fulfill all such conditions and requirements by such termination date, or, if no such conditions or requirements are specified, Contractor shall cease rendering services and performing work on such termination date, and shall not be entitled to receive any compensation for services rendered or work performed after such termination date. In the event of such termination, Contractor shall remain liable to City for liquidated damages incurred for any period of time prior to the termination date.

In addition to any other charges, withholdings or deductions authorized under the Contract or any Laws or Regulations, if City terminates the Contract pursuant to this section, City may withhold and deduct from any payment and/or retention funds otherwise due Contractor any sum necessary to pay the City's cost of completing or correcting, or contracting for the completion or correction of, any services or work under the Contract that are not completed to the satisfaction of the City or that otherwise are deficient or require correction as of such termination date, including but not limited to incomplete punch list items. Such costs shall include all of the City's direct and indirect costs incurred to complete or correct such services or work, including the City's administrative and overhead costs. If the amount of payment(s) and/or retention funds otherwise due the Contractor are insufficient to pay such costs, City shall have the right to recover the balance of such costs from the Contractor and/or its Surety(ies).

27. TERMINATION FOR CONVENIENCE

Upon written notice to the Contractor, the City may at any time, without cause and without prejudice to any other right or remedy of the City, elect to terminate the Contract for the convenience of City. In such case, the Contractor shall be paid (without duplication of any items, and after deduction and/or withholding of any amounts authorized to be deducted or withheld by the Contract Documents or any Laws or Regulations):

- A. For Work executed in accordance with the Contract Documents prior to the effective date of termination and determined to be acceptable by the Engineer, including fair and reasonable sums for overhead and profit on such Work;
- B. For reasonable claims, costs, losses, and damages incurred in settlement of terminated contracts with subcontractors, suppliers, and others; and
- C. For reasonable expenses directly attributable to termination.

Contractor shall not be paid for any loss of anticipated profits or revenue for any Work not performed prior to termination, nor for any economic loss arising out of or resulting from such termination, except for the payments listed in this section. Contractor's warranty under Section 14 of this Agreement shall apply, and Contractor shall remain responsible for all obligations related to such warranty, with respect to all portions of the Work performed prior to the effective date of the termination for convenience pursuant to this section. The City shall be entitled to have any or all remaining Work performed by other contractors or by any other means at any time after the effective date of a termination for convenience pursuant to this section.

28. TERMINATION FOR BREACH OF CONTRACT

If Contractor abandons the Work under this Contract, or if the Contract or any portion of the Contract is sublet or assigned without the consent of the City, or if the Engineer determines in the Engineer's sole discretion that the conditions of the Contract in respect to the rate of progress of the Work are not being fulfilled or any part thereof is unnecessarily delayed, or if Contractor violates or breaches, or fails to execute in good faith, any of the terms or conditions of the Contract, or if Contractor refuses or fails to supply enough properly skilled labor or materials or refuses or fails to make prompt payment to subcontractors for material or labor, or if Contractor disregards any Laws or Regulations or proper instruction or orders of the Engineer, then, notwithstanding any provision to the contrary herein, the City may give Contractor and its Sureties written notification to immediately correct the situation or the Contract shall be terminated.

In the event that such notice is given, and, in the event such situation is not corrected, or arrangements for correction satisfactory to the City are not made, within ten (10) calendar days from the date of such notice or within such other period of time as may be specified by the City in the notice, the Contract shall upon the expiration of said period cease and terminate. In the event of any such termination, City may take over the Work and prosecute the Work to completion, or otherwise, and the Contractor and its Sureties shall be liable to City for any cost occasioned City thereby, as hereinafter set forth.

In the event City completes the Work, or causes the Work to be completed, no payment of any kind shall be made to Contractor until the Work is complete. The cost of completing the Work, including but not limited to, extra costs of project administration and management incurred by City, both direct or indirect, shall be deducted from any sum then due, or that becomes due, to Contractor from City. If sums due to Contractor from City are less than the cost of completing the Work, Contractor and its Sureties shall pay City a sum equal to this difference on demand. In the event City completes the Work, and there is a sum remaining due to Contractor after City deducts the costs of completing the Work, then City shall pay such sum to Contractor. The Contractor and Contractor's Sureties shall be jointly and severally liable for all obligations imposed on Contractor hereunder.

No act by City before the Work is finally accepted, including, but not limited to, exercise of other rights under the Contract, actions at law or in equity, extensions of time, payments, assessments of liquidated damages, occupation or acceptance of any part of the Work,

waiver of any prior breach of the Contract or failure to take action pursuant to this section upon the happening of any prior default or breach of Contractor, shall be construed to be a waiver or estoppel of the City's right to act pursuant to this Section upon any subsequent event, occurrence or failure by Contractor to fulfill the terms and conditions of the Contract. The rights of City to terminate the Contract pursuant to this Section and pursuant to Sections 26 and 27 are cumulative and are in addition to all other rights of City pursuant to the Contract and at law or in equity.

29. CONTRACTOR BANKRUPT

If Contractor should commence any bankruptcy proceeding, or if Contractor is adjudged a bankrupt, or if Contractor makes any assignment for the benefit of creditors, or if a receiver is appointed on account of Contractor's insolvency, then the City may, without prejudice to any other right or remedy, terminate the Contract and complete the work by giving notice as provided in Section 28 above.

30. SURETIES' OBLIGATIONS UPON TERMINATION

If the City terminates the Contract pursuant to Section 28 or Section 29 above:

- A. The Surety under Contractor's performance bond shall be fully responsible for all of the Contractor's remaining obligations of performance under the Contract as if the Surety were a party to the Contract, including without limitation Contractor's obligations, as provided in the Contract Documents, to complete and provide a one-year warranty of the entire Work, pay liquidated damages and indemnify, defend and hold harmless City, up to the full amount of the performance bond.
- B. The Surety under Contractor's payment bond shall be fully responsible for the performance of all of the Contractor's remaining payment obligations for work, services, equipment or materials performed or provided in connection with the Work or any portion thereof, up to the full amount of the payment bond.

31. ACCOUNTING RECORDS OF CONTRACTOR

During performance of the Contract and for a period of three (3) years after completing the entire Work, Contractor shall maintain all accounting and financial records related to the Contract and performance of the Work in accordance with generally accepted accounting practices, and shall keep and make such records available for inspection and audit by representatives of the City upon reasonable written notice.

32. USE TAX REQUIREMENTS

During the performance of this Agreement, CONTRACTOR, for itself, its assignees and successors in interest, agrees as follows:

- A. Use Tax Direct Payment Permit: For all leases and purchases of materials, equipment, supplies, or other tangible personal property used to perform the Agreement and shipped from outside California, the Contractor and any subcontractors leasing or purchasing such materials, equipment, supplies or other tangible personal property shall obtain a Use Tax Direct Payment Permit from the California State Board of Equalization ("SBE") in accordance with the applicable SBE criteria and requirements.
- B. Sellers Permit: For any construction contract and any construction subcontract in the amount of \$5,000,000 or more, Contractor and the subcontractor(s) shall obtain sellers permits from the SBE and shall register the jobsite as the place of business for the purpose of allocating local sales and use tax to the City. Contractor and its subcontractors shall remit the self-accrued use tax to the SBE, and shall provide a copy of each remittance to the City.
- C. The above provisions shall apply in all instances unless prohibited by the funding source for the Agreement.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement on the date set for opposite their names.

CONTRACTOR

Under penalty of perjury, I certify that the taxpayer identification number and all other information provided here are correct.

DATE 1-20-2016

BY AC
Ahmet Gulcu
Print Name
President
Title

BY AC
Ahmet Gulcu
Print Name
Treasury
Title
45-2854540
Federal ID#
275-3227-4
State ID#
142353

City of Sacramento Business Operation Tax Certificate No. (City will not award contract until Certificate Number is obtained)

Type of Business Entity (check one):
 Individual/Sole Proprietor
 Partnership
 Corporation
 Limited Liability Company
 Other (please specify: _____)

CITY OF SACRAMENTO
a municipal corporation

DATE _____

BY _____
For: John F. Shirey, City Manager

Original Approved As To Form:
[Signature]
City Attorney

Attest:

City Clerk

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT-CALIFORNIA

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

You must maintain payroll records accurately segregating the remuneration of your employees while engaged in the work described in the Schedule.

The additional premium for this endorsement shall be 2.5% of the California workers' compensation premium otherwise due on such remuneration.

Schedule

Person or Organization

Blanket Waiver of Subrogation

Job Description

As respects to all CA jobs performed by the named insured during the policy period where by written contract a waiver of subrogation is required prior to the commencement of work.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated
(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective 07-31-2015
Insured
Empire Landscaping, Inc. (A Corp)

Policy No. ATW 002891-02
Insurance Company
Republic Underwriters Insurance Company

Endorsement No. 1

Countersigned By _____

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

BLANKET, PRIMARY, OR NON-CONTRIBUTORY – AS REQUIRED BY WRITTEN CONTRACT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

Policy Effective Date 7/31/2015	Policy Expiration Date 7/31/2016
Named Insured Empire Landscaping Inc	

If the required policy information is not shown above, it will be shown in the Declarations.

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
<p><u>Name of Person or Organization:</u> Any person or organization with whom you agreed, because of a written "insured contract", written agreement or permit, is an insured during the policy period.</p>	<p><u>Location:</u> Blanket as required by written "insured contract". This insurance is excess over any other insurance available to the additional insured(s) as an insured whether primary, excess, contingent or on any other basis, unless a written "insured contract" or written agreement specifically requires that this insurance be either primary or non-contributing. This insurance applies as respects any claim, loss or liability allegedly arising out of the operations of the named insured, provided however that this insurance will not apply to any claim, loss or liability which is determined to be solely the result of the additional insured's negligence or solely the additional insured's responsibility.</p>

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

- B.** With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED ENDORSEMENT - AUTO

This endorsement modifies insurance provided under the following:

COMMERCIAL AUTOMOBILE COVERAGE PART

Policy Effective Date 7/31/2015	Policy Expiration Date 7/31/2016
Named Insured Empire Landscaping Inc	Endorsement Effective 10/20/2015

If the required policy information is not shown above, it will be shown in the Declarations.

SCHEDULE

Name of Additional Insured

Address

City of Sacramento
Department of Public Works, Contracts
Attn: Tim Hopper

5730 24th Street, Building 4
Sacramento, CA 95822

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. SECTION II – LIABILITY COVERAGE, A. Coverage, item 1. Who Is An Insured is amended to add the following:

- d.** Any person, organization, trustee, estate or governmental entity shown in the **SCHEDULE** above with respect to the operation, maintenance or use of a covered "auto" if:
 - (1)** You are obligated to add that person, organization, trustee, estate or governmental entity as an additional "insured" to this policy by:
 - (a)** An expressed provision of an written "insured contract" or written agreement; or
 - (b)** An expressed condition of a written permit issued to you by a governmental or public authority.
 - (2)** The "bodily injury" or "property damage" is caused by an "accident" which takes place after:
 - (a)** You executed the written "insured contract" or written agreement; or
 - (b)** The permit has been issued to you.

B. SECTION IV – BUSINESS AUTO CONDITIONS is amended as follows:

- 1. A. Loss Conditions, 5. Transfer Of Right Of Recovery Against Others To Us** is amended to add the following:

We waive any right of recovery we may have against any additional "insured" under paragraph **d.** above, but only as respects "loss" arising out of the operation, maintenance or use of a covered "auto" pursuant to the provisions or conditions of the written "insured contract", written agreement or permit.

2. **B. General Conditions, 5. Other Insurance** is amended to add the following:

- e. This insurance is excess over any other insurance available to the additional insured(s) as an insured whether primary, excess, contingent or on any other basis, unless a written "insured contract" or written agreement specifically requires that this insurance be either primary or non-contributing.

ALL OTHER TERMS AND CONDITIONS OF THE POLICY REMAIN UNCHANGED.

**CITY OF SACRAMENTO
PERFORMANCE BOND**

Bond No.: 106374486

Premium: \$7,408.00

Page 1 of 1

WHEREAS, the City of Sacramento, State of California, hereinafter called City, has conditionally awarded to: **EMPIRE LANDSCAPING, 118 HICKORY LANE, DAVIS, CA 95616.**

as principal, hereinafter called Contractor, a contract for construction of:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

which contract is by reference incorporated herein and made a part hereof as if the Surety named below were a party to the contract, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract, Contractor is required to furnish a bond for the faithful performance of the Contract.

NOW, THEREFORE, we the Contractor and *(here insert full name and address of Surety):*

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA 11070 White Rock Rd., Ste. 130, Rancho Cordova, CA 95670

a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, as obligee, in the sum of:

FIVE HUNDRED SIXTEEN THOUSAND SIX HUNDRED DOLLARS AND NO CENTS

(\$516,600.00), for the payment of which sum well and truly to be made, we the Contractor and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally. The condition of this obligation is such that, if the Contractor, Contractor's heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and fully perform all covenants, conditions and agreements required to be kept and performed by Contractor in the Contract and any changes, additions or alterations made thereto, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meanings, and shall indemnify and save harmless the City, its officers, employees and agents, as therein provided, then the Surety's obligations under the Contract and this bond shall be null and void; otherwise they shall be and remain in full force and effect. This obligation shall remain in full force and effect through the end of the Contract warranty period, which will expire one year after the completion of work date specified in the Notice of Completion filed for the above-named project.

As part of the obligations secured hereby and in addition to the sum specified above, there shall be included all costs, expenses and fees, including attorney's fees, reasonably incurred by City in successfully enforcing such obligations, all to be taxed as costs and included in any judgment rendered.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on January 21, 2016.

EMPIRE LANDSCAPING, INC.
By: [Signature] (Contractor) (Seal)
Title: President

TRAVELERS CASUALTY AND SURETY COMPANY
OF AMERICA
By: [Signature] (Surety) (Seal)
Title: Karen Amin, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:
[Signature]
City Attorney

Agent name & Address ALLIANT INSURANCE SERVICES, INC.
1949 W. Kettleman Ln., Ste. 200, Lodi, CA 95242
Agent Phone # (209) 333-1136
Surety Phone # (916) 852-5266
California License # 0C36861

**CITY OF SACRAMENTO
PAYMENT BOND**

Bond No.: 106374486
Premium: Included in Conjunction with
Performance Bond

Page 1 of 1

WHEREAS, the City of Sacramento, in the State of California, hereinafter called City, has conditionally awarded to: **EMPIRE LANDSCAPING, 118 HICKORY LANE, DAVIS, CA 95616** hereinafter called Contractor, a contract for construction of:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

Which contract is by reference incorporated herein and made a part hereof, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract and pursuant to Chapter 5 of Title 3 of Part 6 of Division 4 of the California Civil Code (commencing with Civil Code Section 9550), Contractor is required to furnish a good and sufficient payment bond to secure payment of the claims to which reference is made in Civil Code Section 9554.

NOW, THEREFORE, we the Contractor and (*here insert full name and address of Surety*):

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA 11070 White Rock Rd., Ste. 130, Rancho Cordova, CA 95670

a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, and unto all persons or entities entitled to assert a claim against a payment bond under any of the aforesaid Civil Code provisions in the sum of FIVE HUNDRED SIXTEEN THOUSAND SIX HUNDRED DOLLARS AND NO CENTS (\$516,600.00), on the condition that if Contractor shall fail to pay for any materials or equipment furnished or used in performance of the Contract, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board or the Employment Development Department from the wages of employees of the Contractor and all subcontractors with respect to such work or labor, then the Surety shall pay the same in an amount not exceeding the sum specified above. If suit is brought upon this bond, Surety shall pay, in addition to the above sum, all costs, expenses and fees, including attorney's fees, reasonably incurred by any party in successfully enforcing the obligation secured hereby, all to be taxed as costs and included in any judgment rendered. Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect, and shall bind Contractor, Surety, their heirs, executors, administrators, successors and assigns, jointly and severally.

It is hereby stipulated and agreed that this bond shall inure to the benefit of all persons, companies, corporations, political subdivisions, State agencies and other entities entitled to assert a claim against a payment bond under any of the aforesaid Civil Code provisions, so as to give a right of action to them or their assigns in any suit brought upon this bond. The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on January 21, 20 16.

EMPIRE LANDSCAPING, INC.
By [Signature] (Contractor) (Seal)
Title President

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
By [Signature] (Surety) (Seal)
Title Karen Amin, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:
[Signature]
City Attorney

Agent name & Address ALLIANT INSURANCE SERVICES, INC.
1949 W. Kettleman Ln., Ste. 200, Lodi, CA 95242
Agent Phone # (209) 333-1136
Surety Phone # (916) 852-5266
California License # OC36861

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Joaquin)

On January 21, 2016 before me, Jennifer Loper, Notary Public
(insert name and title of the officer)

personally appeared Karen Amin,
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 Jennifer Loper

(Seal)





POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 228630

Certificate No. 006160419

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Daniel M. Connolly, Karen Amin, David Schnapp, and Jennifer Loper

of the City of Lodi, State of California, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 22nd day of January, 2015.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 22nd day of January, 2015, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

**CITY OF SACRAMENTO
PERFORMANCE BOND**

Bond No.: 106374486

Premium: \$7,408.00

Page 1 of 1

WHEREAS, the City of Sacramento, State of California, hereinafter called City, has conditionally awarded to: **EMPIRE LANDSCAPING, 118 HICKORY LANE, DAVIS, CA 95616:**

as principal, hereinafter called Contractor, a contract for construction of:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

which contract is by reference incorporated herein and made a part hereof as if the Surety named below were a party to the contract, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract, Contractor is required to furnish a bond for the faithful performance of the Contract.

NOW, THEREFORE, we the Contractor and (*here insert full name and address of Surety*):

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA 11070 White Rock Rd., Ste. 130, Rancho Cordova, CA 95670

a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, as obligee, in the sum of:

FIVE HUNDRED SIXTEEN THOUSAND SIX HUNDRED DOLLARS AND NO CENTS

(\$516,600.00), for the payment of which sum well and truly to be made, we the Contractor and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally. The condition of this obligation is such that, if the Contractor, Contractor's heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and fully perform all covenants, conditions and agreements required to be kept and performed by Contractor in the Contract and any changes, additions or alterations made thereto, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meanings, and shall indemnify and save harmless the City, its officers, employees and agents, as therein provided, then the Surety's obligations under the Contract and this bond shall be null and void; otherwise they shall be and remain in full force and effect. This obligation shall remain in full force and effect through the end of the Contract warranty period, which will expire one year after the completion of work date specified in the Notice of Completion filed for the above-named project.

As part of the obligations secured hereby and in addition to the sum specified above, there shall be included all costs, expenses and fees, including attorney's fees, reasonably incurred by City in successfully enforcing such obligations, all to be taxed as costs and included in any judgment rendered.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on January 21, 20 16.

EMPIRE LANDSCAPING, INC.
By [Signature] (Contractor) (Seal)
Title President

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
By [Signature] (Surety) (Seal)
Title Karen Amin, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:

[Signature]
City Attorney

Agent name & Address ALLIANT INSURANCE SERVICES, INC.
1949 W. Kettleman Ln., Ste. 200, Lodi, CA 95242
Agent Phone # (209) 333-1136
Surety Phone # (916) 852-5266
California License # 0C36861

**CITY OF SACRAMENTO
PAYMENT BOND**

Bond No.: 106374486
Premium: Included in Conjunction with
Performance Bond

Page 1 of 1

WHEREAS, the City of Sacramento, in the State of California, hereinafter called City, has conditionally awarded to: **EMPIRE LANDSCAPING, 118 HICKORY LANE, DAVIS, CA 95616** hereinafter called Contractor, a contract for construction of:

NEW MARKET DRIVE MEDIAN LANDSCAPE (T15155000)

Which contract is by reference incorporated herein and made a part hereof, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract and pursuant to Chapter 5 of Title 3 of Part 6 of Division 4 of the California Civil Code (commencing with Civil Code Section 9550), Contractor is required to furnish a good and sufficient payment bond to secure payment of the claims to which reference is made in Civil Code Section 9554.

NOW, THEREFORE, we the Contractor and *(here insert full name and address of Surety):*

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA 11070 White Rock Rd., Ste. 130, Rancho Cordova, CA 95670

a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, and unto all persons or entities entitled to assert a claim against a payment bond under any of the aforesaid Civil Code provisions in the sum of **FIVE HUNDRED SIXTEEN THOUSAND SIX HUNDRED DOLLARS AND NO CENTS (\$516,600.00)**, on the condition that if Contractor shall fail to pay for any materials or equipment furnished or used in performance of the Contract, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board or the Employment Development Department from the wages of employees of the Contractor and all subcontractors with respect to such work or labor, then the Surety shall pay the same in an amount not exceeding the sum specified above. If suit is brought upon this bond, Surety shall pay, in addition to the above sum, all costs, expenses and fees, including attorney's fees, reasonably incurred by any party in successfully enforcing the obligation secured hereby, all to be taxed as costs and included in any judgment rendered. Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect, and shall bind Contractor, Surety, their heirs, executors, administrators, successors and assigns, jointly and severally.

It is hereby stipulated and agreed that this bond shall inure to the benefit of all persons, companies, corporations, political subdivisions, State agencies and other entities entitled to assert a claim against a payment bond under any of the aforesaid Civil Code provisions, so as to give a right of action to them or their assigns in any suit brought upon this bond. The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or to the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on January 21, 20 16.

EMPIRE LANDSCAPING, INC.

(Contractor) (Seal)
By _____
Title President

TRAVELERS CASUALTY AND SURETY COMPANY
OF AMERICA

(Surety) (Seal)
By _____
Title Karen Amin, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:
Amr Path

City Attorney

Agent name & Address ALLIANT INSURANCE SERVICES, INC.
1949 W. Kettleman Ln., Ste. 200, Lodi, CA 95242
Agent Phone # (209) 333-1136
Surety Phone # (916) 852-5266
California License # 0C36861

Effective 7-1-12

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Joaquin)

On January 21, 2016 before me, Jennifer Loper, Notary Public
(insert name and title of the officer)

personally appeared Karen Amin
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 Jennifer Loper (Seal)





POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 228630

Certificate No. 006160418

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Daniel M. Connolly, Karen Amin, David Schnapp, and Jennifer Loper

of the City of Lodi, State of California, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 22nd day of January, 2015.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 22nd day of January, 2015, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

WORKER'S COMPENSATION CERTIFICATION

In accordance with Article 5 (commencing at Section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the below certificate must be signed and filed with the awarding body prior to performing any work under this contract. Labor Code Section 3700, inter alia, states the following:

"Every employer shall secure the payment of compensation in one or more of the following ways:

"(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this State.

"(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his employees.

To be signed by authorized corporate officer or partner or individual submitting the Proposal. If Bidder is: (example)

1. An individual using a firm name, sign: "John Doe, an individual doing business as Blank Company."
2. An individual doing business under his own name, Sign: your name only.
3. A co-partnership, sign: "John Doe and Richard Doe, co-partners doing business as Blank Company, by, John Doe, co-partner.
4. A corporation, sign: "Blank Company, by John Doe, Secretary." (or other title)

I am aware of the provisions of Section 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 I will comply with such provisions before commencing the performance of the work of this contract.

DATE: 1-20-2016

Contractor Empire Landscaping Inc.

By Ahmet Gulcu A-C
Signature

PAY REQUEST APPLICATION

PROJECT: NEW MARKET DR. MEDIAN LANDSCAPE
 CONTRACTOR: EMPIRE LANDSCAPING, INC.
 PURCHASE ORDER NO.: _____ COST CENTER (PROJ NO.): T15155000
 INVOICE NO.: 1 PERIOD ENDING DATE: 1/31/2001

ORIGINAL CONTRACT AMOUNT: \$516,600.00
 CHANGE ORDER NO. 1 _____
 CHANGE ORDER NO. 2 _____
 CHANGE ORDER NO. 3 _____
 CHANGE ORDER NO. 4 _____
 NET CHANGE BY CHANGE ORDERS: _____
 TOTAL ADJUSTED CONTRACT AMOUNT TO DATE: \$516,600.00
 BALANCE OF CONTRACT TO FINISH: \$516,600.00
 TOTAL WORK COMPLETED: _____
 LESS 5% RETENTION: _____
 LESS PREVIOUS PAYMENTS: _____
 AMOUNT DUE THIS INVOICE: _____

Labor compliance (payrolls, etc.) is current and submitted for this Pay Request

Approved
By (Prime Contractor) _____ Date: _____

Submit To: Department of Parks and Recreation
Park Planning and Development Services
915 "I"(eye) Street, 5th Floor
Sacramento, CA 95814

Approved By (Resident Const. Inspector) _____ Robert Rueff Date: _____
 Approved By (Project Manager) _____ Dennis Day Date: _____
 Approved By (Labor Compliance) _____ Date: _____

In accordance with Public Contract Code Sec. 20104.50 the City shall pay the Contractor interest on any progress payment which is made by City more than 30 days after City receives an undisputed and properly submitted written payment request. Said interest shall be equal to the rate set forth in CCP Sec.685.010(a), and shall begin to accrue upon the expiration of said 30 day period. Any written request for a progress payment which City determines to be disputed, improper or not suitable for payment for any reason shall be returned to Contractor within 7 days after receipt by City, along with a written statement of the reason or reasons why such request is disputed, improper or not suitable for payment.

ADDENDUM 1-REVISED SCHEDULE OF VALUES (11/12/15)



PROJECT NAME: NEW MARKET DR. MEDIAN LANDSCAPE

CONTRACT NO: T15155000

CITY PROJ. NO: T15155000

FUNDING:

CONTRACTOR: EMPIRE LANDSCAPING, INC.

ADDRESS: 118 HICKORY LANE

DAVIS, CA 95616

PHONE NO: (530) 400-3943

Pay Request Number 1
 Work Performed Thru 1/31/2001
 Date Pay Request was Submitted 2/1/2001
 Number of Contract Days Expended 30

Item No	Item Description	Original Contract Quantity	Unit	Unit Price	Original Contract Amount	CCO Adjusted Quantity	Previously Paid		This Estimate		Total Work Completed		Balance of Contract	
							Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
1	Not Used	N/A	LS											
2	Clearing and Grubbing	1	LS	\$20,000.00	\$20,000.00								1.00	\$20,000.00
3	Erosion and Sediment Control	1	LS	\$10,000.00	\$10,000.00								1.00	\$10,000.00
4	Traffic Control	1	LS	\$5,000.00	\$5,000.00								1.00	\$5,000.00
5	Site Grading	1	LS	\$10,000.00	\$10,000.00								1.00	\$10,000.00
6	Aggregate Base to Place	1	LS	\$10,000.00	\$10,000.00								1.00	\$10,000.00
7	Stabilized Decomposed Granite Pavement to Place	1	LS	\$20,000.00	\$20,000.00								1.00	\$20,000.00
8	6" Concrete Mow Strip to Construct	1	LS	\$5,000.00	\$5,000.00								1.00	\$5,000.00
9	18" Wide Colored Concrete Band	1	LS	\$54,000.00	\$54,000.00								1.00	\$54,000.00
10	River Cobbles to Place	1	LS	\$10,000.00	\$10,000.00								1.00	\$10,000.00
11	Header Board to Place	1	LS	\$5,000.00	\$5,000.00								1.00	\$5,000.00
12	Irrigation Water Tap, Meter and Backflow Preventer	1	LS	\$30,000.00	\$30,000.00								1.00	\$30,000.00
13	Electrical System to Install	1	LS	\$30,000.00	\$30,000.00								1.00	\$30,000.00
14	Automatic Irrigation System	1	LS	\$100,000.00	\$100,000.00								1.00	\$100,000.00
15	Irrigation Controller	1	LS	\$25,000.00	\$25,000.00								1.00	\$25,000.00
16	Booster Pump to Install	1	LS	\$25,000.00	\$25,000.00								1.00	\$25,000.00
17	Trees to Plant (15 Gal.)	1	LS	\$6,600.00	\$6,600.00								1.00	\$6,600.00
18	Trees to Plant (24" Box)	1	LS	\$27,000.00	\$27,000.00								1.00	\$27,000.00
19	Shrub and Groundcover Areas to Plant	1	LS	\$30,000.00	\$30,000.00								1.00	\$30,000.00
20	Landscape Weed Fabric to Install	1	LS	\$5,000.00	\$5,000.00								1.00	\$5,000.00
21	Bark Mulch to Place	1	LS	\$10,000.00	\$10,000.00								1.00	\$10,000.00
22	Plant Establishment (180 Days)	1	LS	\$9,000.00	\$9,000.00								1.00	\$9,000.00
A1	Street Corner Paving, Irrigation and Landscaping	1	LS	\$35,000.00	\$35,000.00								1.00	\$35,000.00
A2	California Fan Palms (15' BTH)	2	EA	\$7,500.00	\$15,000.00								2.00	\$15,000.00
A3	Additional Corner Irrigation and Landscaping	1	LS	\$20,000.00	\$20,000.00								1.00	\$20,000.00
	CCO#1												1.00	

Item No	Item Description	Original Contract Quantity	Unit	Unit Price	Original Contract Amount	CCO Adjusted Quantities	Previously Paid		This Estimate		Total Work Completed		Balance of Contract	
							Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
CCO#2													1.00	\$1.00
CCO#3													1.00	\$1.00
CCO#4													1.00	\$1.00
Original Contract Amount					\$516,600.00									
CCO Adjusted Contract Amount						\$516,600.00		Previous Total	Total This Estimate	Total to Date	Balancing Total			\$516,603.00
								Previously Paid						

GUARANTEE

We hereby guarantee the: **NEW MARKET DRIVE MEDIAN LANDSCAPE
(T15155000)**

City of Sacramento for one (1) year in accordance with the guarantee required in the specifications. We agree to repair or replace any or all such work, together with all or any other work which may be displaced in so doing, that may be proven defective in workmanship or material within the one-year period from the date of acceptance without any expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within five (5) days time after being notified in writing, we collectively or separately, do hereby authorize the City to proceed to have the defects repaired and made good at our expense and will pay the costs and damages, including but not limited to any related attorney fees and City staff and administrative expenses, therefore immediately upon demand.

Dated: 1-20-2016

Signed:



Ahmet Gulcu
Printed Name

Empire Landscaping Inc
Company

118 Hickey Ln
Address

Davis CA 95616.

B16190021007

SPECIAL PROVISIONS

SPECIAL PROVISIONS FOR:

NEW MARKET DRIVE MEDIAN LANDSCAPE
(T15155000)

I. **GENERAL REQUIREMENTS**

A. **SCOPE AND LOCATION OF WORK**

The work to be performed under these Special Provisions consists of developing the New Market Drive Median Landscape in Sacramento. The improvements will consist of grading, concrete flatwork, river cobble, decomposed granite paving, concrete curb, header, automatic irrigation system, electrical, and landscaping.

B. **COMPLETION TIME**

The time for the completion of all work is SIXTY (60) Working Days from the Notice to Proceed for substantial completion and ONE HUNDRED EIGHTY (180) Calendar Days for plant establishment. Should said work not be completed to the satisfaction of the City within said time, the contractor shall pay to the City of Sacramento a sum of ONE THOUSAND DOLLARS (\$1,000.00) as liquidated damages and not as a penalty for each calendar day delay after the expiration of such period until the final acceptance of the work by the City and its delivery to the City.

C. **SPECIFICATIONS**

The work to be performed under this contract shall be done in accordance with the Standard Specifications of the City of Sacramento, adopted June 2007, referred to herein as "Standard Specifications" as modified by these Special Provisions, which shall apply to all work.

- i. Standard Specification 1-23 Engineer shall also mean Landscape Architect as defined in Standard Specification Section 1-33.
- ii. Standard Specifications Section 2-9 SUBCONTRACTORS, add the following after the sub paragraph 2 of the first paragraph in the Standard Specifications.

If a prime Contractor fails to specify a subcontractor, or, if a prime Contractor specifies more than one (1) subcontractor for the same portion of work to be performed under the Contract which portion exceeds one-half of one percent of the prime Contractor's total bid, the prime Contractor agrees that he or she is fully qualified to perform that portion himself or herself, and that the prime Contractor shall perform that portion himself or herself.

- iii. Standard Specifications Section 5-4 COOPERATION OF CONTRACTOR

Add the following after the last paragraph of the Standard Specifications Section 5-4 COOPERATION OF CONTRACTOR with the following:

Contractor shall cooperate with the Landscape Architect, inspectors, and with other Contractors in every way possible. The Inspectors shall designate sequence of construction in case of controversy between Contractors.

iv. Standard Specifications Section 8 MEASUREMENT OF QUANTITIES

Delete the paragraph following Section heading 8-1 and replace it with the following: "The City shall determine quantities of work acceptable under the terms of the contract. Not more than once per month the Contractor shall present to the City a statement showing the amount of labor and materials incorporated into the work."

- v. Special Notice Regarding Standard Specifications: The Standard Specifications of the City of Sacramento, dated June 2007, are subject to the provisions of Title 3 of the Sacramento City Code. If there is any conflict between the Standard Specifications as currently written and Title 3 of the Sacramento City Code, the latter shall govern.

- vi. Standard Specifications Section 7 PROSECUTION AND PROGRESS. Add the following after the last paragraph of the Standard Specifications. Section 7-2 WORK SCHEDULE AND ADEQUATE RESOURCES. Contractor shall submit with each Pay Request Application an updated Work Schedule. The updated Work Schedule is an integral part of the Pay Request Application. The Pay Request Application will not be accepted for processing without an accompanying updated Work Schedule.

Special Notice Regarding Standard Specifications: The Standard Specifications of the City of Sacramento, dated June 2007, are now subject to the provisions of Title 3 of the Sacramento City Code. If there is any conflict between the Standard Specifications as currently written and Title 3 of the Sacramento City Code, the latter shall govern.

D. SUBCONTRACTORS

The Contractor shall comply with Section 2-9 of the Standard Specifications.

E. SCHEDULE OF UNIT PRICES

The successful lowest responsible bidder shall provide a Schedule of Unit Prices to the Landscape Architect prior to the award of the contract. The form for the Schedule of Unit Prices will be provided to the successful lowest responsible bidder by the Landscape Architect. This

schedule of unit prices shall be not be used for payment. Unit prices provided on the schedule of unit prices are for information only and may be used as a basis for determining costs in changes in the work.

F. TIME OF AWARD

Section 3-2, "Time of Award: of the Standard Specifications is hereby amended for this project. Time of Award for this contract shall be made within ninety (90) calendar days after opening of the proposals to the lowest responsible bidder, unless otherwise stated in the contract agreement.

G. PRE-BID INTERPRETATION OF CONTRACT DOCUMENTS

No oral representations or interpretation will be made to any bidder as to the meaning of the contract documents. Request for interpretation shall be made in writing, and delivered to the City at least seven (7) days before the time announced for opening the proposals. Interpretation, where necessary, will be made by the City in the form of an addendum to the contract documents, and when issued, will be sent as promptly as is practical to all parties to whom the bid documents have been issued. All such addenda shall become part of the contract. Request for information regarding this procedure or other similar information, shall be directed to Request for information regarding this procedure or other similar information, shall be directed to Dennis Day, Landscape Architect/Project Manager, a Department of Parks and Recreation, Park Planning & Development Services, 915 I Street, 3th Floor, Sacramento, CA 95814, (916) 808-7633, FAX (916) 808-8275.

It shall also be the bidder's responsibility to call to the attention of the Landscape Architect any missing pages or drawings in the contract documents including the addenda. These items shall be brought to the attention of the Landscape Architect at least seven (7) calendar days before the bid opening date.

H. PRE-JOB CONFERENCE AND CONSTRUCTION SCHEDULE

The Contractor, after delivery of the contract and at least three (3) calendar days before beginning work, shall notify the Park Construction Inspector and arrange a pre-job conference. The Contractor shall submit to the Park Construction Inspector construction progress schedules in accordance with Section 7-2 of the Standard Specifications.

I. WORKMANSHIP AND MATERIALS

Except as otherwise specified, all materials and equipment incorporated in the work under the contract shall be new. The quality of materials and workmanship shall be in accordance with the provisions of Section 5-17 of the Standard Specifications. Appearance of the finished work is of primary importance in all phases of this project. Any portion of the work may be rejected due to appearance.

J. TRADE NAMES AND ALTERNATIVES

In accordance with Paragraph 5-18 of the Standard Specifications of the City of Sacramento, certain articles or materials to be incorporated in the work may be designated, for convenience, under a trade name or the name of a manufacturer and his catalogue information. The use of an alternative article or material which is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the approval of the Landscape Architect. The Contractor shall, within **seven (7) calendar days** after the **Bid Summary and Notification of Award Recommendation**, submit for the review of the Landscape Architect, materials, products, equipment and services which differ in any respect from the materials, products, equipment and services specified. Such submittals shall be accompanied by data to substantiate that such items are equal to those specified. The Landscape Architect shall be the sole judge as to the quality and suitability of substitutions and his/her decision is final. Requests for substitutions will not be entertained or considered by the Landscape Architect during the bidding period. No delay or extension of the contract time will be allowed because of the time required for submitting substitutions or for determining their equality. Failure to propose the substitution of any article or service within **seven (7) calendar days** after the **Bid Summary and Notification of Award Recommendation** will be deemed sufficient cause for the denial of request for substitution.

After an approval for a substitution is given, the Contractor shall be responsible for any variation of dimensions, locations, connections, sizes and openings, type and construction of substrate or support to receive materials, etc. The Contractor shall furnish and install any and all additional materials as may be required to perform a complete job without additional cost to the City.

Request for approval shall, in addition to following the directions described above, list any and all deviations in the quality, criteria, characteristics or dimensions from the specified item or items. Any deviations in the quality, criteria, characteristics or dimensions that do not appear in the request for approval and subsequently appear in the shop drawings or in the product or installation, may cause the Contractor to be directed to remove the item or items in total and at his expense, and to provide and install the item or items as originally specified. The mere mention in the request for approval that the item or items will be in accord with the manufacturer's specification or catalog will not be sufficient to alter the specifications unless approval is given to requests, which specifically list in the requesting letter where deviations in the quality, criteria, characteristics or dimensions exist.

K. ACCIDENT PREVENTION

The Contractor's attention is directed to Section 6-9 of the Standard Specifications, which requires compliance with all requirements of the California Occupational Safety and Health Act.

L. LOCATION OF EQUIPMENT AND PIPING

Drawings showing locations of equipment, piping, valves, sprinkler heads, and other appurtenances are diagrammatic only. When installation deviates from the

plans and specifications, the Landscape Architect shall be notified for approval. The Contractor will be held responsible for deviations made without first obtaining the Landscape Architect's approval, and shall remove and relocate such items at his own expense if so directed by the Park Construction Inspector.

M. RELIEF FROM MAINTENANCE AND RESPONSIBILITY - RESOLUTION NO. 108 - DATED MARCH 26, 1970

Upon the written request of the Contractor and upon written approval by the City Landscape Architect, the Contractor may be relieved of the duty of maintaining and protecting certain portions of the work, which have been completed in all respects in accordance with the requirements of the contract and to the satisfaction of the City Landscape Architect, and thereafter, except with his consent, the Contractor will not be required to do further work thereon. In addition, such action by the City Landscape Architect will relieve the Contractor of responsibility for injury or damage to said completed portions of the work resulting from use by public traffic or from the action of the elements or from any other cause but not from injury or damage resulting from the Contractor's own operations or from his negligence. Nothing in this section providing for relief from maintenance and responsibility will be construed as relieving the Contractor of full responsibility for repairing or replacing defective work or materials found at any time before either the formal acceptance of the entire contract by the City Council, or during the applicable guarantee period.

N. CONFLICTS

This Section of the Special Provisions shall supersede Section 5-3 of the Standard Specifications. In case of conflict between drawings and specifications, the drawings shall govern in matters of quantity, the specifications in matters of quality. In case of conflict within the drawings involving quantities or within the specifications involving qualities, the greater quantity and the higher quality shall be furnished.

O. PROTECTION OF FACILITIES

The Contractor shall be directed to Section 7-7 of the Standard Specifications, which shall also include protecting the work and materials to be used thereon from damage or loss due to theft, vandalism and malicious mischief. The Contractor shall be held responsible for such damages or loss, which he shall remedy at his expense.

P. PROTECTION OF DRAINAGE FACILITIES

The Contractor shall maintain all new drainage facilities so storm drainage runoff into the new system is clean. Use straw bales around inlets to minimize sediment infiltration during rainy season and control irrigation schedule to minimize runoff during initial planting of turf.

Q. CLEANING

The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees work, and at the completion of work, he shall remove all his rubbish from and about the site and all his tools, scaffolding and surplus materials, and shall leave his work area, including all

sidewalks and paving areas "broom clean", or its equivalent, unless more exactly specified in other trade sections of the specifications. In case of dispute, the City may remove the rubbish and charge the cost to the Contractor. The Contractor at his expense shall remove spillage resulting from hauling operations along or across any public traveled way immediately. Water or dust palliative shall be applied if ordered by the Park Construction Inspector for the alleviation or prevention of dust nuisance. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

R. SUBMITTALS

In accordance with the provisions of Section 5-7, Standard Specifications of the City of Sacramento(except where noted below), the Contractor shall furnish the Landscape Architect with such shop drawings and other descriptive materials as may be necessary to adequately describe the equipment, material, and fabricated items proposed to be furnished under this contract, and to determine their compliance with the specifications, design, and arrangement shown on the contract drawings. Items to conform to Special Provisions and may include but not limited to:

<u>Item</u>	<u>Product Data</u>	<u>Shop Drawings</u>	<u>Mock-up or Sample</u>
PVC Drain Pipe	X		
Drainage Structures	X	X	
Aggregate Base	X		
Concrete Pavement	X		X
Colored Concrete & Curing Compounds	X		X
Expansion Joint Materials	X		X
Decomposed Granite Paving	X		X
Trex Header Board	X		
Gate Valves	X		
Remote Control Valve	X		
Valve Boxes & Lid	X		
Quick Coupler Valve	X		
Spray Head	X		
Rotor	X		
Main and Water Line	X		
PVC Pipe Fittings	X		
Booster Pump	X	X	
Backflow Device	X		
Solvent Weld for PVC	X		
Swing Joint Assemblies	X		
Irrigation Piping	X		
Control Wire & Connectors	X		
Soil Amendments	X		X
Pre-emergent	X		

Bark Mulch	X		X
Turf Sod	X		
Plant Materials	X		
Landscape Weed Fabric and Staples or Fasteners	X		X
Electrical	X	X	
Pull Boxes and Conduit	X	X	

One (1) copy of such submittals shall be furnished for review by the Landscape Architect, a **digitally scanned copy** will promptly be returned with approval, rejection, or approval with modification. Neither equipment nor material shall deviate in any way from the approved drawings without prior written approval of the Landscape Architect. Any fabrication of other work performed in advance of such approval shall be done entirely at the risk of the Contractor. The approval of submitted drawings or other descriptive material shall not relieve the Contractor of any obligation or responsibility for fulfillment of the contract as prescribed.

S. RECORD DRAWINGS OF NEW CONSTRUCTION

Should the work as installed differ from the original design, the Contractor shall supply the City with a reproducible Mylar "as-built" drawing with all deviations from the original recorded thereon (layout and grades included). This "as-built" shall be found to be of acceptable quality by the Landscape Architect. Upon request, the City shall supply the Contractor with a Mylar base map for his/her "as-built" drawing. "As-built" drawings shall also be required as stated in Section 36-4 of the Standard Specifications.

T. LICENSE REQUIREMENTS

For this publicly bid project either a General Engineering Contractor "A" that also holds a "C27" License or a General Engineering Contractor "A" License with a qualified subcontractor "C27" Licensed. The "C27" contractor shall have previous park construction experience, and shall be required to install the irrigation and landscaping for this project. The "A" contractor is categorized as a general engineering contractor as stated in the Business and Professions Code (B&P) Section 7056 of Article 4 Classifications on the California Contractors State License Board website.

U. PROTECTION OF EXISTING CONCRETE AND ASPHALT PAVEMENTS

Contractor shall repair and replace to City standards any existing asphalt or concrete pavements damaged during construction activities at no expense to the City. These pavement areas include street, curb and gutter, sidewalk and park path. Contractor shall meet with City inspector prior to construction activities to document existing conditions of these paved areas.

V. PROJECT COORDINATION

Contractor shall complete all general coordination with the Project Manager the Inspector and other staff as necessary to complete the Project in an efficient workmanlike manner; Submittals; Record Drawings; Maintenance of Traffic, Public Safety, and Convenience; Protection of Existing Improvements; Construction Facilities and Temporary Controls; Temporary Electricity; Project Closeout; and Operation and Maintenance Data for this project.

W. City Code 3.60.020 Determination of lowest responsible bidder

Where any provision of the city charter or this chapter requires competitive bidding and award of the contract for a public project to the lowest responsible bidder, the lowest responsible bidder shall be determined as follows:

a. In determining whether a bidder is responsible, consideration shall be given to: (i) the quality of a public project to be provided by the bidder; (ii) the ability, capacity and skill of the bidder to perform the contract; (iii) the ability of the bidder to perform the contract within the time specified, without delay; (iv) the character, integrity, reputation, judgment, experience and efficiency of the bidder; and (v) the quality of the bidder's performance on previous contracts with the city.

b. The city council may by resolution, from time to time, adopt standard minimum qualifications for bidders on competitively bid contracts for public projects. If such standard minimum qualifications are included in the bid specifications for a contract, no bidder shall be considered "responsible" unless it is determined to be responsible in consideration of the factors set forth in subsection A, above, and also meets such standard minimum qualifications at the time of bid opening. The adoption and use of standard minimum qualifications shall not in any way limit or affect the city's ability to: (i) review information contained in a bid, and additional relevant information, and determine whether the bidder is a responsive and/or responsible bidder; or (ii) establish different and/or additional qualification requirements for specific contracts.

c. The city council may by resolution, from time to time, adopt programs or procedures for providing bid price preferences, including but not limited to, preferences to promote the participation and utilization of **local business enterprises** in the city's contracting for public projects. The lowest responsible bidder shall be the responsible bidder whose bid is responsive to the bid requirements, including without limitation any **local business** enterprise program requirements included in the bid specifications, and whose bid price is the lowest, after all bid prices are calculated to include any applicable bid price preferences. (Ord. 2002-013 § 2; Ord. 99-007 § 3; prior code § 58.01.102)

X. City of Sacramento Subcontractor and LBE Participation Verification Form440.

LBE Certification Statements are due to the contract manager by the close of business two days after bid opening for bid to be responsive.

Y. All publicly bid projects are subject to Performance and Payment Bonds.

Z. California Business and Professions Code, Section 7059 states that the Public Works agency has the authority to select classifications for the project.

AA. Urgency Legislation SB 854 Passed by California Legislature JULY 10, 2014

The California Legislature has imposed a new registration requirement for contractors and subcontractors involved with public works projects. Senate Bill 854, passed late last month, created a registration program, effective July 1, 2014, to fund the Department of Industrial Relations' monitoring and enforcement of prevailing wage laws.

The registration period is open now, and contractors and subcontractors wishing to work on a public works project must be registered by March 1, 2015. For public agencies/awarding bodies, the new law requires that all public works projects with bids due after March 1, 2015, or awarded on or after April 1, 2015, use only registered contractors and subcontractors. The bill also requires awarding bodies to include notice of the registration requirement in their bid invitations and bid documents. In addition, public agencies must also file notice of their public works projects using DIR approved forms.

Registration is completed through an online application and requires a non-refundable \$300 fee to be paid by the contractors and subcontractors. The registration process requires contractors to:

- provide workers' compensation coverage to its employees
- hold a valid Contractors State License Board license
- have no delinquent unpaid wage or penalty assessments
- not be subject to federal or state debarment

Contractors must pay an annual renewal fee by July 1 of each year. The registration form is located on the DIR's website at <http://www.dir.ca.gov/DLSE/dlsepublicworks.html>.

To help awarding bodies and contractors comply with the new requirements, the DIR will post a database of registered contractors and subcontractors on its website. While non-registered contractors may not be awarded public works contracts after the effective date, inadvertently listing an unregistered subcontractor on a bid will not necessarily invalidate that bid. In addition, the registration requirement does not apply to private jobs that are determined to be public works after the contract has been awarded.

The new registration system replaces the previous requirement that awarding bodies pay for costs to monitor and enforce compliance with prevailing wage laws for certain public works projects. Registration and renewal fees will go into the State Public Works Enforcement Fund, which provides for the administration of contractor registration, monitoring and enforcement of prevailing wage laws, and the enforcement of Labor Code violations on public works projects by the DIR.

II. ITEMS OF THE BASE BID PROPOSAL

PARK IMPROVEMENTS:

Item No. 1 – City Building Permit Inspection Coordination

This item shall consist of scheduling and coordinating all necessary City Building Permit inspections required for the project, including obtaining a final inspection and closing out the City Building permit for the work shown on the plans in conformance with these Special Provisions and City Building Permit.

A. City Building Permit- The Landscape Architect will apply for a City Building Permit for the project. All the engineered drawings, calculations, permit fees and Special Inspections will be paid for the project by the City.

B. Contractor's Responsibility - The Contractor shall be responsible for the project Building Permit during the project, and return the approved permit to the Landscape Architect upon completion, and including the follows:

Building Inspection Updates – Contractor shall provide the Landscape Architect and Construction Inspector with monthly updates on the progress of all building inspections, and invite the Construction Inspector to attend Building Permit inspections.

C. Construction and Demolition Debris Ordinance (projects over \$250,000) – Contractor shall keep a Waste Log of all materials hauled away from the project, including weight tickets of disposal and recycled materials. Waste Log shall be submitted at the end of the project, within 30 days after permit has been finalized. Refer to the ***C&D Debris Ordinance Overview*** provided as an attachment to Special Provision for this project.

D. Building Permit Inspections – Contractor shall be responsible for scheduling all necessary Building inspections, and shall not cover over work until the work has been inspected and approved.

Contractor shall schedule all the required City Building Inspections by phone or online as indicated on the City Building Permit Envelope. The required inspection disciplines for this project are as follows:

1. Building (Shade Structure)
2. Electrical
3. Plumbing
4. Fire
5. Life Safety

Contractor shall not cover or conceal any Building, Electrical, Plumbing or Mechanical work without City Building Inspectors signature on the Building Permit.

If the Contractor fails to allow for the required building inspections and special inspections of the work, the Contractor shall be liable for the costs to remove and reconstruct work to allow for the required inspections and for issuance of the final building inspection approval.

- E. Special Inspections and Material Testing – The Contractor shall inform the Construction Inspector, who will schedule all required special inspections and material testing. Refer to the Schedule of Special Inspection in the Building Permit for the project.

Upon completion of the Special Inspections and testing work, the Special Inspection firm shall provide a final special inspection test report signed and stamped by the responsible professional engineer. This report will be needed for the Building Inspector at the final inspection, in order for final approval.

- F. Final Inspection/Closeout of Building Permit – Contractor shall be responsible for a final inspection/closing out of the building permit. The Contractor will need the following documents at the final building inspection for final approval and to close out of the City Building permit:
1. C&D Debris Waste Log shall be submitted at the end of the project, within 30 Days after permit have been finalized.
 2. Final Special Inspection Report signed and stamped by the responsible professional engineer. This report will be needed for the Building Inspector at the final inspection, in order for final approval.

Payment shall be made at the lump sum price as a Final Pay Item, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in City Building Permit Inspection Coordination as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 2 – Clearing and Grubbing

This item shall consist of clearing and grubbing in conformance with Sections 12, 13 and 15 of the Standard Specifications and these Special Provisions.

- A. Clearing and Grubbing shall conform to Section 12 of the Standard Specifications. All weeds less than two inches (2") in height may be disked under to a minimum depth of six inches (6"). All other weeds, shrubs, brush, vines, debris and all other objection material within the project site shall be removed.
- B. Debris - All resulting debris shall become the property of the Contractor, and disposed of outside the project limits at the Contractor's expense.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in Site Clearing, Grubbing as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 3 – Erosion and Sediment Control

This item shall consist of Erosion and Sediment Control at the locations indicated on the plans in conformance with Sections 13 and 16 of the City Standard Specifications and per the State Water Resources Control Board , Order No. 2009-0009-DWQ and these *Special Provisions*.

- A. Storm Water Pollution Prevention Plan (SWPPP) – The City has prepared a SWPPP document per the requirements of this project. The contractor and its employees shall be familiar with the requirements outlined in the SWPPP document. The contractor shall have a staff person who is a Qualified SWPPP Practitioner (QSP) on site or have a staff person trained by a QSP on site during construction business hours.

The SWPPP shall reside on the site and or with the construction Forman throughout the duration of construction. The completed SWPPP Manual and Log shall be returned to the City's QSP prior to the final acceptance of the project.

- B. BMP Maintenance and Maintenance Log - The contractor's onsite QSP shall complete a maintenance inspection at a minimum of once a week and the inspection notes and information shall be logged in the SWPPP. The log shall have the time and date of when the maintenance and inspection was conducted. The City's QSP will also conduct maintenance inspections on a random basis and before, during and after precipitation events. If there is a dispute between the contractors and the City's QSP regarding the BMP maintenance then the City's QSD shall decide what is required. The completed maintenance log shall be kept in the SWPPP. Any required changes to the BMP's or erosion and sediment control plan shall be logged by the City's QSP.

More information and details of Best Management Practice the contractor shall refer the SWPPP prepared for this project and the Erosion and Sediment control plan.

- C. Housekeeping Practices shall be implemented as follows:

1. Solid Waste Management procedures shall include designated waste collection areas and containers in areas indicated. Arrange for regular removal and disposal from the site of solid waste. On a daily basis, clear site of trash including organic debris, packaging materials, scrap or surplus building materials, as well as domestic waste. Solid Waste Containers shall have a lid/ cover and shall covered it at the end of each work day or when its windy.
2. Material Delivery and Storage Area shall be designated and provided with a secondary containment method, as with berms. Store material on pallets and provide covering or water tight containers for soluble materials. Locate materials in a lockable storage contain or other secure enclosure to insure items cannot be vandalized or displaced during nonworking hours. Inspect area weekly and 48 hours prior to a storm event. If a spill is discovered the contractor shall first notify the contractor's and the City's QSP immediately and then have the QSP provide direction on how the spill should be cleaned up and if testing will be required.
3. Concrete Waste Area shall be designated and provide for a temporary pit to be used for concrete truck washout. Dispose of hardened concrete offsite. At no time shall a concrete truck dump its waste and clean its truck into the City storm drains via curb and gutter. Inspect daily to control runoff, and weekly for removal of hardened concrete. If the contractor is has a designated area for the concrete washout on site the contractor shall cover and divert rain water from entering into the washout area. The contractor can use a mobile concrete washout or other similar concrete washout system.

4. Paint and Painting Supplies instructions shall be given to employees and subcontractors regarding reduction of pollutants including material storage, use, and clean up. Inspect site weekly for evidence of ^{improper} disposal. A second containment system shall be used to minimize pollutants from escaping the washout areas. In addition the contractor shall place plastic or some other non-permeable lining on the ground to minimize contact between the native soil and the pollutants.
5. Vehicle Fueling, Maintenance and Cleaning shall be located in a designated area with a secondary containment, as with berms. . In addition the contractor shall place plastic or some other non-permeable lining on the ground to minimize contact between the native soil and the pollutants. Provide equipment with drip pans. Restrict on-site maintenance and cleaning of equipment to a minimum. Inspect area weekly.
6. Hazardous Waste Management instructions shall be given to all employees to prevent the discharge of pollutants from hazardous wastes to the drainage system through proper material use, and waste disposal. Hazardous waste products commonly found on-site include but are not limited to paints & solvents, petroleum products, fertilizers, herbicides & pesticides, soil stabilization products, asphalt products, and concrete curing products. A list of materials expected to be used is listed in the SWPPP. If additional items or items need to be removed the contractor shall notify the City QSP.
7. Dust Control: The Contractor shall comply with all City and County of Sacramento, State of California air pollution control rules, regulations, ordinances, and statues which apply to any work performed pursuant to the contract, including any air pollution control rules, regulations, ordinances, and statutes, specified in the Government Code. The Contractor shall be responsible for the control of dust within the limits of the project at all times including weekends and holidays in addition to normal working days. The Contractor shall take whatever steps are necessary or required by the Inspector to eliminate the nuisance of blowing dust without causing sediment, debris or litter to enter the City storm drain system.
8. Erosion, Sediment, and Pollution Control The Contractor shall be responsible for controlling erosion and sedimentation within the limits of the project. In addition the contractor shall take measures to eliminate any water with pollutants from entering the project site as 'run-on'. The contractor shall be responsible for erosion and sediment control at all times during (working hours) and during normal working days, excluding evenings, weekends and holidays. The Contractor shall prevent sediment and construction debris from entering the City storm drain system.
9. Non-Storm Water, slurry and sediment from concrete or asphalt saw cutting operations shall not be allowed to enter the City storm drain system, but instead must be collected and disposed of, by the Contractor, in some manner approved by the Inspector.

10. Site Cleanup: The Contractor shall keep the project site clean and free of dust, mud, and debris resulting from the Contractor's operations. Daily clean up throughout the project shall be required as the Contractor progresses with the work. Extra precautions and clean-up efforts shall be made prior to weekends and holidays, and before a predicted rain event.

Daily all paved areas within the limits and surrounding the project shall be cleaned and free of sediments, asphalt, concrete and any other construction debris. The Contractor will not be allowed to clean sediment and debris from the street by using water to wash down streets. The streets will be allowed to be washed only after the streets have been thoroughly swept and/or vacuumed and inlet protection has been placed at all storm drain inlets to catch any remaining sediments from the streets.

Spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at his expense. If site is not kept sufficiently clean the City will take measures to clean it and back charge the Contractor.

11. More information and details of Best Management Practice the contractor shall refer the SWPPP prepared for this project and the Erosion and Sediment control plan.
- D. Construction site shall be prepared by the Contractor prior to the start of construction and shall have erosion and sediment control measures in place until the project is complete. Contractor shall ensure to have all erosion and sediment control measures as outlined on the plans and in the SWPPP in place throughout the year.
- E. Erosion and sediment control measures shall be installed and maintained before the start of construction begins and until disturbed areas are stabilized. All erosion and sediment control measures shall be checked and maintained by the contractor on a minimum of a weekly basis, before and after and during all storms to ensure measures are functioning properly.
- F. Erosion Control Plan may not cover all the situations that arise during construction due to unanticipated field conditions. Changes to the erosion and sediment control plan shall be made to meet field by the City's QSP. The contractor shall make the required changes within 48 hours.
- G. Exposed / Disturbed soils that are present, the Contractor shall replant the areas with native compatible, drought-resistant vegetation prior to the end of construction, before shutting a site down for the wet seasons, or areas not actively being constructed within the last 14 calendar days. In addition the contractor shall use wet suppression to dampen the soil to minimize dust on as need basis. The contractor shall provide a price in the bid to:
1. Install Poly-Acrylamide (PAM) and Copolymer of Acrylamide where the paving is scheduled to be installed (price to install two times)
 2. Install straw mulch with tackifier, install where planting is scheduled to be installed. (Price to install two times).

3. Installation Copolymers of Sodium Acrylates and Acrylamides installed on slopes between 5:1 to 3:1. (Price to install two times).

The contractor shall provide a square foot price per application (within the Schedule of Unit Pricing) to install these items as described above. If additional applications are required then the City will prepare a change order to increase the contract amount. If the items are not installed as described above then the City will prepare a deductive change order at the end of the project.

- H. Stabilized Construction Entrance shall be installed by the Contractor prior to the commencement of construction including clearing and grubbing. Location of the entrance may be adjusted by the Contractor to facilitate grading operations. All construction traffic entering the paved road must cross the stabilized construction entrance. The stabilized construction entrance shall remain in place until the road base rock course is completed or when the City QSP authorizes the removal of the stabilized construction entrance. The contractor will be responsible for cleaning the stabilized construction entrance if the QSP finds it requires maintenance. All sediment deposited on paved roadways shall be swept at the end of each working day or as necessary.
- I. Fiber Rolls shall be installed per the plans and shall be placed around all new and existing drainage structure openings immediately after the structure opening is constructed. All fiber rolls shall be maintained and remain in place until construction is completed.

Payment shall be made at the lump sum bid price, and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in completing the Erosion and Sediment Control as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 4 – Traffic Control

This item shall consist of preparing and implementing a Traffic Control Plan and furnishing, installing and maintaining all warning signs and devices necessary to safeguard the general public and the Work, and to provide for the proper and safe routing of the vehicular and pedestrian traffic during the performance of the Work in conformance with Section 6-10 and 6-11 of the Standard Specifications and these Special Provisions.

- A. Traffic Control Plan shall be prepared by the Contractor per Section 6-10 of the Standard Specifications. Traffic Control Plan shall be to the Construction Inspector for approval by the City, prior to beginning any work on the street median.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in Traffic Control as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 5 – Site Grading

This item shall consist of Site Grading the existing surface to the lines and grades for the park development shown on the plans in conformance with sections 14 and 15 of the Standard Specifications and these Special Provisions.

- A. Layout of Work:
 - 1. Grade the site to the tolerances shown.
 - 2. Tolerances: Site grading shall be to the elevations shown on the Drawings, plus or minus 0.1 foot vertically.
- B. The Contractor shall meet the lines and grades as shown on the grading plan. It shall be at the discretion of the Landscape Architect to allow the Contractor to make necessary adjustments to balance the earthwork on site at no additional cost to the City. The Contractor shall be solely responsible for earthwork calculations.
- C. Relative Compaction for landscaped areas shall be 85%.
- D. Planter Areas adjacent to paved areas shall be graded so that after settlement, the soil will be two inches (2") below the top of adjacent pavement, curbs or mow strips.
- E. Site Grading shall be approved by the Landscape Architect upon completion of grading operations and prior to beginning landscape planting.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in Site Grading as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 6 - Aggregate Base to Place

This item shall consist of furnishing and installing aggregate base (AB) under the 18" wide concrete band as shown on the plans in conformance with Section 10, and 17 of the Standard Specifications and these Special Provisions.

- A. Aggregate Base shall be Class II, per Section 26 of the State Standard Specifications.
- B. Recycled Aggregate Base will be allowed and must conform to the requirements of Section 26 of the State Specifications, and tested prior to arrival at the site to verify that it meets the requirements of Class II Aggregate base.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in providing and completing the Aggregate Base to Place under Concrete Flatwork as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 7 – Stabilized Decomposed Granite Pavement to Place

This item shall consist of furnishing, staking and placing Cement Stabilized Decomposed Granite Paving on top of landscape weed fabric as shown on the plans and the detail thereon, in conformance with these Special Provisions.

- A. Decomposed Granite: Decomposed granite, hereafter referred to as "DG", shall be Gold Track Fines as available from Granite Construction Co., Felton Quarry, Felton, CA 95018, (831) 335-3445. Material shall also conform to the following:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8"	100%
No. 4	85% - 95%
No. 8	75% - 95%
No. 30	35% - 55%
No. 200	10% - 20%

The yellow-brown color, inherent to Gold Track Fines type DG is a requirement for this material. The Contractor shall obtain the approval of the Engineer in writing of the DG he proposes to use prior to delivery to the site.

- B. Cement: Portland cement shall be DTSS Type II Modified added to the DG at the ratio of 5% by weight of dry DG.
- C. Mixes: The quantity of water added to the mixture shall be adjusted to the absolute minimum required to permit uniform mixing. The materials shall be mixed in a drum-type mixer on the job or at a central mixing plant. The Contractor shall provide the Engineer sufficient notice of his intent to begin mixing so that the Engineer can provide inspection of the batching and mixing operation.
- D. Landscape Weed Fabric shall be DeWitt Weed Barrier Landscape Fabric, 3.5 ounce, 12 yr., Color Brown, UV treated, spunbonded fabric or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com.
- E. Metal Anchor Pins shall be by Dewitt or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com.
- F. Time Limits: Not more than 1-1/2 hours shall elapse between the time water is added to the decomposed granite and cement and the time of completion of raking.
- G. Placement: DG mixture shall be deposited in such a manner as to minimize the necessity for spotting, picking up, or otherwise shifting the mixture. The mixture shall be leveled by raking and compacted by use of light roller. The mixture shall not be screeded off or finished by floating. No steel tooling of edges shall be done.
- H. Finish: The finished surface of the paving shall be kept moist for five days. Broom with a steel-bristle broom within 24 hours after placement to remove cement mortar film on the exposed surface and to fill cracks. Broom the surface daily for four (4) additional days, filling cracks each time.
- I. Sample. Prior to placement of decomposed granite the Contractor shall submit to the Project Landscape Architect a representative sample of decomposed granite for use on this project for approval. No decomposed granite shall be placed prior to receiving the Project Landscape Architect's approval.
- J. Weed Control shall conform to Section 35-6 of the Standard Specifications.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in completing the Stabilized Decomposed Granite Pavement to Place as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 8 – 6” Concrete Mow Strip to Construct

This item shall consist of constructing 6” Concrete Mow Strip as shown on the plans in conformance with Section 10, 19 and 24 of the Standard Specifications and these Special Provisions.

- A. Portland Cement Concrete shall be Type II, Class “C”, conforming to Section 10-5 of the Standard Specifications.
- B. Reinforcement shall be intermediate grade and deformed in conformance with “deformed billet-steel bars for concrete reinforcement” (ASTM Designation A615) and with Section 21 of the Standard Specifications. Rebar shall be as shown on the plans.
- C. Subgrade shall conform to Section 19 of the Standard Specifications, with the following exception: relative compaction shall be 85%.
- D. Finish shall be broomed parallel to the mow strip edge with a medium broom finish. All exposed surfaces shall be finished to true lines and grades as shown on the plans.
- E. Expansion Joints and Score lines shall conform to Section 24-6 of the Standard Specifications with the exception of the following. Expansion joints shall be place at 20’ O.C., and score lines at 10’ O.C.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in completing 6” Concrete Mow Strip to Construct as shown on plans, as specified in these Special Provisions and as directed the Landscape Architect.

Item No. 9 – 18” Wide Colored Concrete Band

This item shall consist of furnishing all materials and equipment necessary for installing an 18” wide Colored Concrete Band as shown on the plans in conformity with Sections 10, 18, and 24 of the Standard Specifications and as amended by these Special Provisions and the manufacturer’s specifications.

- A. Portland Cement Concrete shall be Type II, Class “C”“C”, conforming to Section 10-5 of the Standard Specifications.
- B. Colored Concrete: Manufacturer: Davis Colors manufactured by Davis Colors; phone 213-269-7311. Pigments shall contain pure, concentrated mineral pigments especially processed for mixing into concrete and complying with ASTM C979. If pigments are to be added to mix at the project site, furnish pigments in pre-measured Mix-Ready disintegrating bags.
- C. Color: Provide color selected by Landscape Architect from manufacturer’s premium color line. Color shall be as shown on the plans by *Davis Colors* or approved equal. Submit

sample chip of specified color indicating pigment number and required dosage rate. Pigment as necessary to match color sample in *Davis Colors Concrete Color Selector chart*. Mix in accordance with manufacturer's instructions. Mix until pigments are uniformly dispersed throughout mixture.

- D. Reinforcement shall be intermediate grade and deformed in conformance with "deformed billet-steel bars for concrete reinforcement" (ASTM Designation A615) and with Section 21 of the Standard Specifications. Rebar shall be as shown on the plans.
- E. Curing Compound for Colored Concrete: Provide W-1000 Clear Cure & Seal manufactured by Davis Colors or approved equal. Apply curing compound for colored concrete in accordance with manufacturer's instructions.
- F. Expansion & Score Joints shall conform to Section 24-6 of the Standard Specifications with the exception of the following. Expansion joints and score joints shall be located where indicated on the plans and edged to a three-eighths inch (3/8") radius
- G. Finish shall conform to Section 24-7 of the Standard Specifications with the following exception: the concrete shall be broomed perpendicular to the sidewalk edge with a medium finish.
- H. Test Panel shall be **required** and shall be poured prior to placement of concrete flatwork. The contractor shall construct a test panel of 36" X 36" X 3-1/2" thick minimum dimensions. The Contractor shall notify the Landscape Architect and Inspector forty-eight (48) hours prior to test pour. If the test is found to be unsatisfactory by the City, additional test panels shall be constructed and finished until the correct finish is achieved. Workmen and equipment used in the construction of the test panel shall be the same as those used throughout the installation of concrete.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in completing 18" Wide Colored Concrete Band as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 10 – River Cobbles to Place

This item shall consist of furnishing and placing River Cobbles over landscape weed block fabric as shown on the plans, and these Special Provisions and in conformance with the Standard Specifications.

- A. River Cobble shall be 4" to 8" Landscape River Washed Cobbles, and shall be free of broken cobbles, dirt and concrete.
- B. Landscape Weed Fabric shall be DeWitt Weed Barrier Landscape Fabric, 3.5 ounce, 12 yr., Color Brown, UV treated, spunbonded fabric or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com.

- C. Metal Anchor Pins shall be by Dewitt or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in completing River Cobble to Place as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 11 – Header Board to Install

This item shall consist of furnishing and installing Header Board as shown on the plans and as specified in the Special Provisions.

- A. Header Board shall be 2" x 4" x 16' length manufactured by Trex Company, Inc. or approved equal. Trex is made from a unique combination of reclaimed wood and plastic. Color shall Cedar.
- B. Stakes shall also be made of boards manufactured by Trex Company, Inc. or approved equal. Color to match header board.

Local Supplier: Berco Redwood, 4560 Auburn Bl., Sacramento, CA 95841, Phone: (916) 483-2001

Payment shall be at the lump sum price bid, installed and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in completing Header Board to Install as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 12 – Irrigation Water Tap, Meter and Backflow Preventer

This item shall consist of furnishing and installing a water tap, meter and a backflow preventer as shown on the plans, in conformance with Sections 10, 13, 14, 17, 27 and 38 of the Standard Specifications and these Special Provisions.

- A. Supply Line shall be PVC pipe under 2-1/2" and under shall be Schedule 40 and pipe 3" and large shall be Class 315, solvent weld and shall be installed in conformance with Section 10, 17, 24 and 38 of the Standard Specifications.
- B. Shut-off Valve shall be a gate valve as specified in Section 27-7 and 38 of the Standard Specifications.
- C. Water Tap and Meter shall be as specified in Section 27 of the Standard Specifications and to be installed by the City Water Division. Size of water tap is shown on the plans. Meter shall be the same size as the water tap. The Contractor shall contact the Customer Service Office, located at 1391 35th Avenue, or by calling (916) 264-5371. The City will pay all water tap fees directly to the City Water Division prior to construction. Contractor should allow 60 days for installation of water tap by the City after payment.

- D. Backflow Prevention Assembly shall conform to Section 10-49 and the appropriate Standard Drawing W-606 or W-607 of Section 38 of the Standard Specifications.

The lowest point of the Backflow Prevention Assembly shall be placed with a 12" minimum clearance and 15" maximum clearance from finished grade. After installation, the backflow prevention assembly must be tested for proper operation by a certified backflow device tester prior to use. All backflow prevention devices and risers shall be painted Hunter Green or approved equal.

- E. Concrete Pad shall be installed as shown on the plans in conformance with sections 10, 19, and 24 of the Standard Specifications and with these Specials Provision.
- F. Freeze Protection Bag shall be required
- G. New Backflow Preventer shall be enclosed with an insulated backflow preventer cage, Placer Waterworks Model #PW/E1 A-S or approved equal. Available through Placer Waterworks (916) 773-2959, FAX (916) 773-2958.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in completing the Irrigation Tap, Meter and Backflow Preventer as shown on plans, as specified in these Special Provisions and as directed by the Inspector.

Item No. 13 - Electrical System to Install

This item shall consist of furnishing, installing and testing the electrical system improvements, shade structure lighting, electrical pedestals with receptacles and a new SMUD transformer on a concrete pad as shown on the plans in conformance with section 34 and 38 of the Standard Specifications and these Special Provisions.

- A. Concrete Pads for Electrical Equipment or SMUD shall be installed as shown on the plans in conformance with sections 10, 19, and 24 of the Standard Specifications and with these Specials Provision.
- B. Electrical Pull Boxes, Underground Conduits, Conductors which are shown on the plans or specified herein and which are necessary to complete the park electrical system shall be furnished and installed.
- C. Electrical Incidental Parts which are not shown on the plans or specified herein and which are necessary to complete the park electrical shall be furnished and installed as through such parts were shown on the plans or specified herein.
- D. Electronic Marker System shall conform to Section 10-54 of the Standard Specifications, except as amended by the following: no marker locators will be required by the Contractor. Contractor shall supply only enough markers for use in new electrical system. The markers shall be placed within the pull box cover of buried lawn area pull boxes. The marker shall be 3M EMS 4" Extended Range 5' Ball Marker – Power 1402-XR.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in Electrical System to Install as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 14 - Automatic Irrigation System

This item shall consist of furnishing and installing an Automatic Irrigation System as shown on the drawings in conformance with the applicable paragraphs of Sections 10 and 36 of the Standard Specifications and these Special Provisions.

- A. Electric Control Valves shall conform to Section 36-13 of the Standard Specifications. Electric control valves shall be Superior model 950, or approved equal, and shall be constructed as specified in Section 10-50 of the Standard Specifications. Lawn and shrub area valves shall be installed at grade.
- B. Gate Valves shall be constructed of all brass as specified in Section 10-51 of the Standard Specifications and shall be lead free and shall be manufactured by Nibco, Model number T-113LF or approved equal and as shown on the plans and shall be installed at the locations as shown on the plans. Plastic control valves are not acceptable. Valves shall be installed at finished grade in a concrete valve box with locking cover.
- C. Master Valve shall be normally closed with 24 V solenoid and a bypass master valve normally open. Master Valve's sizes and type as shown on the plans and per Standard Drawing No. "L-20" of Section 38 of the Standard Specifications. Install per details and manufacturer's specifications. Pull four additional wires in different colors from controller to master valve.
- D. Flow Sensor and Output Transmitter: Install the flow sensor as per the details and manufacturer's specifications. Pulse output transmitter shall be installed per the manufacturer's specifications.
- E. Valve Boxes shall be installed in conformance with Section 10-52 of the Standard Specifications and as shown on the plans.
- F. Electrical shall conform to Section 34 of the Standard Specifications.
- G. Irrigation Control Wires shall conform to Sections 10-48 and 36-12 of the Standard Specifications. Trench for irrigation control wires through existing lawn shall be twenty-four inches (24") deep. Trenching for irrigation control wires through existing paved areas shall conform to Section 34-9 of the Standard Specifications.

Irrigation Control Wires shall be color coded to the use listed below and follow the colors associated with them.

- 1. Full Rotor - Red Wire
- 2. Part Rotor - Green Wire
- 3. Spray Heads - Yellow Wire
- 4. Bubblers - Blue Wire

5. Common Wire - White Wire

- H. Quick Coupling Valves shall be by Rain Bird, model 44LRC as specified in the plans, or approved equal. Quick coupling valve shall be constructed of brass with a locking yellow thermoplastic rubber cover with "DO NOT DRINK" markings. Quick Coupling valve shall have a one inch (1") threaded pipe and key connection and shall be installed as shown on the plans in conformance with Section 10-53 of the Standard Specifications and shall be installed with the top at finished grade. Four (4) quick coupler keys shall be provided to the City of Sacramento at the completion of the project.
- I. Plastic Irrigation Pipe Fittings shall conform to Section 10-46 of the Standard Specifications with the following addition: All fittings on the upstream and all threaded pipe fittings downstream side of the irrigation valve shall be Schedule 80 PVC.
- J. Main Line Pipe shall conform to Section 10-44 of the Standard Specifications and be amended as follows: Main line shall be Class 315, ring-tite PVC pipe for pipes 3" and larger, and shall be Schedule 40 solvent weld PVC pipe for pipes smaller than 3". All Class 315 ring-tite and Schedule 40 PVC pipes shall have concrete thrust blocking in conformance with Section 27-6 and Standard Drawing No. "W-103" of Section 38 of the Standard Specifications. The contractor shall pressure test the irrigation main line with the inspector present. The pressure test shall consist of the contractor pressurizing the mainline to 150 PSI for two hours with zero pressure loss with either the Inspector or Landscape Architect present.
- K. Lateral Line Pipe or pipe on the discharge side of the irrigation control valve shall be Class 200 solvent weld PVC pipe and shall conform to Section 10-44 of the Standard Specifications, except as previously amended.
- L. PVC Primers and Solvent welded - PVC pipes will require the following primer and solvent glue applications. Primer shall consist of Weld-On P-70 Industrial Grade Primer and the PVC Solvent Cement shall be Weld-On 711 Heavy Bodied Cement, or approved equal. The primer and solvent cement shall be installed per manufactures specifications.
- M. Sprinklers shall be installed at the locations shown on the plans, in conformance with Standard Drawing No. L-50 of Section 38 of the Standard Specifications. Sprinklers shall be the type and model as shown on the plans.
- N. Ball Valve Assembly shall be installed at the locations shown on the Plans. Ball Valve Assembly shall be constructed of all brass as specified in Section 10-51 of the Standard Specifications and shall be the type and model as shown on the plans. Plastic control valves are not acceptable. Valves shall be installed at finished grade in a concrete valve box with locking cover.
- O. Electronic Marker System shall conform to Section 10-54 of the Standard Specifications, except as amended by the following: no marker locators will be required by the Contractor. Contractor shall supply only enough markers for use in new irrigation system. The markers shall be fastened to the underside of the valve box cover of buried lawn area valves only. The marker shall be 3M EMS Mini-Marker – Water, model 1257.

- P. Irrigation Sleeves – Shall conform to the Standard Specifications 36-8. The minimum diameter of the sleeve shall be at least two times the diameter of the conduit going through the sleeve. The sleeve shall extend a minimum of 1' beyond the edge of the paving.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Automatic Irrigation System as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 15 – Irrigation Controller

This item shall consist of furnishing and installing a Central Control System as shown on the plans in conformance with Section 34 of the Standard Specifications and these Special Provisions.

1. FIELD EQUIPMENT

1.1 Automatic Controller

- A. Controller(s) shall be as indicated on the drawings, and shall be manufactured by Calsense, Inc. Controller shall be installed per manufacturer's specifications, as shown on the drawings, and as specified herein.
 - 1. All controllers shall be the Calsense CS3000 series
- B. The irrigation controller shall have a 10-year, limited warranty.
- C. The irrigation controller shall have a large 5.7 inch backlit, ¼ VGA, LCD, sunlight readable display where information can be viewed on the same screen, and with a scrolling side menu design that makes programming intuitive and easy to follow.
- D. The controller shall be available in multiple station counts including 8, 16, 24, 32, 40 or 48 stations. If less than 48 stations are purchased initially, additional stations can be added at any time in the field as 8-station kits.
- E. The controller shall support up to 128-stations when using 2-Wire. This can be either 128, 2-Wire stations or a combination of conventional-wired stations and 2-Wire stations.
- F. Controller software upgrades shall occur via the internet transparently and at no charge.
- G. The controller shall have unlimited programs known as Station Groups which can water individually or concurrently to maximize irrigation system capacity and reduce watering time.

- H. The controller shall have the ability to assign landscape details as plant material, head type, soil type and exposure to each Station Group to simplify programming of stations with similar characteristics. Each group shall include a variety of other settings including irrigation schedules, percent adjust factor, line-fill times and on-at-a time rules.
- I. The controller shall support up to four mainlines simultaneously for managing flow.
- J. The controller shall support up to 12 points of connection shared among controllers.
- K. The controller shall support up to 3 flow sensors and 3 master valves in a by-pass configuration so as to accurately measure and read the overall range of station flow rates from the lowest flowing station in GPM to the highest flowing station in GPM, using the 2- Wire option and the 2- Wire, POC decoders for the second and third flow devices and master valves.
- L. The controller shall automatically calculate cycle and soak scheduling to water each station for a fixed cycle time and allow the water to soak in between cycles, maximizing infiltration and minimizing runoff.
- M. The controller shall have a water budget feature that displays monthly water volume allotments in either HCF or gallons for each of the 12 calendar months labeled as January thru December. This monthly guideline shall be calculated three ways, either directly entered, calculated by the controller using a yearly budget and dividing that out to the 12 months proportionately using built-in historical ET, or by calculating the monthly numbers using total square footage and a user selected percent of historical ET.
- N. The water budget shall be available per POC controlled. If the expected water use for the month exceeds the monthly budget, the user shall be notified with an alarm before the month ends so changes to the program can be made. The controller shall not terminate irrigation automatically in this process, or if selected as an option, the controller shall proactively and automatically decrease the scheduled irrigation gradually upon approaching the set water budget limit with notification of said action.
- O. The controller shall have a wide range of water reports and diagnostics available directly at the controller and shall include:
 - A summary of all usage for each irrigation mainline
 - Usage for each point of connection connected to the mainline
 - Station-by-station usage
 - A complete station-by-station history which includes the date and start time of each cycle, programmed minutes, programmed inches, number of cycles, actual flow rate, expected flow rate, and any alerts or issues that occurred during irrigation.

- Unscheduled water usage and non-controller water usage including quick coupler use and bleeding valves manually
- P. The irrigation controller shall have three separate mainline break settings available for proper flow detection of catastrophic issues without interfering with standard irrigation practices and shall be programmed for 1.) 'during irrigation', 2.) 'master valve override' functions, and 3) 'all other times'
- Q. The controller shall have flow management capability as a standard feature whereas the controller shall learn each station's expected GPM flow rate automatically at night over several irrigations, and use the mainline GPM capacity programmed, to operate up to six (6) valves at the same time to shorten the water window.
- R. The controller shall have the ability to accommodate multiple types of irrigation schedules including irrigating even days, odd days, prescribed days of the week, and interval scheduling ranging from every other day up to every four weeks.
- S. Several controllers, up to twelve shall be able to share one or multiple points of connection with multiple flow sensors and master valves. This option shall allow several controllers without the use of a central control computer to share the irrigation programs and flow information for:
 - 1. Monitoring of system flows.
 - 2. Shortening water windows by maximizing the number of valves on without exceeding system flow capacity.
 - 3. Turning OFF valves with excessive flow rates due to broken lateral lines.
 - 4. Tracking water usage and comparing to a water budget.
 - 5. Eliminating relays when sharing pumps and master valves.
- T. When more than one controller is sharing one or multiple points of connection and the controllers are communicating to each other through hardwire or radio, the data shall be U. The controller shall provide permanent memory stores of all controller programming and setup data, including date and time, in non-erasable memory.
- V. The controller shall have the ability to create and program an unlimited number of manual programs which allow the user to schedule stations to run for a preset time, up to 6 – times per day, for hydro-seeding, new planting and fertilization scheduling.
- X. Electrical alerts, such as short circuits and no currents, shall be standard to help the user troubleshoot field wiring and solenoid problems.
- Y. The irrigation controller shall provide an optional lights feature to be used to operate up to four light, gate or water feature relays.

1.2 Wall Mount Installation

- A. The wall-mounted gray box shall be a completely assembled unit, pre-mounted with the designated controller. The box shall be constructed of

weather- and vandal-resistant stainless steel.

- B. The wall mount unit shall come complete with transient and lightning protection board and factory-labeled terminals.
- C. The transient protection board shall be pre-mounted in the wall mount unit and shall support field replaceable modules which include terminal strips for the connection of irrigation field wires, 2-Wire cable, and weather monitoring devices such as an ET gage, Tipping Rain Bucket, and Wind gage.
- D. The wall mount unit shall feature a security-tight locking mechanism, louvered vents, with splash guards, and bee/wasp screens.
- E. All wall mount units shall come with a 10-year limited warranty and shall be fully UL- approved.

1.3 Pedestal Enclosure

- A. The enclosure shall be of a vandal and weather resistant nature manufactured entirely of 304-grade stainless steel, and the top shall be 12 gauge and the body 14 gauge. The main housing shall be louvered upper and lower body to allow for cross flow ventilation. A stainless steel backboard shall be provided for the purpose of mounting electronic and various other types of equipment. The stainless steel backboard shall be mounted on four stainless steel bolts that will allow for easy removal of the backboard.
- B. The 38-inch height with flip top shall provide easy access for programming from a standing position under normal installations.
- C. The pre-assembled vandal resistant enclosure factory pre-assembled and supplied by controller manufacturer shall come complete with 24 VAC lightning and surge protection and all terminals shall be factory labeled. The pre-assembled enclosure shall come provided with an On/Off switch to isolate the controller along with a GFI receptacle. Specific radio antenna(s) shall be pre-mounted and connected on enclosure. The enclosure shall include 2-7/8", 1-1/2" thick, 6-pin cylinder, die-cast steel padlock with unique shackles design.
- D. Factory pre-assembled enclosure with controller shall carry a full UL listing.
- E. Controller manufacturer shall offer a double-wide, pre-assembled vandal resistant enclosure, 38-inch height with flip top for two controller placements side by side. All necessary wiring between the two controllers in order to share central communications and/or flow and weather data shall be pre-wired by manufacturer for easy installation.
- F. The factory pre-assembled enclosures shall carry a ten (10) year limited

warranty.

1.4 Grounding

- A. Grounding shall consist of one 5/8-inch x 8-foot copper rod installed per irrigation controller and where multiple controllers *are not* connected to the same ground rod.
- B. The top of each rod shall be installed inside a 10-inch round valve box, with the rod installed as close as practical to the controller. If a pedestal enclosure is used, the ground rod may be installed through the pedestal base. Under no circumstances shall the rods be shortened.
- C. A #6 AWG solid copper wire shall be used to connect from the ground lug of the transient protection board to the copper rod. Brass clamps specifically designed to secure the copper wire to the grounding rod shall be used. There shall be no kinks or sharp bends in the wire.
- D. Each wire may be wrapped around the rod and brazed in place as an alternative to clamping. Braze the wire to the rod for at least one circumference of the rod.

1.5 2-Wire Path & Decoders

- A. The 2-Wire option shall provide support for up to one-hundred and twenty-eight (128), 2-Wire stations connected to a single controller and shall provide support for up to 6 points of connection (POC's).
- B. The 2-Wire cable shall either be Paige P7354D or Regency's Hunter® Decoder cable with a maximum length of 7,000 ft.
- C. A ground rod, 5/8 inch x 8-ft solid copper shall be required every 300-feet along the 2-Wire path as well as a single ground rod at the end of the cable run.
- D. The station decoder shall be a 2-station decoder and shall be able to operate up to 2- solenoids using unique colored wires for each.
- E. A single controller shall be able to operate up to 70, 2-station decoders and it shall be intended that all wire runs between valves and 2-Wire decoders shall be direct pulls and have no splices except at the decoder location.
- F. All electrical connections must be waterproof and moisture-resistant and shall be done with 3M™ Scotchcast™ 3570G Connector Sealing Packs.
- G. The 2-Wire decoders shall use #14 AWG direct burial wire to connect to remote control valves and the maximum wire run between the decoder and the valve shall be 100-feet.

- H. The POC decoder shall operate a single master valve and flow meter (model FM). A single controller shall be able to operate up to six POC decoders with a maximum of 12- POC's in a chain, controllers using *FLOWSENSE™* technology.
- I. The maximum wire run between the POC decoder and flow meter shall be 20-feet while the maximum wire run between the decoder and the master valve shall be 100-feet.

1.6 Weather Monitoring

- A. The manufacturer of the central control system shall provide real-time ET through the internet known as *WEATHERSENSE*, to any location within the United States using aggregated data from more than 25,000 weather stations combined with high-resolution modeled, near-surface weather conditions, ensuring current conditions are accurate even in areas of localized microclimates, all without subscription charges.
- B. The controller shall be able to interface with an on-site ET gage able to measure daily localized, evapo-transpiration and log the amount of inches lost each day without the use of a central computer.
- H. The ET measuring device shall be powered by the selected field controller. ET is measured directly in 0.01" increments and pulses from the gage are sent directly to the field controller.
- I. The controller shall be able to store and display daily, on-site ET in a 28-day table which is updated every 24 hours.
- D. The user shall be able to view over 100 selections of built-in historical ET tables or program monthly historical ET data for a given area directly, to be used as a backup for that night's calculation in case the ET gage malfunctioned or the real-time value sent normally through the Internet failed.
- E. The user shall be able to cap the amount of daily ET used by the controller for that night's calculation by selecting a percent of historical ET for the given area to be used instead of the actual ET received.
- F. The irrigation controller shall have the capability to calculate station run times using the average of the last 7 days of ET instead of using a single ET value to calculate the next scheduled, station run times.
- G. The controller shall be able to interface directly with a Tipping Rain Bucket and shall accurately measure rainfall in 0.01" increments by means of a tipping and emptying device mounted below the center of the collection dish.
- J. The rain-measuring device shall be wired using the 25-feet of 2-conductor cable supplied with the Tipping Rain Bucket to the selected field controller. The controller shall have a weather option able to interface

with the device. The cable shall be installed in conduit and the connections are to be made at a terminal strip inside the enclosure. Maximum length of cable run shall be 1000 feet using Paige P7171D communication cable when necessary. 18-gauge multi-conductor irrigation wire in conduit may be used for runs under 100-feet. Runs shall be direct pulls without splices.

- I. The irrigation controller shall provide the following programming parameters for rain: Stop Irrigation after x.xx inches Maximum Rain in One Hour is x.xx inches Maximum Rain in 24 Hours is x.xx inches
- J. Wind speed shall be monitored by the irrigation controller with the weather option interface and the wind gage installed. The controller shall pause irrigation once the wind speed exceeds a user-set limit. As wind subsides, the controller shall resume irrigation where it left off. Winds from 0-to 135-MPH shall be accurately read. Data from one wind gage shall be shared amongst a group of controllers making up a FLOWSENSE™ chain.
- K. The wind gage device shall be wired using the 60-feet of 2-conductor cable supplied with the device to the selected field controller. The cable shall be installed in conduit and the connections are to be made at a terminal strip inside the enclosure. Maximum length of cable run shall be 1000 feet using Paige P7171D communication cable when necessary. 18-gauge multi-conductor irrigation wire in conduit may be used for runs under 100-feet. Runs shall be direct pulls without splices.

1.7 Flow Monitoring

- A. The flow sensor used shall be supplied by the same manufacturer as the irrigation controller.
- B. The flow sensor shall be wired back to the irrigation controller using two #14 AWG wires, one red, and one black in 1" PVC conduit to connect to the irrigation controller. The maximum wire run between flow meter and controller shall be 2000 ft. The flow meter shall send low voltage digital pulses back to the controller and therefore all electrical connections must be waterproof and be resistant to any moisture entry.
- C. It is intended that all wire runs between the controller and flow meter shall be direct pulls and have no splices. If wire splices are unavoidable, they must be installed in a valve box with Spears DS-100 connectors with Spears sealant or 3M Scotchlok No. 3570 connector sealing pack used.
- D. Each flow sensor shall have the following characteristics:
 - 1. Housing to be a Sch. 80 polyvinyl chloride tee or bronze tee
 - 2. Have a pulsing output that operates at 9VDC and a pulse rate that is proportionate to the GPM
 - 3. Fully compatible with the internal interface at each field controller
 - 4. Powered by the controller

- 5. Replaceable metering insert
 - 6. Shall feature a six-bladed design with a proprietary, non-magnetic sensing mechanism
- E. The irrigation controller shall include native support for Bermad 900-M Reed Switch and Netafim Pulse Reed Switch series hydrometers. Allowable hydrometer sizes shall range from 1.5" to 10". Reed Switches that are supported include 1-pulse per 1-gallon and 1-pulse per 10-gallon switches. Currently only one hydrometer mentioned shall be able to interface with the controller.

2.0 Central Control Communication Options

- A. The field controller(s) shall be capable of utilizing a single mode or a combination of communication modes such as 3.5G cellular radio, Ethernet, wireless Ethernet, point-to-point Spread Spectrum radio, and hardwire communication cable for central control of irrigation via cloud-based, Command Center Online web software.
- B. The controller shall be able to utilize a wireless, 3.5G cellular radio in remote areas where an Ethernet or Wi-Fi connection is not possible for direct communication back to a desktop, tablet, or laptop computer via the Internet. Service plans for single and multiple controllers utilizing a 3.5G cellular modem shall be available through the manufacturer as 1-year or 5-year plan.
- C. The controller shall be able to utilize an Ethernet communication, CAT5 or CAT6 cable path as part of a district's or campus network system. An Ethernet (RJ45) connection shall be supplied at the controller location, with the network set to have access to this connection. IP reservations with DHCP are preferred along with the hard coded MAC address from the Ethernet device supplied. The secondary preference shall be a static IP address with additional programming requirements. The controller shall utilize an existing Wi-Fi 33, wireless Ethernet network on a school campus or facility city project. IP reservations with DHCP are preferred along with the hard coded MAC address from the Ethernet device supplied.
- D. The controller shall be able to utilize a short-range, Spread-Spectrum radio to communicate with other controllers in line-of-sight proximity providing a reliable communication link instead of a hardwire communication path when sharing data. The spread-spectrum radio option does not require FCC licensing, and offers a secure error correcting frequency hopping radio link immune to outside interference.

2.1 Command Center Online Web Software

- A. The central control software shall be a cloud-based package designed to provide complete irrigation control through a web application, without the purchase of proprietary software loaded on a dedicated, desktop computer.
- B. The fully-featured web application shall provide communication using a

variety of internet- connected options including Ethernet, Wireless Ethernet (Wi-Fi), and 3.5G Cellular Radio.

- C. The web application shall allow the user to monitor and program controllers, as well as run various water usage reports from any internet-connected device including PC's, tablets, and smart phones. Weather data collected from an ET Gage, Tipping Rain Bucket, or *WEATHERSENSE* can be shared to any controller on the system.
- D. Engineered for easy and reliable access, all that is needed to get started using the software shall be a user name and password to obtain data from controllers in the field. Each customer's service shall be unique and password protected so data is secure.
- F. User accounts shall be issued and managed by an administrator account so that only authorized users can access controller information.
- G. The cloud-based software shall include the ability to turn stations On and Off remotely using any internet-connected device including PC's and tablets, and a smart phone app. User shall be able to turn on up to six valves simultaneously and view real-time flow information, details if a mainline break occurs, and real-time weather data when using on- site weather devices such as daily ET and rainfall in inches.
- H. The web software shall allow a customer to create their own custom dashboard as the home page, providing a snapshot of the most important water and labor management graphs and reports depicting easily the most current status of each controller at each specific project location.
- I. System reports shall include complete records of the details for every irrigation cycle, water usage versus water budget amounts, the gallons and percentages of water savings, and what events and changes have occurred at the controller. System administrators shall have management reports listing sites and user for their company.
- J. System requirements shall be a broadband internet connection such as DSL, cable, or mobile broadband.
- K. Supported web browsers shall include:
 - Microsoft Windows Internet Explorer® 8.0 or higher
 - Google® Chrome™ 34 or later
 - Mozilla Firefox™ 28 or higher
 - Apple® Safari™ 5.1.7 or higher

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3.0 Warranty, Service & Training

- A. The manufacturer shall provide after-sale support that is a *no charge* service whereas on-going training and education shall be provided by factory

direct personnel to the end user(s) at both the field controller(s) and using the cloud based, web software for central control of irrigation.

- B. The central control manufacturer shall warrant to the purchaser of its manufactured products against defects in material and workmanship for a period of ten (10) years from the date of original purchase by the owner.
- C. All peripheral, accessory, and RF equipment such as radio and 3.5G cellular radio modems, ET gages, flow sensors, and rain buckets (but not limited to) and used in conjunction with central irrigation controllers, shall have distinct warranties of their own and should be noted separately from this warranty.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Central Irrigation Controller as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 16 – Booster Pump to Install

This item shall consist of furnishing and installing a booster pump assembly as shown on the plan in conformance with these special provisions and the manufacturer's specifications.

- A. Booster Pump Assembly Booster pump assembly shall be by Custom Pump and Power, Inc approved equal.
- B. A Customflow Quality Booster Packages™, model 50CPPI007132015-1/10VFD; or approved equal. Booster pump assembly has been designed for New Market Drive Median Booster Pump , Reference Number 50CPPI07132015-1/10VFD. Assembly, testing, startup, and service by Custom Pump & Power, Inc. Electrical supply to power the booster pump assembly shall be provided by the Contractor. Single- Phase: 208-Volt: 2- pole 60-Amp breaker for 31-amp load.
- C. A Customflow Quality Booster Packages™ is designed to operate automatically through a control system. The irrigation system must provide (A) the water pressure through the plumbing connection and the (B) control device, The pressure source for the system can be city pressure, gravity, or a pump that creates or boosts the required pressures The control device can be a controller linked with a pump start relay, pressure switch, float switch, or flow switch for automatic operation. The basic function of the system will receive an external electrical signal, close a contact transferring the power to the motor and the pump is activated. When the demand stops, the contacts open and subsequently the pump turns off.
- D. Conditions: Maximum flow: 50- GPM with 40 PSI boost: Electrical service 208 -volt: Single-phase: 24VAC-pump start assembled and mounted above ground in a weatherproof enclosure.

All work shall comply with the City of Sacramento Standard Specifications and shall meet applicable federal, state, and local building codes, including permits as required.

Design and install booster pump with electrical supply including permits and applicable fees.

Motor and pump sizing according to specifications. Pump brands used (or approved

equal):

- Berkeley B Series only,
- Gould's 3656S
- Grundfos CR
- Franklin Pumps
- Peerless C

Pump control panel to be ETL/UL 508 listed, mounted in NEMA 12 blown and filtered enclosure with main circuit breaker door interlocked handle, Fuji VFD Eco VFD only capable of single-phase input and three-phase output with DC link choke, drive display on the door, fused 110-volt control, 150VA control transformer, one fault light on door, three control relays, optional output terminal for external fan. Custom Pump standard operating system.

E. VFD Booster Specifications

1.0 General

- 1.1. This specification shall establish the minimum requirements for variable frequency duplex control panels. Equipment that does not meet these requirements shall not be acceptable.

2.0 Operation Conditions

- 2.1 The operating ambient temperature range shall be 0°C to 50°C (32° to 122°F). Storage temperatures shall be between -40°C to 50°C (-40° to 122°F).
- 2.2 The relative humidity range shall be 5-95% non-condensing.
- 2.3 The variable frequency drives shall be suitable for operation at altitudes up to 3300 ft. without de-rating. Elevation above 3300ft derate 1% per 328Ft up to 9900 ft.
- 2.4 The variable frequency drives have been vibration tested in accordance with IEC 68-2-34.
- 2.5 The variable frequency drives have been mechanical shock tested in accordance with IEC 68-2-27.
- 2.6 The variable frequency drives electromagnetic emissions is in compliance with EN50081-2.
- 2.7 The variable frequency drives electromagnetic immunity is in compliance with IEC801 and EN50082-2, and complies with EN61800-3 with built in filter.

3.0 Standards

- 3.1 The panel is UL 508A, cUL 508A, and ETL 508A listed.
- 3.2 The panel is designed in accordance with applicable portions of NEMA standards.
- 3.3 The panel is compatible with the installation requirements of interpretive codes such as National Electric Code (NEC) and Occupational Safety & Health Act (OSHA).
- 3.4 Standard enclosure sizes are 1Hp to 10Hp 200 to 230Volts or 1Hp to 20Hp 480Volts is 24"x 15"x 14", 15Hp 200 to 230Volts 24"x 20" x 14", 20Hp to 30Hp 200 to 230Volts or 480Volt is 30"x 24"x 14"

4.0 Input Power

- 4.1 The panel is to operate on 200 to 240Volts +/-10%, single-phase with minimum 50% deration
- 4.2 The frequency is to be 60Hz +/-5%.
- 4.3 The MOV voltage of the drive 160 Joules, 1400VDC clamping.

5.0 Output Power

- 5.1 The drive shall be capable of horsepower ratings for 1Hp to 2300Hp and output frequencies up to 3,000Hz. It shall also have an energy save feature with the capability of selecting a V/Hz automatic control function that will modify the V/Hz curve based on light load characteristics that will minimize power consumption.
- 5.2 The drive output voltage shall vary with frequency to maintain constant volts/hertz ratio up to base speed (60Hertz) output. Constant or linear voltage output shall be supplied at frequencies greater than base speed (60Hertz).
- 5.3 The drive one minute overload current rating shall be 110% of rated current for normal duty loads and 150% torque for heavy duty loads.

6.0 I/O Specification

- 6.1 Seven programmable digital inputs.
- 6.2 Digital inputs can be programmed for positive or negative logic.
- 6.3 Three analog inputs (Analog 1 0-10VDC, Analog 2 and 3 programmable for 0-10VDC, 0-20Ma, 4-20Ma, 20-0Ma, 20-4Ma, or thermistor input).
- 6.4 Two programmable analog outputs (programmable for 0-10VDC, 0-20Ma, or 4-20Ma).
- 6.5 Secure Disable input meets EN954-1 cat 3.
- 6.6 One programmable dry contact rated 240VAC 2A resistive.
- 6.7 24VDC external input for backup power supply.

7.0 Features

- 7.1 V/Hz standard default mode or can be programmed in open loop vector or rotor flux control mode.
- 7.2 Three zero space solution module slots for fieldbus and additional I/O.
- 7.3 Smartcard for simple setup and cloning of drive parameters.
- 7.4 External 24VDC backup control supply connection.
- 7.5 PLC functionality built in with IEC 61131-3 programming language.
- 7.6 Built in EMC filter.
- 7.7 Built in dynamic brake transistor.
- 7.8 HOA selector switch mounted on the outside door

8.0 Protective Features

- 8.1 Under Voltage DC Bus 175/350/435VDC, Under voltage trip (approximately 124/247/307VAC line voltage).
- 8.2 Over Voltage DC Bus 415/830/990VDC, Over voltage trip (approximately 293/587/700VAC line voltage).
- 8.3 MOV voltage 160 Joules, 1400VDC clamping.
- 8.4 Transient protection line to line and line to ground.
- 8.5 Drive overload trip programmable for normal duty or heavy duty operation.

- 8.6 Instantaneous over current trip is 225% of drive rating.
- 8.7 Phase loss trip due to DC bus ripple exceeded.
- 8.8 Over temperature trips; drive heatsink, control board, and option module monitoring.
- 8.9 Protects against phase to phase faults.
- 8.10 Protects against phase to ground faults.
- 8.11 Electronically protects the motor from overheating due to load conditions.
- 8.12 No flow shutdown with programmable auto restart attempts.

9.0 Quality Assurance

- 9.1 All panels shall be 100% tested to ensure proper performance upon delivery.
- 9.2 Three Year Warranty from the delivery date.
 - IFM Effector transducer PA3224 with shielded cable.
 - INOV8 temperature switch mounted on the pump volute with red fault light and reset on panel door.
 - American Granby liquid filled gauges mounted on intake and discharge manifold.
 - Nibco GD4765-3 butterfly valves with grooved connection line size for bypass and applicable line size for pump suction.
 - Flomatic Check Valve with threaded connections
 - Galvanized plumbing within unit are grooved connections and fittings for 2" and larger, painted dark green.
 - Above ground galvanized drop pipes with grooved connections. Underground PVC connections and adaptors.
 - Booster pump assembly to be mounted on a level concrete pad 4" thick with a 3" apron all around including a minimum of three conduits for power and control wires.

Booster Pump Enclosure B:

- Standard enclosure size 48"X 36"X 44", uni-constructed two-piece with pivoting top and no hinges with shock absorber to assist opening and closing. Louvers on two sides for ventilation. Exhaust fan rated for 110 CFM, 115-volt, with finger guard for safety, external single muffin fan hood to shield from exposure. Pump and electrical panel mounted for easy service access. Powder coated dark green exterior and interior, all steel brackets and hardware for supports.
 - Space for future flow sensor and meter valve downstream of the booster pump installation to be coordinated with City Irrigation Supervisor is required.
 - Pumps equipped with mechanical shaft seals, back pull out designs with ample access to junction box.
 - Contractor is required to provide decomposed granite to the surface for the drop pipes to penetrate the ground to connect to the mainline .
 - 30 months warranty following final acceptance on all equipment by City of Sacramento.
 - Contractor to provide Operation & Maintenance manuals and special tools. (2 sets)
 - Contractor to provide as-built for electrical and pumping system after

- acceptance. (2 sets)
- Contractor to provide equipment and assembly submittals prior to proceeding with work. (3 sets)
- Contractor to contact City Irrigation Supervisor for inspection of in ground plumbing before backfill.

F. Inspection –

1. Contractor to contact Streetscapes for inspection of in ground plumbing before backfill.
2. Manufacturer shall provide the City with a letter verifying that the booster pump was installed per the manufacture's specifications and has been tested and certified.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Booster Pump Assembly as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 17 - Trees to Plant (15 Gal.)

This item shall consist of furnishing, preparing and planting 15-gallon Trees in conformance with Sections 10 and 35 of the Standard Specifications and as amended by these Special Provisions.

- A. Preparing of Planting Areas shall conform to Section 35-5 of the Standard Specifications.

Soil in lawn areas adjacent to paved areas shall be graded so that after settlement, the soil will be one half inch (1/2") below the top of the paving.
- B. Weed Control shall conform to Section 35-6 of the Standard Specifications.
- C. Trees and Planting Materials shall conform to Section 35-7 of the Standard Specifications, except where noted.
 1. Trees quality and size shall comply with current edition of "American Standard for Nursery Stock" as adopted by the American Association of Nurseryman.
 2. Plant Schedules shown on the plans are for the Contractor's convenience only. The Contractor shall confirm all quantities and shall plant as required by the Planting Plan when discrepancies exist.
 3. Tree Stake shall be pressure-treated lodge pole pine, eight foot (8') by two inch (2") diameter.
 4. Nursery Stakes shall be removed at the time of planting. No nursery stake shall be present prior to final acceptance unless other directed by the Landscape Architect.

5. Tree Ties shall conform to Section 35-7, paragraph G with the exception of the ties shall be rubber and attached per planting detail.
6. Mulch shall conform to the applicable paragraphs of Section 35-8. Mulch area shall be a four foot (4') diameter circle from the tree base in turf.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Trees to Plant (15 gallon) as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 18 - Trees (24" Box)

This item shall consist of furnishing, preparing and planting 24" Box Trees in conformance with Sections 10 and 35 of the Standard Specifications and as amended by these Special Provisions.

- A. Preparing of Planting Areas shall conform to Section 35-5 of the Standard Specifications.

Soil in lawn areas adjacent to paved areas shall be graded so that after settlement, the soil will be one half inch (1/2") below the top of the paving.
- B. Weed Control shall conform to Section 35-6 of the Standard Specifications.
- C. Trees and Planting Materials shall conform to Section 35-7 of the Standard Specifications, except where noted.
 1. Trees quality and size shall comply with current edition of "American Standard for Nursery Stock" as adopted by the American Association of Nurseryman.
 2. Plant Schedules shown on the plans are for the Contractor's convenience only. The Contractor shall confirm all quantities and shall plant as required by the Planting Plan when discrepancies exist.
 3. Tree Stake shall be pressure-treated lodge pole pine, eight foot (8') by two inch (2") diameter.
 4. Nursery Stakes shall be removed at the time of planting. No nursery stake shall be present prior to final acceptance unless other directed by the Landscape Architect.
 5. Tree Ties shall conform to Section 35-7, paragraph G with the exception of the ties shall be rubber and attached per planting detail.
 6. Mulch shall conform to the applicable paragraphs of Section 35-8. Mulch area shall be a four foot (4') diameter circle from the tree base in turf.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Trees to Plant (24" box) as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 19 - Shrub and Groundcover Areas

This item shall consist of furnishing, preparing and planting Shrub and Groundcover Areas in conformance with Sections 10 and 35 of the Standard Specifications and as amended by these Special Provisions.

- A. Preparing of Planting Areas shall conform to Section 35-5 of the Standard Specifications. Soil in Shrub and Groundcover areas adjacent to paved areas shall be graded so that after settlement, the soil will be three inches (3") below the top of the adjacent paving or curb.
- B. Weed Control shall conform to Section 35-6 of the Standard Specifications.
- C. Soil Preparation Materials shall conform to Section 10-39, 10-40, 10-41, 35-8 of the Standard Specifications.
 - 1. Soil Conditioner/Fertilizer Contractor shall submit soil fertility analysis upon completion of rough grading for approval and application of amendments. Soils fertility analysis shall evaluate the following: micronutrient content, macronutrient content, pH level, saturation percentage, soil texture, infiltration rate, conductivity, total dissolved salts, cation exchange capacity, Sulfur or Lime levels, Gypsum levels, Sodium absorption ratio, exchangeable Sodium percentage, organic matter and recommendations based on analytical results. Soil conditioner shall be cultivated into the top six inches (6") of the soil and thoroughly watered in. Contractor shall provide proof of soil conditioner application to the Landscape Architect.
- D. Planting Materials shall conform to Section 10-43 and 35-8 of the Standard Specifications.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Shrub and Groundcover Areas to Plant as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 20 - Landscape Weed Fabric

This item shall consist of furnishing and installing landscape weed block fabric in all new planting areas shown on the plans in conformance with the Standard Specifications and as amended by these Special Provisions. Landscape weed fabric is not required to be place within existing planting areas.

- A. Landscape Weed Fabric shall be DeWitt Weed Barrier Landscape Fabric, 3.5 ounce, 12 yr., Color Brown, UV treated, spunbonded fabric or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com.
- B. Metal Anchor Pins shall be by Dewitt or approved equal. Contact DeWitt Company 1-800-888-9669, or dewittcompany.com.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Landscape Weed Fabric to Place as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 21 - Bark Mulch

This item shall consist of furnishing and installing bark mulch in new planting area shown on the plans in conformance with the Standard Specifications and as amended by these Special Provisions.

- A. Mulch shall be evenly spread in all planter areas as specified on the plans. Mulch shall be Medium Walk on Bark, consisting of walk-on Douglas fir bark, available from Redi-Gro, or approved equal. Contractor shall submit a mulch sample to the Landscape Architect for approval at least forty-eight (48) hours prior to installation.

Payment shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Bark Mulch to Place as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. 22 – Plant Establishment (180 Days)

This item shall consist of maintaining the landscape planted areas installed in this contract as shown on the plans in conformance with Sections 35-15 through 35-18 of the Standard Specifications and as amended by these Special Provisions.

- A. Start of Maintenance Period shall conform to Section 35-15 of the Standard Specifications. As amended by the following: The start of the Maintenance period will not start until SUBSTANTIAL COMPLETION (refer to sections 1-45 and 8-4 of the 2007 City Standard Specifications) of the entire project has been determined by the City landscape architect.
- B. Watering shall conform to Section 35-13 of the Standard Specifications and these Special Provisions.
- C. Plant Replacement shall conform to Sections 35-14 of the Standard Specifications.
- D. Plant Establishment period or Landscape Maintenance Period shall conform to Section 35-16 of the Standard Specifications and be amended as follows: The Landscape Maintenance Period shall be Ninety (90) Calendar Days and shall begin on the date of the Start of Maintenance Period. Plant Establishment and Landscape Maintenance shall continue until final acceptance of the work.
- E. Tree & Shrub Maintenance. Trees and Shrubs shall be pruned and shaped as directed by the Landscape Architect. Trees shall be restacked as necessary. Maintain watering basins and shrub and groundcover areas free of weeds.

- F. Final Inspection shall conform to Section 35-18 of the Standard Specifications. At the time of final acceptance of the work, any square yard of the planted areas shall be ninety percent (90%) weed free, as determined by the Inspector.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Plant Establishment (180 days) as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

ADDITIVE ALTERNATE ITEM:

Item No. A1 – Street Corner Paving, Irrigation and Landscape

This item shall consist of furnishing and installing the temporary construction fencing, grading, header board, concrete flatwork over aggregate base, 6" mowstrip, automatic irrigation, turf sod, and landscaping as identified on the plans as Additive Alternate A1, located near the corner of New Market Dr. and Natomas Bl. as shown on the plans in conformance with Sections 10, 18, and 24 of the Standard Specifications and as amended by these Special Provisions.

- A. Temporary Construction Fence shall consist of furnishing, installing and maintaining a temporary 6' Chain Link Panel Construction Fence around the construction area shown on the Plans in conformance with Section 10 of the Standard Specifications.

- B. Site Grading shall comply with the Bid Item for Site Grading of these Special Provisions.

- C. Concrete Flatwork

1. Aggregate Base shall be Class II, per Section 26 of the State Standard Specifications.

Recycled Aggregate Base will be allowed and must conform to the requirements of Section 26 of the State Specifications, and tested prior to arrival at the site to verify that it meets the requirements of Class II Aggregate base.

2. Portland Cement Concrete shall be Type II, Class "C", conforming to Section 10-5 of the Standard Specifications.

3. Reinforcement shall be intermediate grade and deformed in conformance with "deformed billet-steel bars for concrete reinforcement" (ASTM Designation A615) and with Section 21 of the Standard Specifications. Rebar shall be as shown on the plans.

4. Expansion & Score Joints shall conform to Section 24-6 of the Standard Specifications with the exception of the following. Expansion joints and score joints shall be located where indicated on the plans and edged to a three-eighths inch (3/8") radius.

5. Finish shall conform to Section 24-7 of the Standard Specifications with the following exception: the concrete shall be broomed perpendicular to the sidewalk

edge with a medium finish.

6. Test Panel shall be **required** and shall be poured prior to placement of concrete flatwork. The contractor shall construct a test panel of 36" X 36" X 3-1/2" thick minimum dimensions. The Contractor shall notify the Landscape Architect and Inspector forty-eight (48) hours prior to test pour. If the test is found to be unsatisfactory by the City, additional test panels shall be constructed and finished until the correct finish is achieved. Workmen and equipment used in the construction of the test panel shall be the same as those used throughout the installation of concrete.
- D. 6" Concrete Mowstrip shall comply with the Bid Item for 6" Concrete Mowstrip of these Special Provisions.
 - E. Header Board shall comply with the Bid Item for Header Board of these Special Provisions.
 - F. Automatic Irrigation System shall comply with the Bid Item for Automatic Irrigation System of these Special Provisions.
 - G. Trees (15 Gal.) shall comply with the Bid Item for Trees (15 Gal.) of these Special Provisions.
 - H. Trees (24" Box) shall comply with the Bid Item for Trees (24" Box) of these Special Provisions.
 - I. Shrub and Groundcover Areas shall comply with the Bid Item for Shrub and Groundcover Areas of these Special Provisions.
 - J. Landscape Weed Fabric shall comply with the Bid Item for Landscape Weed Fabric of these Special Provisions.
 - K. Bark Mulch shall comply with the Bid Item for Bark Mulch of these Special Provisions.
 - L. Turf Sod
 1. Preparing of Planting Areas, Section 35-5 of the Standard Specifications shall be amended as follows: Soil shall be cultivated until the condition of the soil is loose and fine-textured to a depth of four inches (4"). Finish grade of all planting areas shall be reviewed and approved by the Landscape Architect before proceeding with planting.

Soil in lawn areas adjacent to curbs or paved areas shall be graded so that after settlement, the soil will be one half inches (1/2") below the top of curb or paving.
 2. Weed Control shall conform to Section 35-6 of the Standard Specifications.
 3. Soil Preparation Materials shall conform to Section 10-39, 10-40, 10-41, 35-8 of the Standard Specifications.

a. Soil Conditioner/Fertilizer shall be Tri-C 6-2-4 w/ 5% Sulfur, or approved equal. Soil conditioner shall contain 6-2-4 (NPK ratio) and 20% humic acids, and shall be applied at the rate of 70 lbs. per 1,000 square feet. Soil conditioner shall be cultivated into the top six inches (6") of the soil and thoroughly watered in. Contractor shall provide proof of soil conditioner application to the Project Construction Inspector. For supplier call 1-800-927-3311 or (909) 590-1790.

b. Organic Amendment shall be nitrogen treated fir bark with the following properties:

Physical Properties: 95% - 100% passing, sieve size 6.35 mm (1/4" inch), 80% - 100% passing, sieve size 2.38 mm (No. 8, 8 mesh), and 0% - 30% passing, sieve size 500 micron (No. 35,32 mesh).

Chemical Properties: Nitrogen Content (dry weight basis) – 0.4-0.6% iron content – minimum 0.08% dilute acid soluble Fe on dry weight basis, soluble salts – maximum 3.5 milliohms / centimeter @ 25 degrees C. as determined by saturation extract method; ash – 0 – 6.0%

4. Amendment shall be uniformly distributed throughout all irrigated planted areas and incorporated to a homogenously blended depth of six inches. Application rate shall be 3 cubic yards per 1,000 square foot.

5. Turf Sodding shall conform to Section 10-42, and applicable paragraphs of Section 35-12 of the Standard Specifications and these Special Provisions.

1. Turf Sodding shall consist of 90% Dwarf Fescue mix, and 10% Dwarf Kentucky Bluegrass.

6. Turf Starter Fertilizer shall be shall be applied at the rate of ten (10) lbs. per 1,000 square. Starter fertilizer shall conform to the requirements of the California Food and Agricultural Code

M. Plant Establishment shall comply with the Bid Item Plant Establishment of these Special Provision.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in Street Corner Irrigation and Landscape as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

Item No. A2 – California Fan Palms (15' BTH)

This item shall consist of preparing and planting California Fan Palms fifteen foot bare trunk height (15" BTH) in conformance with Sections 10 and 35 of the Standard Specifications and as amended by these Special Provisions.

- A. Reviews: The Contractor shall specifically request the following reviews prior to progressing with the work:
1. Review at the place of growth prior to shipment and upon arrival at the project site by the City's Representative.
 2. Certification in writing to the City Representative that palms have been inspected and are certified disease free at time of shipment.
 3. Pit excavation.
 4. Plant installation.
- B. Submittals/Plant Material: Within five days after award of contract, Contractor shall submit notice to the Landscape Architect certifying the quantity and species of palms ordered, the nursery supplying the material and any palms unavailable at the time, and proposed means of providing same to be approved by the Landscape Architect.
- C. Specimen palm sources: Contractor is advised that plant material specified is not subject to substitutions and if portions of specimen palms material are unavailable, all other operations are to be completed within the time schedules outlined with a later single phase to be scheduled for completion several months later, with no change in contract amounts.
- D. Quality:
1. Palms shall be field grown and shall come directly from established field growing grounds. Palms that have been previously dug, shipped, or previously stored in any manner, are not acceptable.
 2. Foliage shall be well developed, healthy, and free from disfigurements and cosmetic injuries.
 3. Minimum height shall be fifteen (15) feet of cleared trunk, not including fronds, head, and root ball.
 4. Trunks shall be free from all defects including decay, abrasions, climbing spike holes, sun scald, disease and pests, or any objectionable disfigurements.
 5. Trunks shall be cleared from ground level to the bottom of shipping fronds, shall be single-trunked and straight, shall not have basal suckers, and shall be uniform in diameter from ground level to head. Significant variation of trunk diameter beyond normal taper on individual palms shall be grounds for rejection.

6. Root systems shall be vigorous and well developed and shall not show signs of root disease or root pests.

E. Installation

1. Planting operations shall take place between March 1 and August 31.
2. Plant Material Approvals: Before planting operations commence, all specimen palms shall be reviewed by the Landscape Architect. Defective palms installed without such review shall be removed from the site upon request by the landscape architect and an acceptable palm substituted in its place.
3. Protection of Plants: Contractor shall maintain all palms in a healthy growing condition prior to and during planting operations. Contractor shall be responsible for vandalism, theft and damage to palms until commencement of the maintenance period. Palms shall be "healed in" if delays beyond 24 hours will occur between time of arrival at the job site and time of planting. All palms shall be 'healed in' at an approved storage facility in a perpendicular position. A 100% washed concrete or plaster sand (no beach sand) backfill shall be provided to completely cover root balls, which shall be thoroughly watered and maintained in a moist condition at all times.
4. Handling: All palms shall be loaded and unloaded with mechanical or hydraulic cranes. Tractors, front end loaders, or fork lifts shall not be used under any circumstances. Chains and cables of any type shall not be used and all rigging and support shall come from nylon slings of a type which will not abrade, bruise, cut, or otherwise damage the palm trunk surface. When rigging is to come into contact with the palm trunk surface or head area, 2" x 6" lumber shall be placed between rigging and palm trunk to prevent abrasions, cuts, or damage.
5. Pruning: Contractor shall do no pruning without the specific approval of the landscape architect. Plants pruned without approval shall be replaced by the Contractor, if required.
6. Basins: Construct basins as necessary to water palms. Remove basins from all palms under a permanent irrigation system prior to final review and finish grade the planting area. Basins for palms to be hand watered shall remain in place. Basin bottoms shall drain away from plant stem.
7. Plant Pits, Backfill and Finish Grading: See detail and other sections for materials and installation requirements. Base and sides of planting pit shall be thoroughly scarified before palm installation.
8. Frond Ties: Jute or twine frond ties broken during palm tree handling are to be replaced prior to planting. Fronds shall remain tied with ties left to weather away over time.

9. Planting: Palms shall be planted with top of root mass 8" to 12" below finish grade. Backfill shall be jetted thoroughly with water to eliminate air pockets during installation. Trees shall be installed vertical and plumb.
10. Cleanup: After completion of all operations, Contractor shall remove all trash, excess soil and other debris. All walks, walls and pavement shall be swept and washed clean, leaving the entire area in a neat, orderly condition.
11. Chemicals: Contractor shall verify compatibility, dosage and other application procedures with the manufacturer and shall pre-test any and all chemicals at the site to verify total compatibility with proposed plantings and shall be responsible for any damage arising from inappropriate use.

F. Maintenance

1. Alignment: Adjustments to straighten palms due to settling or shifting during the maintenance period are the responsibility of the contractor.
2. Irrigation: Monitor soil moisture levels. Base frequency of irrigation applications on actual evapotranspiration rates for the site. Hand water as necessary to maintain moisture throughout the maintenance period. Adjust adjacent spray irrigation to minimize throw onto palm trunks.
3. Weed Abatement: The soils surrounding the palms shall be maintained clear of turf or groundcover 2 feet from the trunk. This area to be mulched per detail. Apply no herbicides within the watering basin surrounding the palms.
4. Fertilizer: All palms shall be fertilized in April and August with the following dry fertilizer applied to the soil surface:

Par Ex 28-3-8 IBDU/SCU with minors, at 4 lbs. per single palm uniformly applied in a band around each cleared trunk area and immediately watered in.

Foliar fertilization shall occur for a period of one year following installation. Installing Contractor shall be responsible during the maintenance period and the remaining period will be the responsibility of the project owner. The fronds and heart shall be sprayed once a month with a foliar application of Grace's Minor Gro micro nutrient fertilizer at the recommended label rate.
5. Fungicide: Prophylactic fungicide applications shall also occur for a period of one year following installation. Installing contractor shall be responsible during the maintenance period and the remaining period will be the responsibility of the project owner. The fronds and heart shall be sprayed once a month with a foliar application of the fungicides Benlate and Maneb, or approved substitute. Rate and material shall be prescribed in writing by a licensed Pest Control Advisor prior to application.

Payment shall be made at the lump sum price bid, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in

California Fan Palms (15' BTH) as shown on the plans, as specified in these Special Provisions and as directed by the Park Construction Inspector.

Item No. A3 – Additional Street Corner Irrigation and Landscape

This item shall consist of furnishing and installing the site grading, header boards, automatic irrigation, and landscaping as identified on the plans as Additive Alternate A3, located near the corner of New Market Dr. and Natomas Bl. as shown on the plans in conformance with Sections 10, 18, and 24 of the Standard Specifications and as amended by these Special Provisions.

- A. Site Grading shall comply with the Bid Item for Site Grading of these Special Provisions.
- B. Header Board shall comply with the Bid Item for Header Board of these Special Provisions.
- C. Automatic Irrigation System shall comply with the Bid Item for Automatic Irrigation System of these Special Provisions.
- D. Trees (24" Box) shall comply with the Bid Item for Trees (24" Box) of these Special Provisions.
- E. Shrub and Groundcover Areas shall comply with the Bid Item for Shrub and Groundcover Areas of these Special Provisions.
- F. Landscape Weed Fabric shall comply with the Bid Item for Landscape Weed Fabric of these Special Provisions.
- G. Bark Mulch shall comply with the Bid Item for Bark Mulch of these Special Provisions.
- H. Plant Establishment shall comply with the Bid Item Plant Establishment of these Special Provision.

Payment shall be at the lump sum price bid, and shall include full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all work involved in Street Corner Irrigation and Landscape as shown on the plans, as specified in these Special Provisions and as directed by the Landscape Architect.

ATTACHMENT A

Storm Water Prevention Pollution Details

ATTACHMENT B

Construction and Demolition Debris Ordinance and Waste Management Plan

CITY OF SACRAMENTO
 DEPT. OF PARKS & RECREATION
 LANDSCAPE ARCHITECTURE SECTION
 95 I STREET, 3RD FLOOR, SACRAMENTO, CA 95814

SACRAMENTO
 Parks and Recreation

NEW MARKET DR. MEDIAN LANDSCAPE
 LAYOUT PLAN

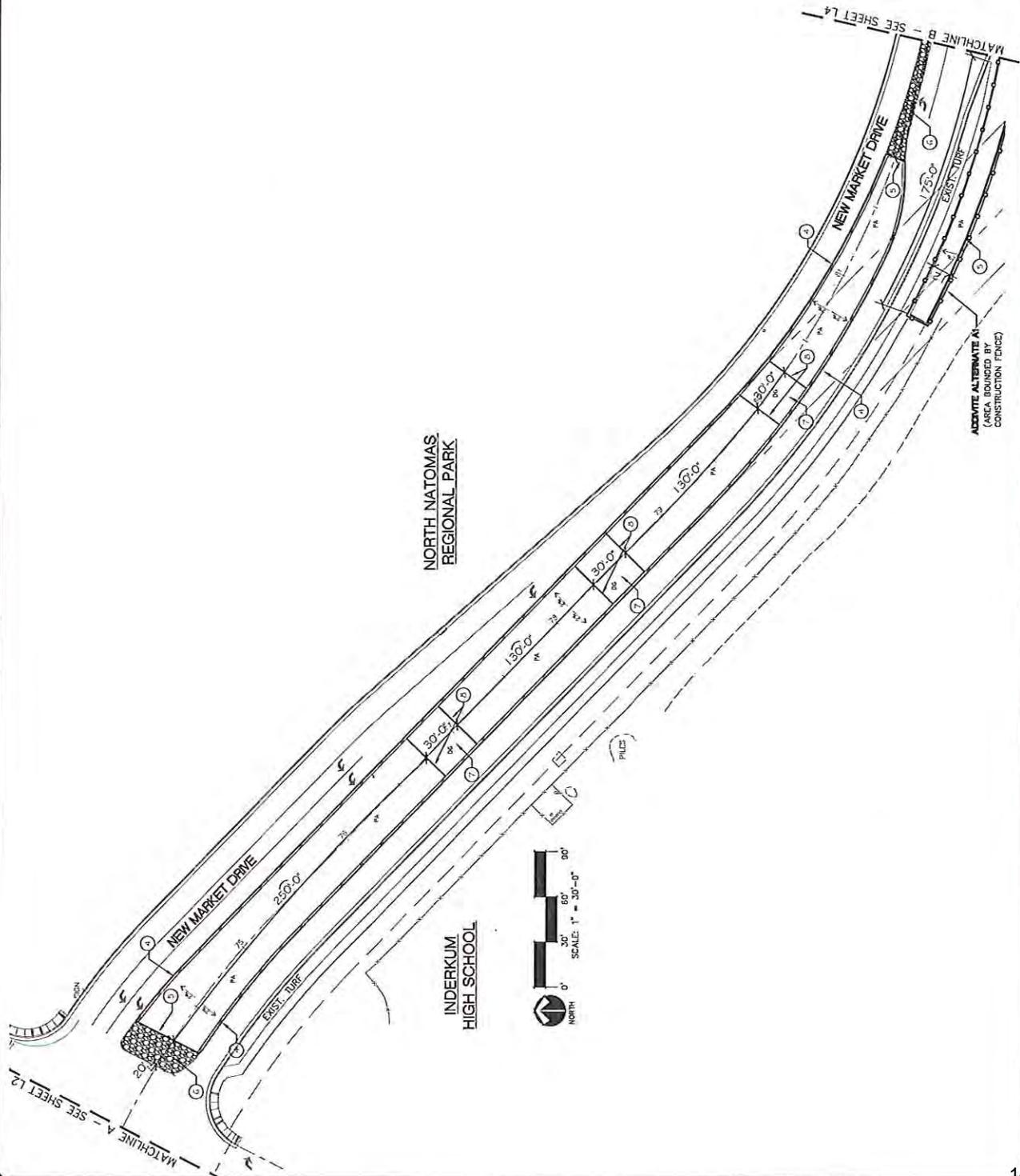
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 DESIGN (DRAWN BY):
 D.DAVY, J. WICKHAMANN
 CAD FILE:
 DATE: 01/11/11
 SCALE: AS SHOWN
 P. N. THORSON
 REVIEWERS:

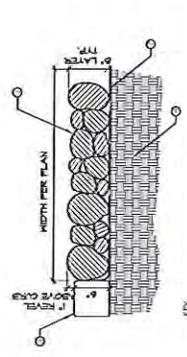
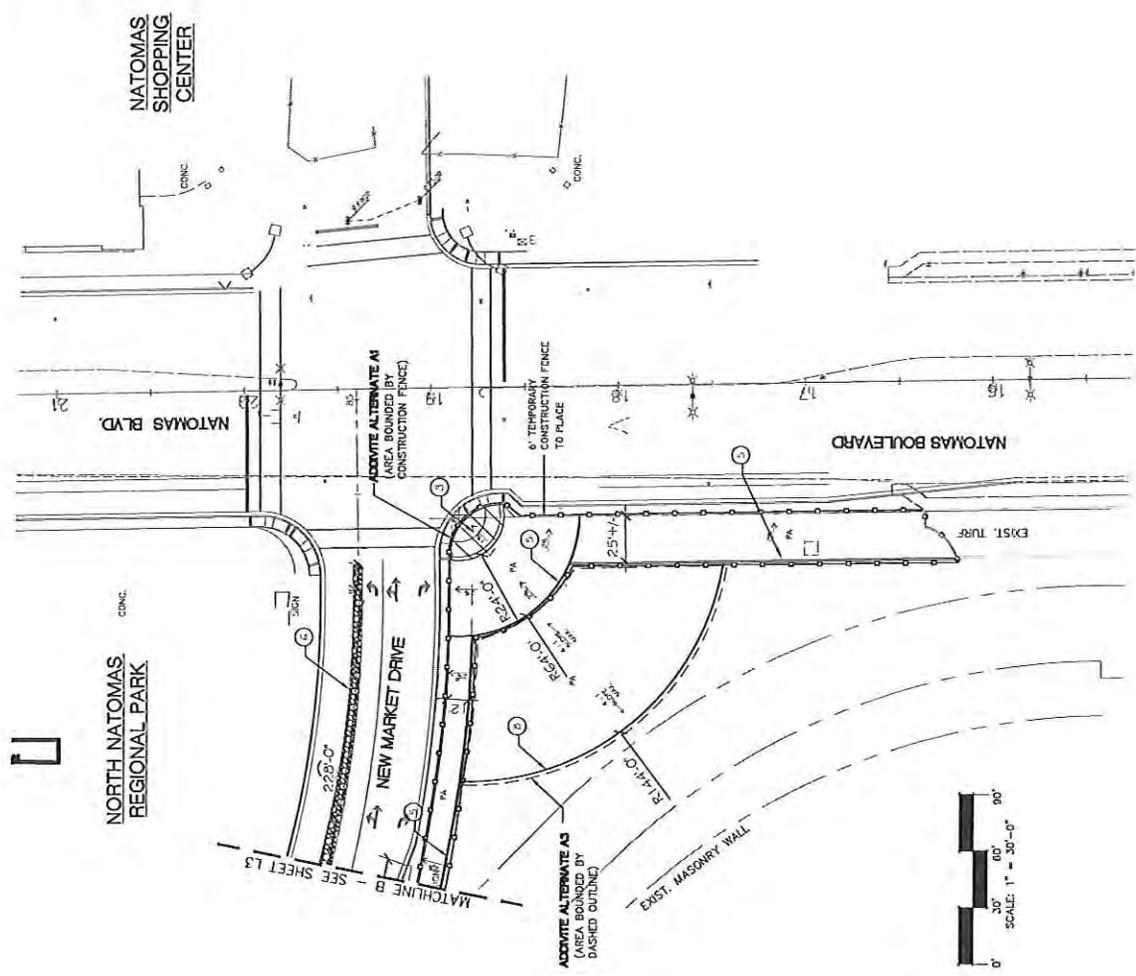


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 L3 of 15

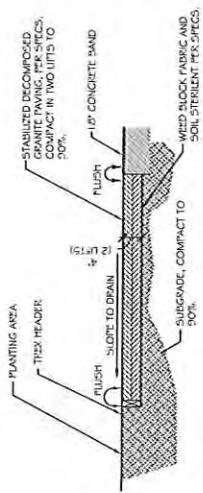


SEE SHEETS L2 FOR
 LAYOUT NOTES, LEGEND, AND
 KEY NOTES

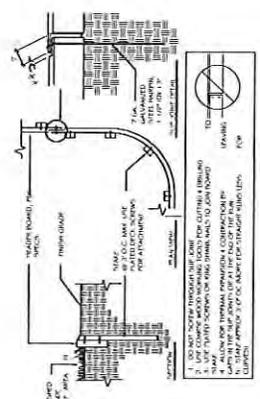




1 RIVER COBBLE
 NOT TO SCALE



2 DECOMPOSED GRANITE PAVING
 NOT TO SCALE

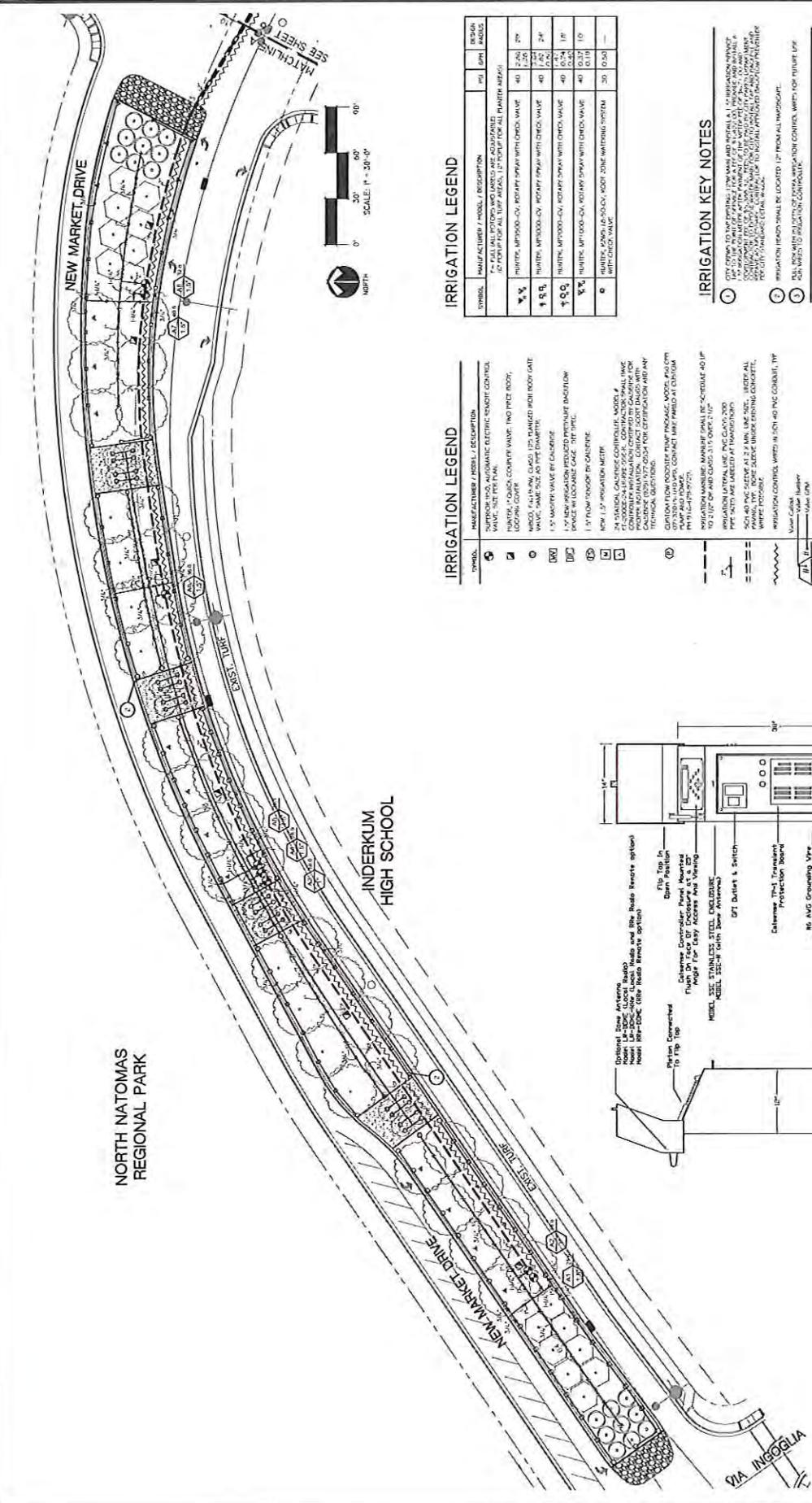


3 TREX HEADER DETAIL
 NOT TO SCALE

SEE SHEETS L2 FOR LAYOUT NOTES, LEGEND, AND KEY NOTES

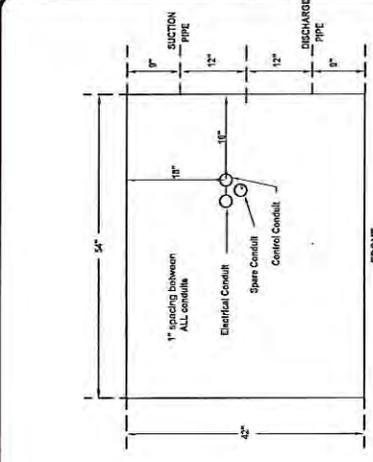
Know what's below. Call before you dig.





IRRIGATION LEGEND

SYMBOL	MANUFACTURER / MODEL / DESCRIPTION	SIZE	SPACING	RADIUS
1/4"	1/4" PIPING	1/4"	12"	12"
1/2"	1/2" PIPING	1/2"	12"	12"
3/4"	3/4" PIPING	3/4"	12"	12"
1"	1" PIPING	1"	12"	12"
1 1/2"	1 1/2" PIPING	1 1/2"	12"	12"
2"	2" PIPING	2"	12"	12"
3"	3" PIPING	3"	12"	12"
4"	4" PIPING	4"	12"	12"
6"	6" PIPING	6"	12"	12"
8"	8" PIPING	8"	12"	12"
10"	10" PIPING	10"	12"	12"
12"	12" PIPING	12"	12"	12"
15"	15" PIPING	15"	12"	12"
18"	18" PIPING	18"	12"	12"
24"	24" PIPING	24"	12"	12"
30"	30" PIPING	30"	12"	12"
36"	36" PIPING	36"	12"	12"
42"	42" PIPING	42"	12"	12"
48"	48" PIPING	48"	12"	12"
54"	54" PIPING	54"	12"	12"
60"	60" PIPING	60"	12"	12"
72"	72" PIPING	72"	12"	12"
84"	84" PIPING	84"	12"	12"
96"	96" PIPING	96"	12"	12"
108"	108" PIPING	108"	12"	12"
120"	120" PIPING	120"	12"	12"
132"	132" PIPING	132"	12"	12"
144"	144" PIPING	144"	12"	12"
156"	156" PIPING	156"	12"	12"
168"	168" PIPING	168"	12"	12"
180"	180" PIPING	180"	12"	12"
192"	192" PIPING	192"	12"	12"
204"	204" PIPING	204"	12"	12"
216"	216" PIPING	216"	12"	12"
228"	228" PIPING	228"	12"	12"
240"	240" PIPING	240"	12"	12"
252"	252" PIPING	252"	12"	12"
264"	264" PIPING	264"	12"	12"
276"	276" PIPING	276"	12"	12"
288"	288" PIPING	288"	12"	12"
300"	300" PIPING	300"	12"	12"
312"	312" PIPING	312"	12"	12"
324"	324" PIPING	324"	12"	12"
336"	336" PIPING	336"	12"	12"
348"	348" PIPING	348"	12"	12"
360"	360" PIPING	360"	12"	12"
372"	372" PIPING	372"	12"	12"
384"	384" PIPING	384"	12"	12"
396"	396" PIPING	396"	12"	12"
408"	408" PIPING	408"	12"	12"
420"	420" PIPING	420"	12"	12"
432"	432" PIPING	432"	12"	12"
444"	444" PIPING	444"	12"	12"
456"	456" PIPING	456"	12"	12"
468"	468" PIPING	468"	12"	12"
480"	480" PIPING	480"	12"	12"
492"	492" PIPING	492"	12"	12"
504"	504" PIPING	504"	12"	12"
516"	516" PIPING	516"	12"	12"
528"	528" PIPING	528"	12"	12"
540"	540" PIPING	540"	12"	12"
552"	552" PIPING	552"	12"	12"
564"	564" PIPING	564"	12"	12"
576"	576" PIPING	576"	12"	12"
588"	588" PIPING	588"	12"	12"
600"	600" PIPING	600"	12"	12"
612"	612" PIPING	612"	12"	12"
624"	624" PIPING	624"	12"	12"
636"	636" PIPING	636"	12"	12"
648"	648" PIPING	648"	12"	12"
660"	660" PIPING	660"	12"	12"
672"	672" PIPING	672"	12"	12"
684"	684" PIPING	684"	12"	12"
696"	696" PIPING	696"	12"	12"
708"	708" PIPING	708"	12"	12"
720"	720" PIPING	720"	12"	12"
732"	732" PIPING	732"	12"	12"
744"	744" PIPING	744"	12"	12"
756"	756" PIPING	756"	12"	12"
768"	768" PIPING	768"	12"	12"
780"	780" PIPING	780"	12"	12"
792"	792" PIPING	792"	12"	12"
804"	804" PIPING	804"	12"	12"
816"	816" PIPING	816"	12"	12"
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852"	852" PIPING	852"	12"	12"
864"	864" PIPING	864"	12"	12"
876"	876" PIPING	876"	12"	12"
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900"	900" PIPING	900"	12"	12"
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996"	996" PIPING	996"	12"	12"
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1080"	1080" PIPING	1080"	12"	12"
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1152"	1152" PIPING	1152"	12"	12"
1164"	1164" PIPING	1164"	12"	12"
1176"	1176" PIPING	1176"	12"	12"
1188"	1188" PIPING	1188"	12"	12"
1200"	1200" PIPING	1200"	12"	12"
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1932"	1932" PIPING	1932"	12"	12"
1944"	1944" PIPING	1944"	12"	12"
1956"	1956" PIPING	1956"	12"	12"
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1980"	1980" PIPING	1980"	12"	12"
1992"	1992" PIPING	1992"	12"	12"
2004"	2004" PIPING	2004"	12"	12"
2016"	2016" PIPING	2016"	12"	12"
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2100"	2100" PIPING	2100"	12"	12"
2112"	2112" PIPING	2112"	12"	12"
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2244"	2244" PIPING	2244"	12"	12"
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2316"	2316" PIPING	2316"	12"	12"
2328"	2328" PIPING	2328"	12"	12"
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2364"	2364" PIPING	2364"	12"	12

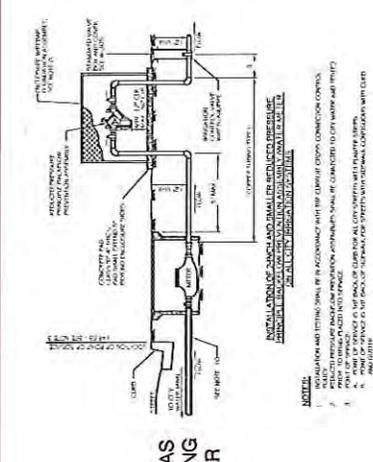


1" spacing between ALL conduits
 Electrical Conduit
 Spare Conduit
 Control Conduit

FRONT

SLAB DIMENSIONS MUST BE SPREAD AROUND PUMP ENCLOSURE
 FOR PERMANENT MOUNTING TO SLAB USE 2\"/>

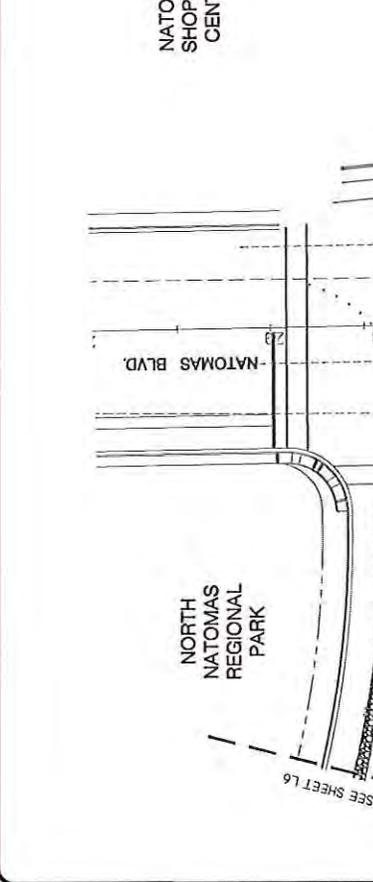
2 BOOSTER PUMP CONCRETE PAD
 NOT TO SCALE



INSTALL BACKFLOW PREVENTER IN ACCORDANCE WITH THE CURRENT CODES, CONNECTIONS, AND ALL OTHER RELEVANT REGULATIONS AND STANDARDS. THE FOLLOWING ARE THE MINIMUM REQUIREMENTS FOR THE INSTALLATION OF A BACKFLOW PREVENTER:

1. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN THE MAIN LINE OF THE WATER SUPPLY SYSTEM.
2. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A VERTICAL POSITION.
3. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM FREEZING TEMPERATURES.
4. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM VIBRATION.
5. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE PRESSURE.
6. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE TEMPERATURE.
7. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE CORROSION.
8. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE SLOPE.
9. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE WIND.
10. THE BACKFLOW PREVENTER SHALL BE INSTALLED IN A LOCATION THAT IS PROTECTED FROM EXCESSIVE LIGHTNING.

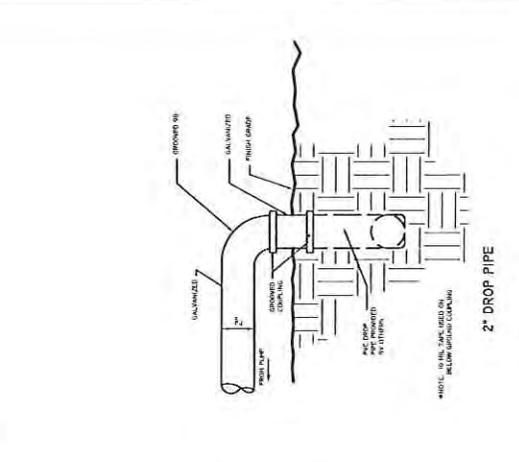
1 BACKFLOW PREVENTER
 NOT TO SCALE



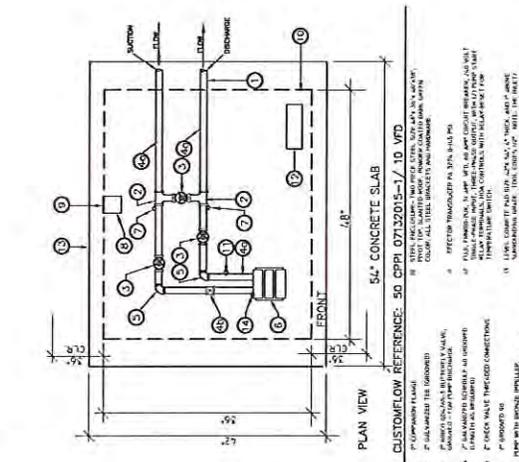
PLAN VIEW

5\"/>

3 BOOSTER PUMP
 NOT TO SCALE



2\"/>



5\"/>

CITY OF SACRAMENTO
 DEPT. OF PARKS & RECREATION
 LANDSCAPE ARCHITECTURE SECTION
 915 I STREET, 5TH FLOOR, SACRAMENTO, CA 95814

SACRAMENTO
 Parks and Recreation

NEW MARKET DR. MEDIAN LANDSCAPE PLANTING PLAN

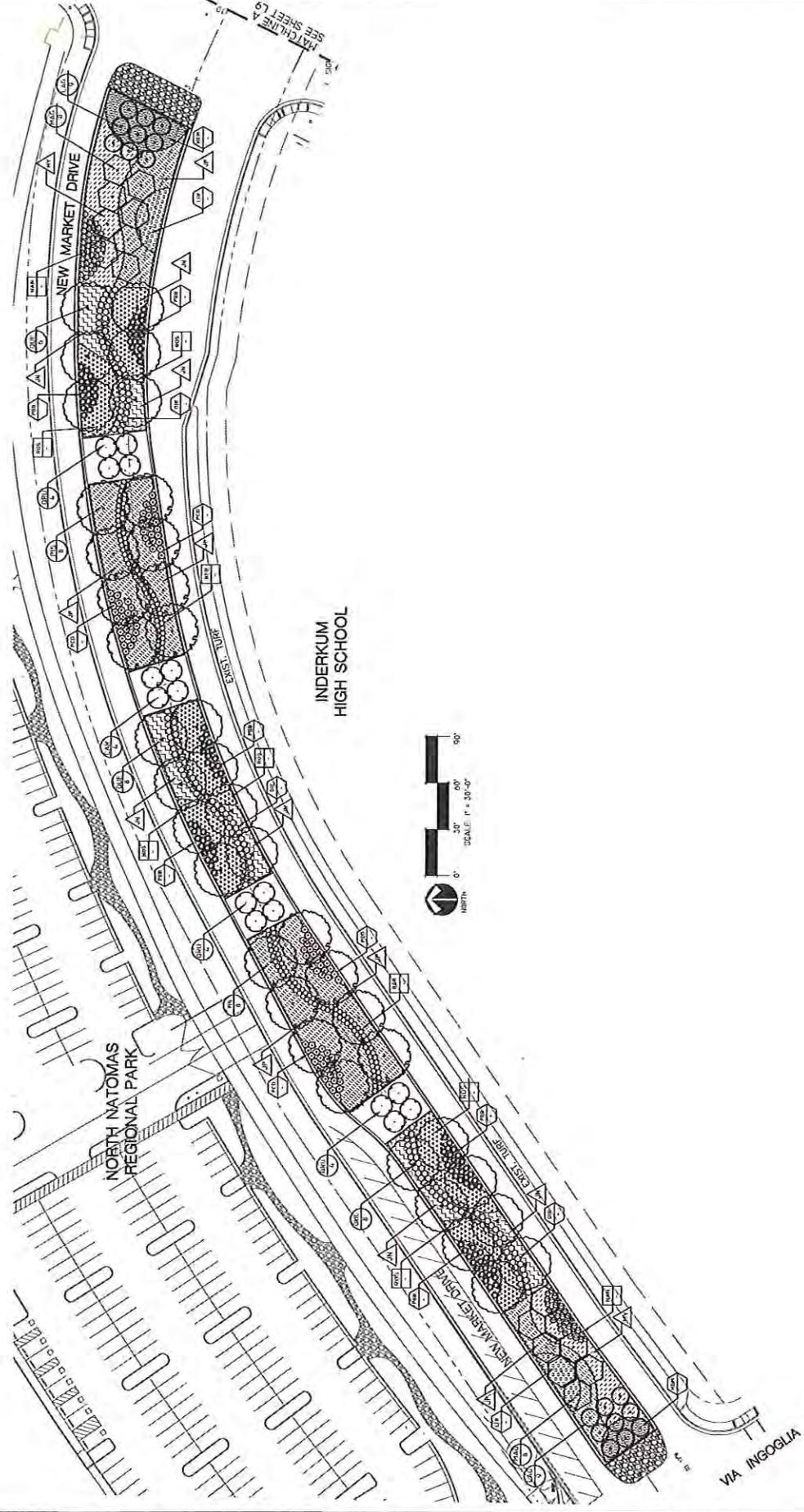
AMERICAN
 ARCHITECT
 8 DAY
 DESIGN PROVIDED BY
 2500 J. WISSEMAN
 CAD FILE
 DATE: 02/07/2018
 SCALE: AS SHOWN
 P. N. 170222000
 REVISIONS

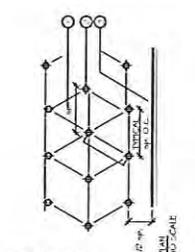
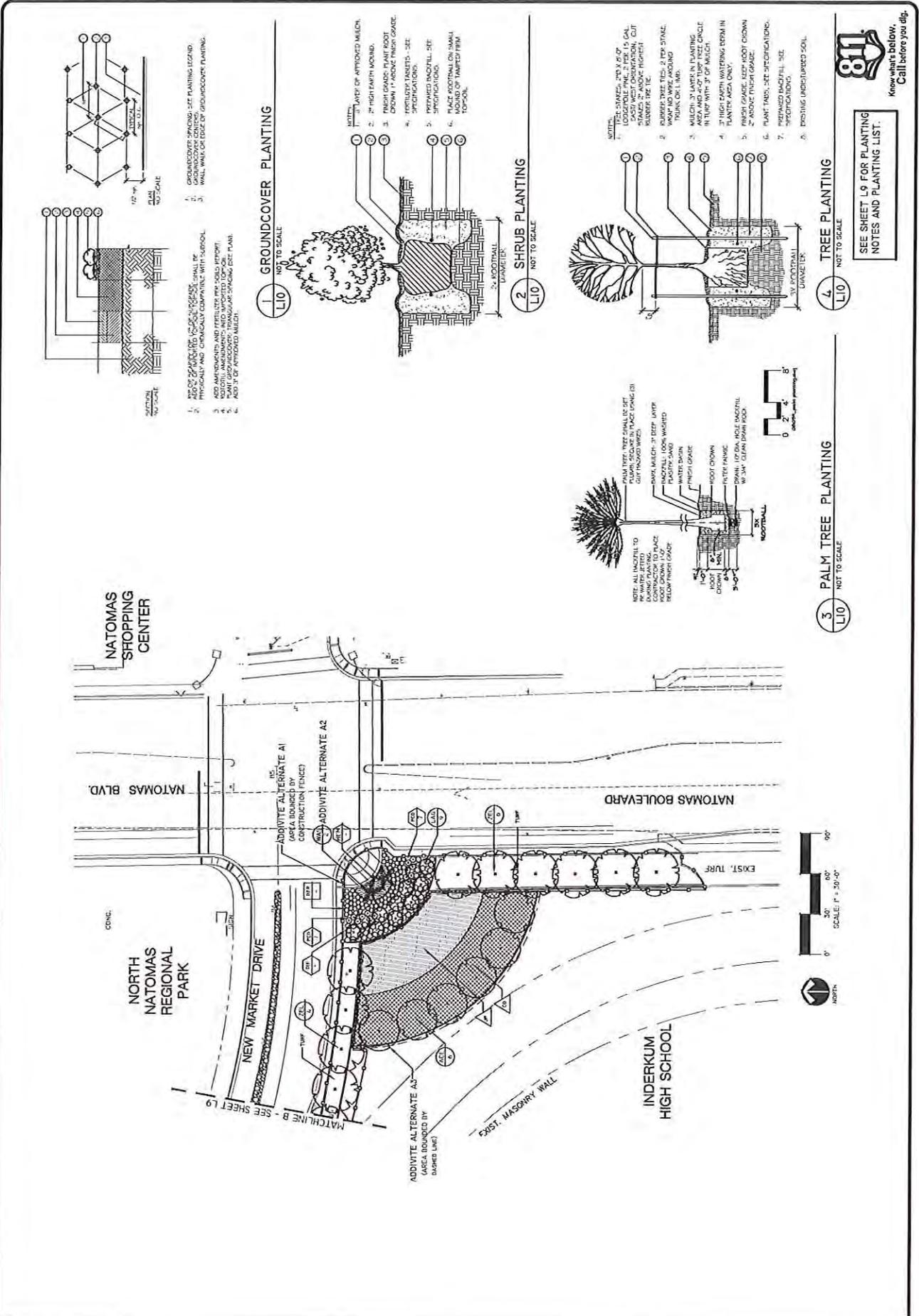


SHEET NO.
L8 of 15

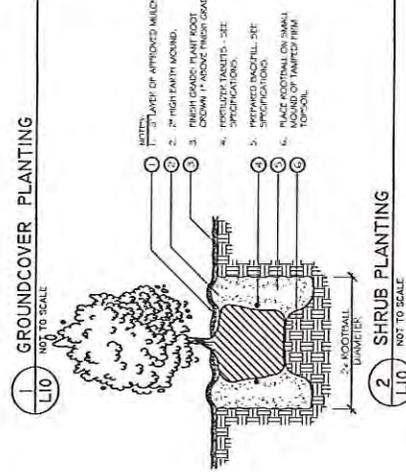


SEE SHEET L9 FOR PLANTING
 NOTES AND PLANTING LIST, AND
 L10 FOR PLANTING DETAILS.

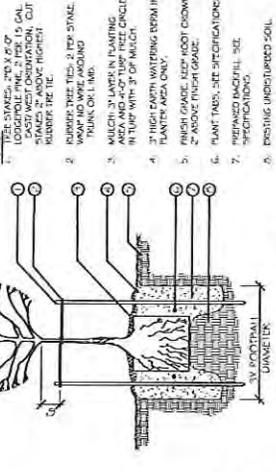




1. ADD 2\"/>
- 2. ADD 2\"/>
- 3. ADD 2\"/>
- 4. ADD 2\"/>



1. 2\"/>
- 2. 2\"/>
- 3. 2\"/>
- 4. 2\"/>
- 5. 2\"/>
- 6. 2\"/>
- 7. 2\"/>
- 8. 2\"/>



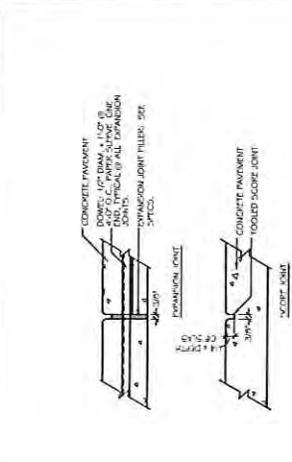
1. PALM TREE SHALL BE SET IN A 1\"/>
- 2. 2\"/>
- 3. 2\"/>
- 4. 2\"/>
- 5. 2\"/>
- 6. 2\"/>
- 7. 2\"/>
- 8. 2\"/>



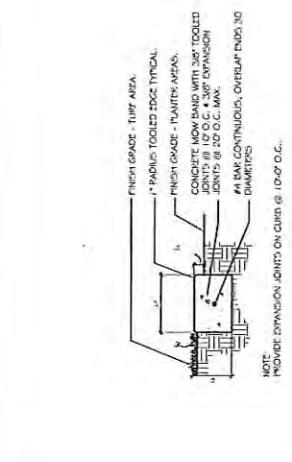
1. TREE STAKES, 2\"/>
- 2. 2\"/>
- 3. 2\"/>
- 4. 2\"/>
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- 8. 2\"/>



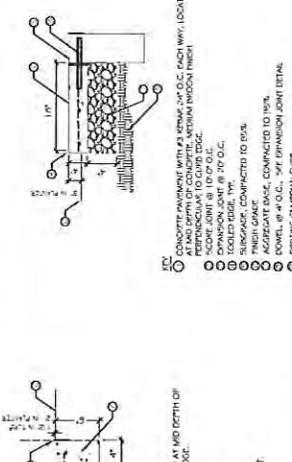
SEE SHEET L9 FOR PLANTING NOTES AND PLANTING LIST.
 Call before you dig.



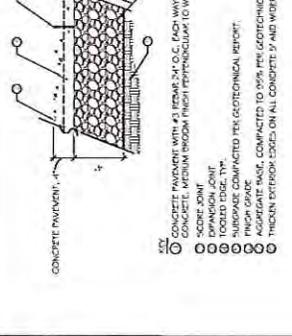
4 EXPANSION / SCORE JOINT
NOT TO SCALE



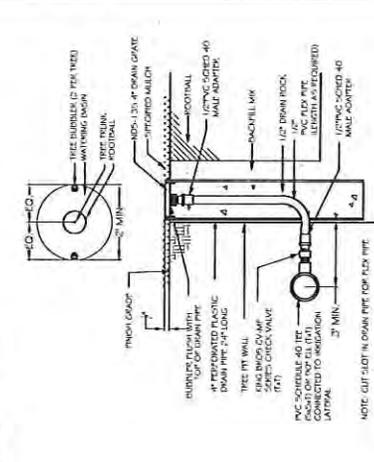
3 6" CONCRETE MOWSTRIP
NOT TO SCALE



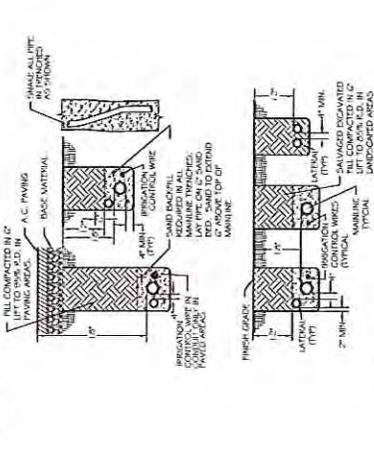
2 18" WIDE CONCRETE FLATWORK BAND
NOT TO SCALE



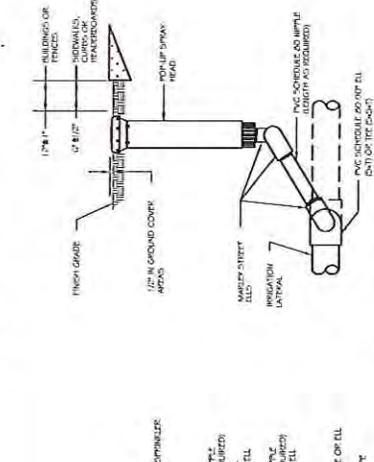
1 CONCRETE FLATWORK
NOT TO SCALE



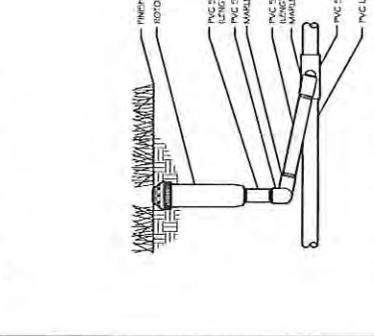
8 TREE BUBBLER DETAIL
NOT TO SCALE



7 TRENCH DETAIL
NOT TO SCALE



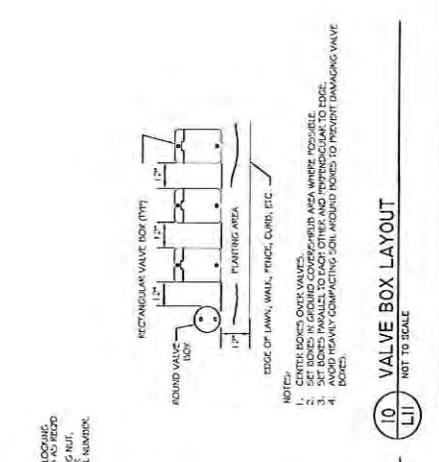
6 SPRAY HEAD DETAIL
NOT TO SCALE



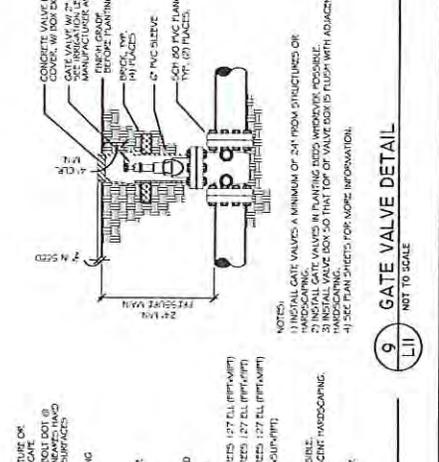
5 ROTOR DETAIL
NOT TO SCALE



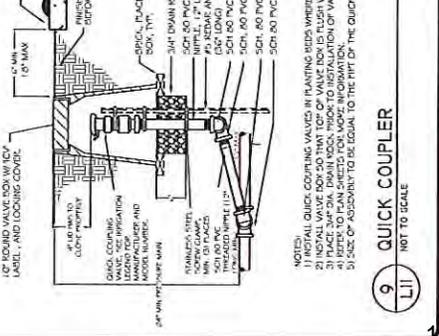
10 VALVE BOX LAYOUT
NOT TO SCALE



9 GATE VALVE DETAIL
NOT TO SCALE



9 QUICK COUPLER
NOT TO SCALE

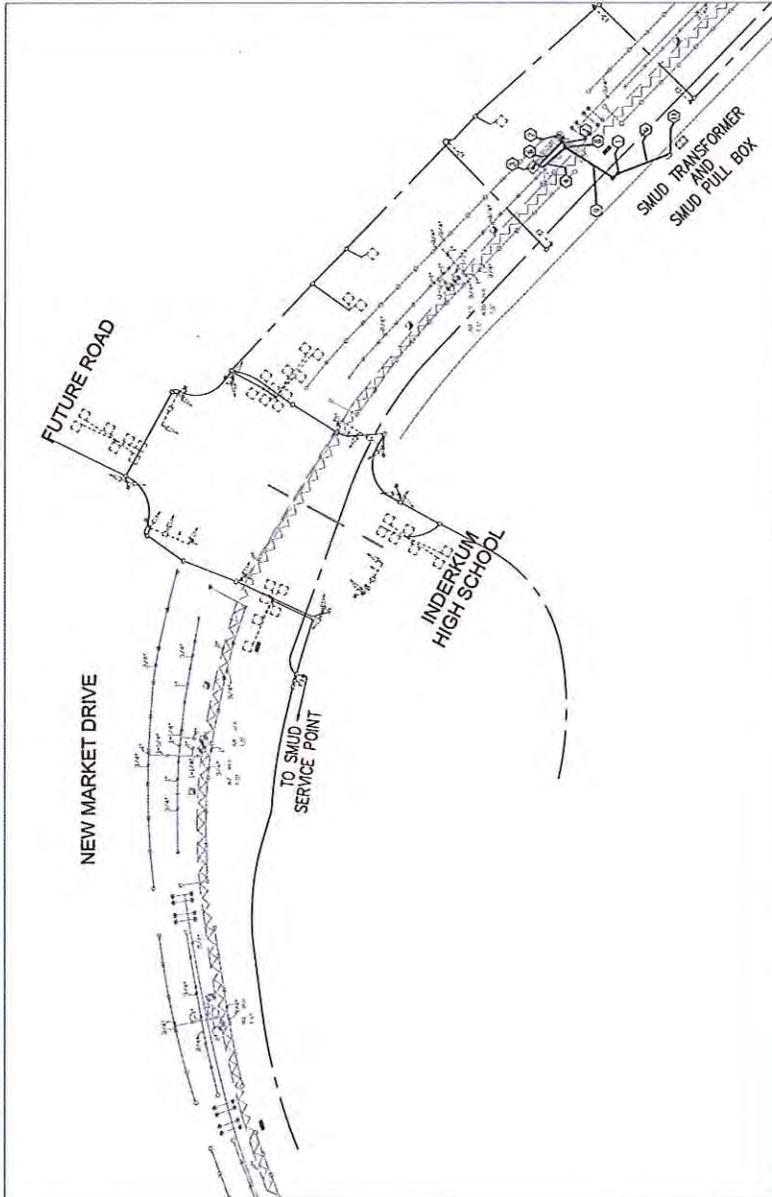


9 VALVE DETAIL
NOT TO SCALE



NUMBERED NOTES

- ① METERED PEDESTAL BY TESCO. REFER TO DETAIL 1 ON SHEET E3.
- ② NEW 5 HORSEPOWER 230V, 3PH, PUMP MOTOR. MOTOR CONNECTED TO VARIABLE FREQUENCY DRIVE WITH 208V, 1PH INPUT. VFD FURNISHED WITH INTERNAL 60 AMP INPUT BREAKER.
- ③ NEW IRRIGATION CONTROLLER.
- ④ 1 - 1" CONDUIT WITH 2 #10 & 1 #10 'G'.
- ⑤ 1 - 2" SCHEDULE 80 PVC CONDUIT WITH 3 #10 & 1 #6 'G' TO EXISTING SMUD PULL BOX.
- ⑥ 1 - 1 1/4" EMPTY CONDUIT FOR CONTROL WIRING BY OTHERS.
- ⑦ SEE ONE LINE DIAGRAM ON SHEET E-3 FOR CONDUIT AND WIRE SIZE.
- ⑧ FURNISH AND INSTALL 10" X 17" (CALTRANS #5) CONCRETE ELECTRICAL PULL BOX.
- ⑨ 1-2"C WITH 3#4 & 1#8 GND (FOR BOOSTER PUMP), AND 2#10 & 1#10 GND (FOR IRRIGATION CONTROLLER).
- ⑩ EXISTING CONDUIT AND CONDUCTORS TO REMAIN (TYPICAL OF ALL).
- ⑪ SMUD SERVICE POINT OF CONNECTION. TERMINATE NEW CONDUIT AND CONDUCTORS PER SMUD REQUIREMENTS.



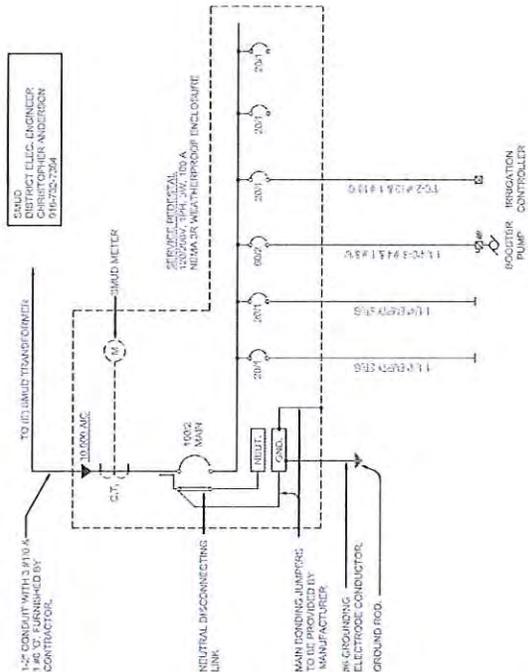
① SITE PLAN - ELECTRICAL
 SUB 1-10-07



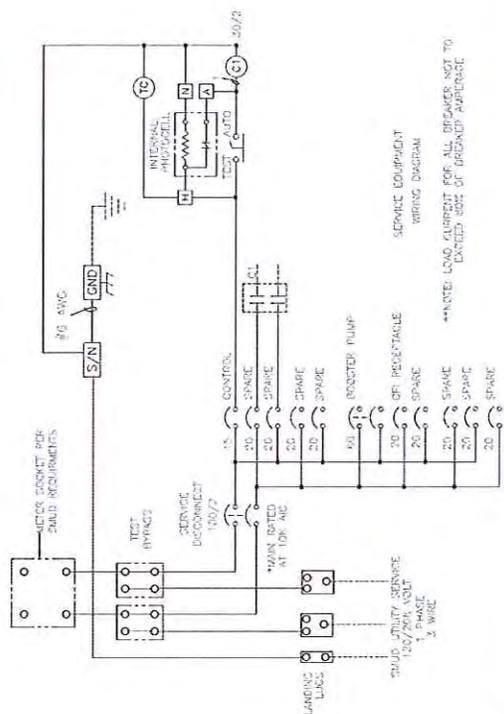
CEC LOAD CALCULATIONS

METERED PERIODICAL
 150/200 VOLT, 3-PHASE, 3-WIRE
 TO ARRIVE:

LOAD	CONNECTED LOAD (KVA)	30 MIN DIVERSITY	TOTAL DVA
MOTOR LOADS	3.30	100%	4.35
RECEPTACLE LOADS	0.18	100%	0.18
	4.38 / 30% = ALL LINES		14.3



NO SCALE



NO SCALE

JANUARY				
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
		1	2 NTP MOBILIZATION	3
			8 Land clearing	9
	6 Install erosion & sediment control measures	7		10 Grading
		13	14	15
				16
				22
				23

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None



of construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
 - Erosion control BMPs
 - Sediment control BMPs
 - Tracking control BMPs
 - Wind erosion control BMPs
 - Non-stormwater BMPs
 - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
 - Sequence trenching activities so that most open portions are closed before new trenching begins.
 - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
 - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

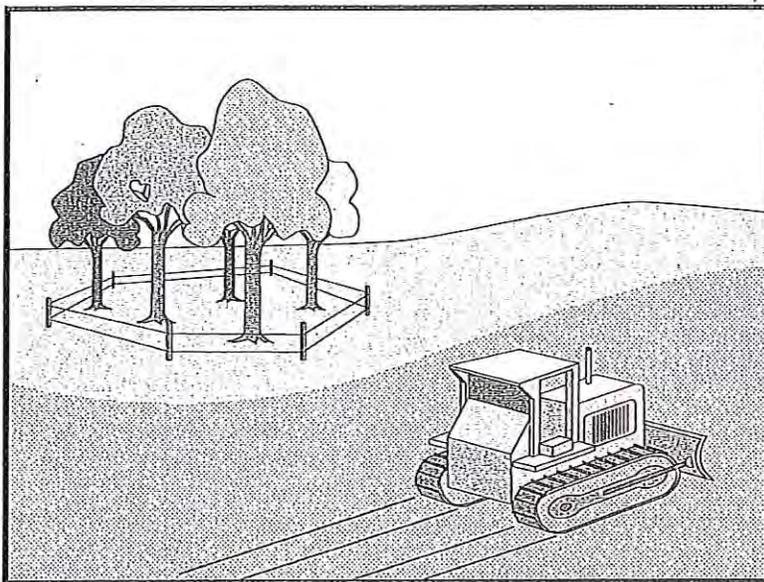
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Limitations

- Requires forward planning by the owner/developer,

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None



Preservation Of Existing Vegetation EC-2

contractor, and design staff.

- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
 - Orange colored plastic mesh fencing works well.
 - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Preservation Of Existing Vegetation EC-2

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of \$10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
 - Fertilize stressed or damaged broadleaf trees to aid recovery.
 - Fertilize trees in the late fall or early spring.

Preservation Of Existing Vegetation EC-2

- Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.
- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

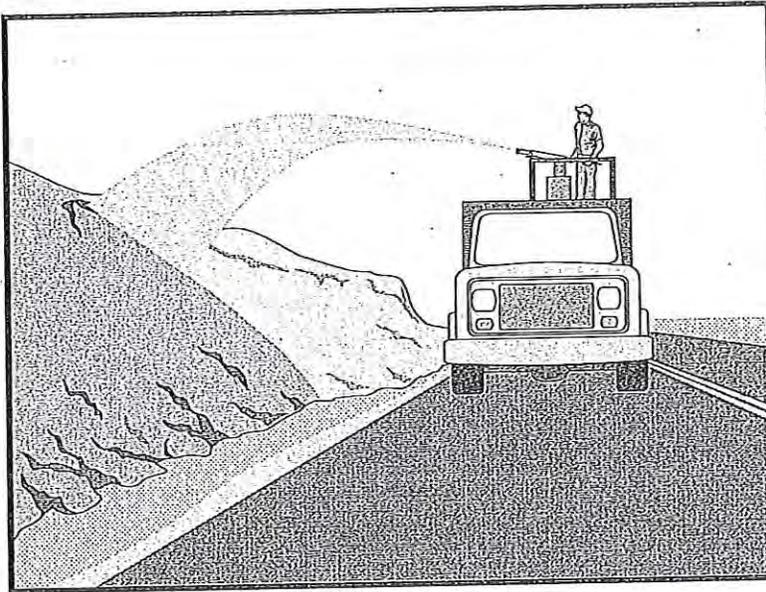
References

County of Sacramento Tree Preservation Ordinance, September 1981.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



Description and Purpose

Hydraulic Mulch consists of various types of fibrous materials mixed with water and sprayed onto the soil surface in slurry form to provide a layer of temporary protection from wind and water erosion.

Suitable Applications

Hydraulic mulch as a temporary, stand alone, erosion control BMP is suitable for disturbed areas that require temporary protection from wind and water erosion until permanent soil stabilization activities commence. Examples include:

- Rough-graded areas that will remain inactive for longer than permit-required thresholds (e.g., 14 days) or otherwise require stabilization to minimize erosion or prevent sediment discharges.
- Soil stockpiles.
- Slopes with exposed soil between existing vegetation such as trees or shrubs.
- Slopes planted with live, container-grown vegetation or plugs.
- Slopes burned by wildfire.

Hydraulic mulch can also be applied to augment other erosion control BMPs such as:

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- EC-4 Hydroseeding
- EC-5 Soil Binders
- EC-6 Straw Mulch
- EC-7 Geotextiles and Mats
- EC-8 Wood Mulching
- EC-14 Compost Blanket
- EC-16 Non-Vegetative Stabilization



- In conjunction with straw mulch (see EC-6 Straw Mulch) where the rate of hydraulic mulch is reduced to 100-500 lbs per acre and the slurry is applied over the straw as a tackifying agent to hold the straw in place.
- Supplemental application of soil amendments, such as fertilizer, lime, gypsum, soil bio-stimulants or compost.

Limitations

In general, hydraulic mulch is not limited by slope length, gradient or soil type. However, the following limitations typically apply:

- Most hydraulic mulch applications, particularly bonded fiber matrices (BFMs), require at least 24 hours to dry before rainfall occurs.
- Temporary applications (i.e., without a vegetative component) may require a second application in order to remain effective for an entire rainy season.
- Treatment areas must be accessible to hydraulic mulching equipment.
- Availability of water sources in remote areas for mixing and application.
- As a stand-alone temporary BMP, hydraulic mulches may need to be re-applied to maintain their erosion control effectiveness, typically after 6-12 months depending on the type of mulch used.
- Availability of hydraulic mulching equipment may be limited just prior to the rainy season and prior to storms due to high demand.
- Cellulose fiber mulches alone may not perform well on steep slopes or in coarse soils.

Implementation

- Where feasible, it is preferable to prepare soil surfaces prior to application by roughening embankments and fill areas with a crimping or punching type roller or by track walking.
- The majority of hydraulic mulch applications do not necessarily require surface/soil preparation (See EC-15 Soil Preparation) although in almost every case where re-vegetation is included as part of the practice, soil preparation can be beneficial. One of the advantages of hydraulic mulch over other erosion control methods is that it can be applied in areas where soil preparation is precluded by site conditions, such as steep slopes, rocky soils, or inaccessibility.
- Avoid mulch over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Hydraulic mulching is generally performed utilizing specialized machines that have a large water-holding/mixing tank and some form of mechanical agitation or other recirculation method to keep water, mulch and soil amendments in suspension. The mixed hydraulic slurry can be applied from a tower sprayer on top of the machine or by extending a hose to areas remote from the machine.

- Where possible apply hydraulic mulch from multiple directions to adequately cover the soil. Application from a single direction can result in shadowing, uneven coverage and failure of the BMP.
- Hydraulic mulch can also include a vegetative component, such as seed, rhizomes, or stolons (see EC-4 Hydraulic Seed).
- Typical hydraulic mulch application rates range from 2,000 pounds per acre for standard mulches (SMs) to 3,500 pounds per acre for BFMs. However, the required amount of hydraulic mulch to provide adequate coverage of exposed topsoil may appear to exceed the standard rates when the roughness of the soil surface is changed due to soil preparation methods (see EC-15 Soil Preparation) or by slope gradient.
- Other factors such as existing soil moisture and soil texture can have a profound effect on the amount of hydraulic mulch required (i.e. application rate) applied to achieve an erosion-resistant covering.
- Avoid use of mulch without a tackifier component, especially on slopes.
- Mulches used in the hydraulic mulch slurry can include:
 - Cellulose fiber
 - Thermally-processed wood fibers
 - Cotton
 - Synthetics
 - Compost (see EC-14, Compost Blanket)
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Categories of Hydraulic Mulches

Standard Hydraulic Mulch (SM)

Standard hydraulic mulches are generally applied at a rate of 2,000 pounds per acre and are manufactured containing around 5% tackifier (i.e. soil binder), usually a plant-derived guar or psyllium type. Most standard mulches are green in color derived from food-color based dyes.

Hydraulic Matrices (HM) and Stabilized Fiber Matrices (SFM)

Hydraulic matrices and stabilized fiber matrices are slurries which contain increased levels of tackifiers/soil binders; usually 10% or more by weight. HMs and SFMs have improved performance compared to a standard hydraulic mulch (SM) because of the additional percentage of tackifier and because of their higher application rates, typically 2,500 – 4,000 pounds per acre. Hydraulic matrices can include a mixture of fibers, for example, a 50/50 blend of paper and wood fiber. In the case of an SFM, the tackifier/soil binder is specified as a polyacrylamide (PAM).

Bonded Fiber Matrix (BFM)

Bonded fiber matrices (BFMs) are hydraulically-applied systems of fibers, adhesives (typically guar based) and chemical cross-links. Upon drying, the slurry forms an erosion-resistant blanket that prevents soil erosion and promotes vegetation establishment. The cross-linked adhesive in the BFM should be biodegradable and should not dissolve or disperse upon re-wetting. BFMs are typically applied at rates from 3,000 to 4,000 lbs/acre based on the manufacturer's recommendation. BFMs should not be applied immediately before, during or immediately after rainfall or if the soil is saturated. Depending on the product, BFMs typically require 12 to 24 hours to dry and become effective.

Mechanically-Bonded Fiber Matrices (MBFM)

Mechanically-bonded fiber matrices (MBFMs) are hydraulically applied systems similar to BFM that use crimped synthetic fibers and PAM and are typically applied to a slope at a higher application rate than a standard BFM.

Hydraulic Compost Matrix (HCM)

Hydraulic compost matrix (HCM) is a field-derived practice whereby finely graded or sifted compost is introduced into the hydraulic mulch slurry. A guar-type tackifier can be added for steeper slope applications as well as any specified seed mixtures. A HCM can help to accelerate seed germination and growth. HCMs are particularly useful as an in-fill for three-dimensional re-vegetation geocomposites, such as turf reinforcement mats (TRM) (see EC-7 Geotextiles and Mats).

Costs

Average installed costs for hydraulic mulch categories are provided in Table 1, below.

**Table 1
HYDRAULIC MULCH BMPs
INSTALLED COSTS**

BMP	Installed Cost/Acre
Standard Hydraulic Mulching (SM)	\$1,700 - \$3,600 per acre
Hydraulic Matrices (HM) and Stabilized Fiber Matrices	
Guar-based	\$2,000 - \$4,000 per acre
PAM-based	\$2,500 - \$5,610 per acre
Bonded Fiber Matrix (BFM)	\$3,900 - \$6,900 per acre
Mechanically Bonded Fiber Matrix (MBFM)	\$4,500 - \$6,000 per acre
Hydraulic Compost Matrix (HCM)	\$3,000 - \$3,500 per acre

Source: Caltrans Soil Stabilization BMP Research for Erosion and Sediment Controls, July 2007

Inspection and Maintenance

- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected

weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Compare the number of bags or weight of applied mulch to the area treated to determine actual application rates and compliance with specifications.

References

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Controlling Erosion of Construction Sites, Agricultural Information #347, U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service – SCS).

Guides for Erosion and Sediment Control in California, USDA Soils Conservation Service, January 1991.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Sedimentation and Erosion Control, An Inventory of Current Practices Draft, US EPA, April 1990.

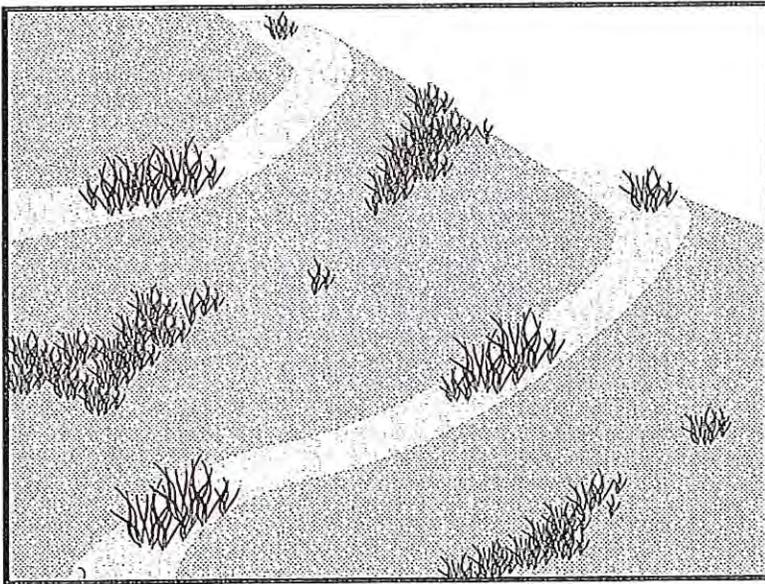
Soil Erosion by Water, Agriculture Information Bulletin #513, U.S. Department of Agriculture, Soil Conservation Service.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



Description and Purpose

Hydroseeding typically consists of applying a mixture of a hydraulic mulch, seed, fertilizer, and stabilizing emulsion with a hydraulic mulcher, to temporarily protect exposed soils from erosion by water and wind. Hydraulic seeding, or hydroseeding, is simply the method by which temporary or permanent seed is applied to the soil surface.

Suitable Applications

Hydroseeding is suitable for disturbed areas requiring temporary protection until permanent stabilization is established, for disturbed areas that will be re-disturbed following an extended period of inactivity, or to apply permanent stabilization measures. Hydroseeding without mulch or other cover (e.g. EC-7, Erosion Control Blanket) is not a stand-alone erosion control BMP and should be combined with additional measures until vegetation establishment.

Typical applications for hydroseeding include:

- Disturbed soil/graded areas where permanent stabilization or continued earthwork is not anticipated prior to seed germination.
- Cleared and graded areas exposed to seasonal rains or temporary irrigation.
- Areas not subject to heavy wear by construction equipment or high traffic.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- EC-3 Hydraulic Mulch
- EC-5 Soil Binders
- EC-6 Straw Mulch
- EC-7 Geotextiles and Mats
- EC-8 Wood Mulching
- EC-14 Compost Blanket
- EC-16 Non-Vegetative Stabilization



Limitations

- Availability of hydroseeding equipment may be limited just prior to the rainy season and prior to storms due to high demand.
- Hydraulic seed should be applied with hydraulic mulch or a stand-alone hydroseed application should be followed by one of the following:
 - Straw mulch (see Straw Mulch EC-6)
 - Rolled erosion control products (see Geotextiles and Mats EC-7)
 - Application of Compost Blanket (see Compost Blanket EC-14)

Hydraulic seed may be used alone only on small flat surfaces when there is sufficient time in the season to ensure adequate vegetation establishment and coverage to provide adequate erosion control.

- Hydraulic seed without mulch does not provide immediate erosion control.
- Temporary seeding may not be appropriate for steep slopes (i.e., slopes readily prone to rill erosion or without sufficient topsoil).
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation may not be appropriate for short term inactivity (i.e. less than 3-6 months).

Implementation

In order to select appropriate hydraulic seed mixtures, an evaluation of site conditions should be performed with respect to:

- | | |
|---|----------------------------------|
| - Soil conditions | - Maintenance requirements |
| - Site topography and exposure (sun/wind) | - Sensitive adjacent areas |
| - Season and climate | - Water availability |
| - Vegetation types | - Plans for permanent vegetation |

The local office of the U.S.D.A. Natural Resources Conservation Service (NRCS) is an excellent source of information on appropriate seed mixes.

The following steps should be followed for implementation:

- Where appropriate or feasible, soil should be prepared to receive the seed by disking or otherwise scarifying (See EC-15, Soil Preparation) the surface to eliminate crust, improve air and water infiltration and create a more favorable environment for germination and growth.

- Avoid use of hydraulic seed in areas where the BMP would be incompatible with future earthwork activities.
- Hydraulic seed can be applied using a multiple step or one step process.
 - In a multiple step process, hydraulic seed is applied first, followed by mulch or a Rolled Erosion Control Product (RECP).
 - In the one step process, hydraulic seed is applied with hydraulic mulch in a hydraulic matrix. When the one step process is used to apply the mixture of fiber, seed, etc., the seed rate should be increased to compensate for all seeds not having direct contact with the soil.
- All hydraulically seeded areas should have mulch, or alternate erosion control cover to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow.
- All seeds should be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag should be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test. The container should be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed should be pellet inoculated. Inoculant sources should be species specific and should be applied at a rate of 2 lb of inoculant per 100 lb seed.
- Commercial fertilizer should conform to the requirements of the California Food and Agricultural Code, which can be found at http://www.leginfo.ca.gov/.html/fac_table_of_contents.html. Fertilizer should be pelleted or granular form.
- Follow up applications should be made as needed to cover areas of poor coverage or germination/vegetation establishment and to maintain adequate soil protection.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Costs

Average cost for installation and maintenance may vary from as low as \$1,900 per acre for flat slopes and stable soils, to \$4,000 per acre for moderate to steep slopes and/or erosive soils. Cost of seed mixtures vary based on types of required vegetation.

BMP	Installed Cost per Acre
Hydraulic Seed	\$1,900-\$4,000

Source: Caltrans Soil Stabilization BMP Research for Erosion and Sediment Controls, July 2007

Inspection and Maintenance

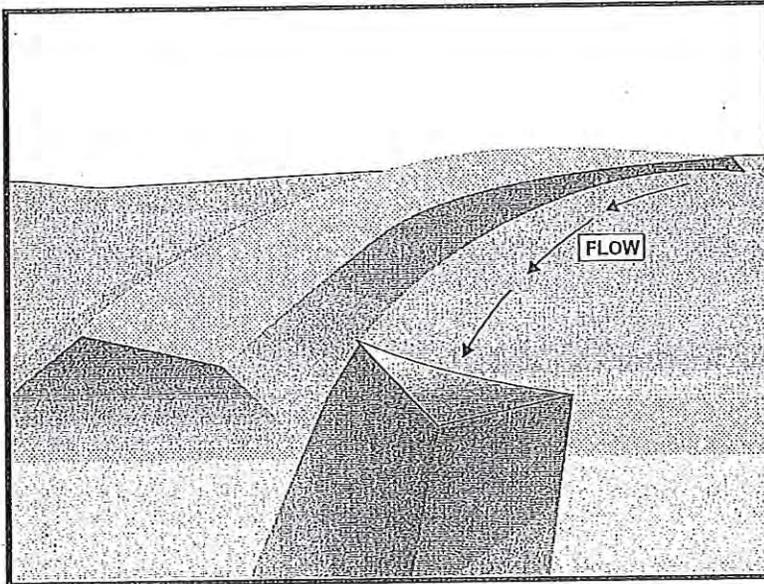
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates.
- Irrigation systems, if applicable, should be inspected daily while in use to identify system malfunctions and line breaks. When line breaks are detected, the system must be shut down immediately and breaks repaired before the system is put back into operation.
- Irrigation systems should be inspected for complete coverage and adjusted as needed to maintain complete coverage.

References

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999.



Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
 - To convey surface runoff down sloping land
 - To intercept and divert runoff to avoid sheet flow over sloped surfaces
 - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel
 - To intercept runoff from paved surfaces
 - Below steep grades where runoff begins to concentrate
 - Along roadways and facility improvements subject to flood drainage

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None



- At the top of slopes to divert runoff from adjacent or undisturbed slopes
- At bottom and mid slope locations to intercept sheet flow and convey concentrated flows
- Divert sediment laden runoff into sediment basins or traps

Limitations

Dikes should not be used for drainage areas greater than 10 acres or along slopes greater than 10 percent. For larger areas more permanent drainage structures should be built. All drainage structures should be built in compliance with local municipal requirements.

- Earth dikes may create more disturbed area on site and become barriers to construction equipment.
- Earth dikes must be stabilized immediately, which adds cost and maintenance concerns.
- Diverted stormwater may cause downstream flood damage.
- Dikes should not be constructed of soils that may be easily eroded.
- Regrading the site to remove the dike may add additional cost.
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales must conform to local floodplain management requirements.
- Earth dikes/drainage swales are not suitable as sediment trapping devices.
- It may be necessary to use other soil stabilization and sediment controls such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales, and ditches.
- Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges can result in areas of standing water suitable for mosquito production in drainage swales.

Implementation

The temporary earth dike is a berm or ridge of compacted soil, located in such a manner as to divert stormwater to a sediment trapping device or a stabilized outlet, thereby reducing the potential for erosion and offsite sedimentation. Earth dikes can also be used to divert runoff from off site and from undisturbed areas away from disturbed areas and to divert sheet flows away from unprotected slopes.

An earth dike does not itself control erosion or remove sediment from runoff. A dike prevents erosion by directing runoff to an erosion control device such as a sediment trap or directing runoff away from an erodible area. Temporary diversion dikes should not adversely impact adjacent properties and must conform to local floodplain management regulations, and should not be used in areas with slopes steeper than 10%.

Slopes that are formed during cut and fill operations should be protected from erosion by runoff. A combination of a temporary drainage swale and an earth dike at the top of a slope can divert

runoff to a location where it can be brought to the bottom of the slope (see EC-11, Slope Drains). A combination dike and swale is easily constructed by a single pass of a bulldozer or grader and compacted by a second pass of the tracks or wheels over the ridge. Diversion structures should be installed when the site is initially graded and remain in place until post construction BMPs are installed and the slopes are stabilized.

Diversion practices concentrate surface runoff, increasing its velocity and erosive force. Thus, the flow out of the drain or swale must be directed onto a stabilized area or into a grade stabilization structure. If significant erosion will occur, a swale should be stabilized using vegetation, chemical treatment, rock rip-rap, matting, or other physical means of stabilization. Any drain or swale that conveys sediment laden runoff must be diverted into a sediment basin or trap before it is discharged from the site.

General

- Care must be applied to correctly size and locate earth dikes, drainage swales. Excessively steep, unlined dikes, and swales are subject to erosion and gully formation.
- Conveyances should be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, overtopping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff onto other property without securing written authorization from the property owner.
- When possible, install and utilize permanent dikes, swales, and ditches early in the construction process.
- Provide stabilized outlets.

Earth Dikes

Temporary earth dikes are a practical, inexpensive BMP used to divert stormwater runoff. Temporary diversion dikes should be installed in the following manner:

- All dikes should be compacted by earth moving equipment.
- All dikes should have positive drainage to an outlet.
- All dikes should have 2:1 or flatter side slopes, 18 in. minimum height, and a minimum top width of 24 in. Wide top widths and flat slopes are usually needed at crossings for construction traffic.
- The outlet from the earth dike must function with a minimum of erosion. Runoff should be conveyed to a sediment trapping device such as a Sediment Trap (SE-3) or Sediment Basin

(SE-2) when either the dike channel or the drainage area above the dike are not adequately stabilized.

- Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%. In either case, stabilization of the earth dike should be completed immediately after construction or prior to the first rain.
- If riprap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. -12 in. Riprap

- The stone riprap, recycled concrete, etc. used for stabilization should be pressed into the soil with construction equipment.
- Filter cloth may be used to cover dikes in use for long periods.
- Construction activity on the earth dike should be kept to a minimum.

Drainage Swales

Drainage swales are only effective if they are properly installed. Swales are more effective than dikes because they tend to be more stable. The combination of a swale with a dike on the downhill side is the most cost effective diversion.

Standard engineering design criteria for small open channel and closed conveyance systems should be used (see the local drainage design manual). Unless local drainage design criteria state otherwise, drainage swales should be designed as follows:

- No more than 5 acres may drain to a temporary drainage swale.
- Place drainage swales above or below, not on, a cut or fill slope.
- Swale bottom width should be at least 2 ft
- Depth of the swale should be at least 18 in.
- Side slopes should be 2:1 or flatter.
- Drainage or swales should be laid at a grade of at least 1 percent, but not more than 15 percent.
- The swale must not be overtopped by the peak discharge from a 10-year storm, irrespective of the design criteria stated above.

- Remove all trees, stumps, obstructions, and other objectionable material from the swale when it is built.
- Compact any fill material along the path of the swale.
- Stabilize all swales immediately. Seed and mulch swales at a slope of less than 5 percent, and use rip-rap or sod for swales with a slope between 5 and 15 percent. For temporary swales, geotextiles and mats (EC-7) may provide immediate stabilization.
- Irrigation may be required to establish sufficient vegetation to prevent erosion.
- Do not operate construction vehicles across a swale unless a stabilized crossing is provided.
- Permanent drainage facilities must be designed by a professional engineer (see the local drainage design criteria for proper design).
- At a minimum, the drainage swale should conform to predevelopment drainage patterns and capacities.
- Construct the drainage swale with a positive grade to a stabilized outlet.
- Provide erosion protection or energy dissipation measures if the flow out of the drainage swale can reach an erosive velocity.

Costs

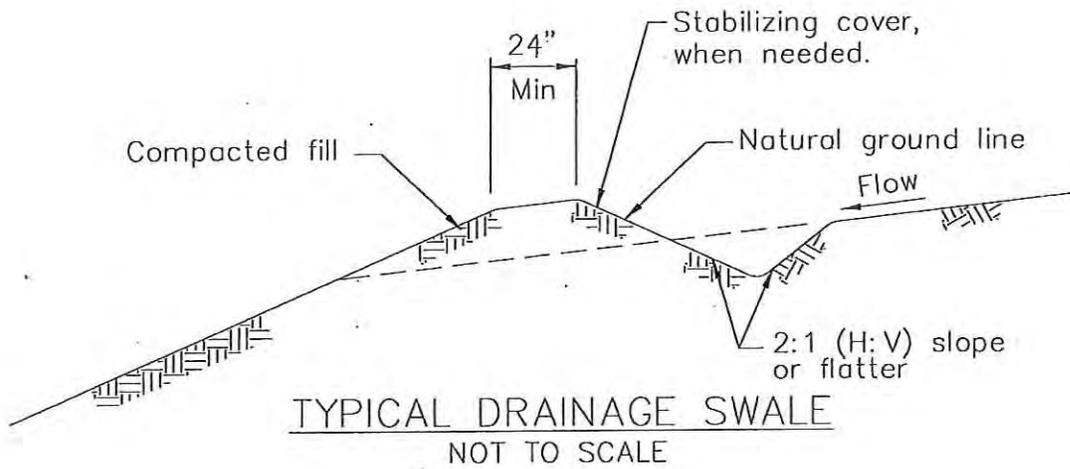
- Cost ranges from \$15 to \$55 per ft for both earthwork and stabilization and depends on availability of material, site location, and access.
- Small dikes: \$2.50 - \$6.50/linear ft; Large dikes: \$2.50/yd³.
- The cost of a drainage swale increases with drainage area and slope. Typical swales for controlling internal erosion are inexpensive, as they are quickly formed during routine earthwork.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.
- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction

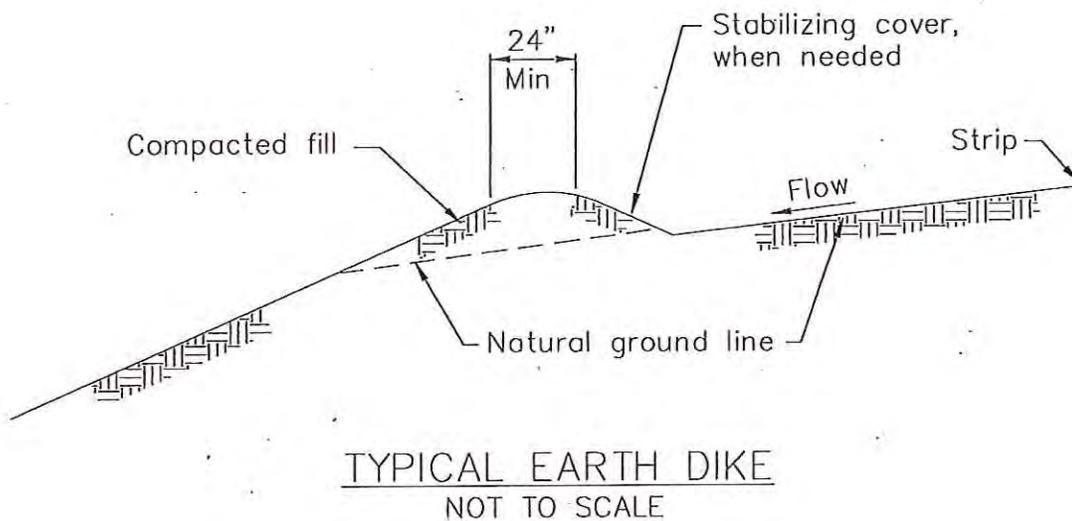
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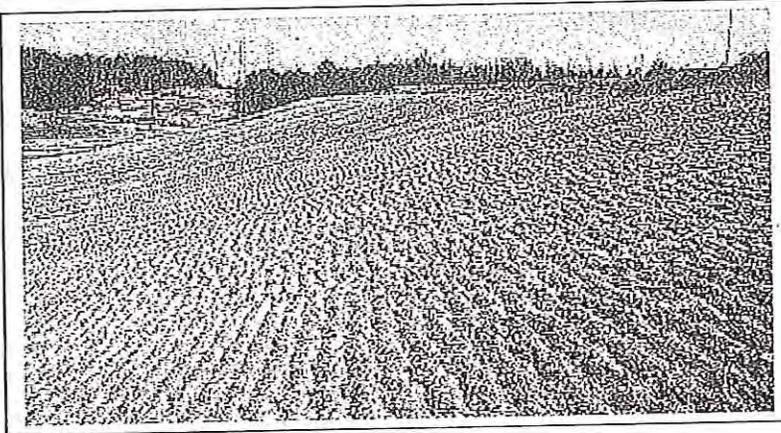
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- Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



NOTES:

1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade.





Description and Purpose

Soil Preparation/Roughening involves assessment and preparation of surface soils for BMP installation. This can include soil testing (for seed base, soil characteristics, or nutrients), as well as roughening surface soils by mechanical methods (including sheepsfoot rolling, track walking, scarifying, stair stepping, and imprinting) to prepare soil for additional BMPs, or to break up sheet flow. Soil Preparation can also involve tilling topsoil to prepare a seed bed and/or incorporation of soil amendments, to enhance vegetative establishment.

Suitable Applications

Soil preparation: Soil preparation is essential to proper vegetative establishment. In particular, soil preparation (i.e. tilling, raking, and amendment) is suitable for use in combination with any soil stabilization method, including RECPs or sod. Soil preparation should not be confused with roughening.

Roughening: Soil roughening is generally referred to as track walking (sometimes called imprinting) a slope, where treads from heavy equipment run parallel to the contours of the slope and act as mini terraces. Soil preparation is most effective when used in combination with erosion controls. Soil Roughening is suitable for use as a complementary process for controlling erosion on a site. Roughening is not intended to be used as a stand-alone BMP, and should be used with perimeter controls, additional erosion control measures, grade breaks, and vegetative establishment for maximum effectiveness. Roughening is intended to only affect surface soils and should not compromise slope stability or overall compaction. Suitable applications for soil roughening include:

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- EC-3 Hydraulic Mulch
- EC-5 Soil Binders
- EC-7 Geotextiles and Mats



- Along any disturbed slopes, including temporary stockpiles, sediment basins, or compacted soil diversion berms and swales.
- Roughening should be used in combination with hydraulically applied stabilization methods, compost blanket, or straw mulch; but should not be used in combination with RECPs or sod because roughening is intended to leave terraces on the slope.

Limitations

- Preparation and roughening must take place prior to installing other erosion controls (such as hydraulically applied stabilizers) or sediment controls (such as fiber rolls) on the faces of slopes.
- In such cases where slope preparation is minimal, erosion control/revegetation BMPs that do not require extensive soil preparation - such as hydraulic mulching and seeding applications - should be employed.
- Consideration should be given to the type of erosion control BMP that follows surface preparation, as some BMPs are not designed to be installed over various types of tillage/roughening, i.e., RECPs (erosion control blankets) should not be used with soil roughening due to a "bridging" effect, which suspends the blanket above the seed bed.
- Surface roughness has an effect on the amount of mulch material that needs to be applied, which shows up as a general increase in mulch material due to an increase in surface area (Topographic Index -see EC-3 Hydraulic Mulching).

Implementation

- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

General

A roughened surface can significantly reduce erosion. Based on tests done at the San Diego State Erosion Research Laboratory, various roughening techniques on slopes can result in a 12 - 76% reduction in the erosion rate versus smooth slopes.

Materials

Minimal materials are required unless amendments and/or seed are added to the soil. The majority of soil roughening/preparation can be done with equipment that is on hand at a normal construction site, such as bull dozers and compaction equipment.

Installation Guidelines

Soil Preparation

- Where appropriate or feasible, soil should be prepared to receive the seed by disking or otherwise scarifying the surface to eliminate crust, improve air and water infiltration and create a more favorable environment for germination and growth.
- Based upon soil testing conducted, apply additional soil amendments (e.g. fertilizers, additional seed) to the soil to help with germination. Follow EC-4, Hydroseeding, when selecting and applying seed and fertilizers.

Cut Slope Roughening:

- Stair-step grade or groove the cut slopes that are steeper than 3:1.
- Use stair-step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading.
- Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall.
- Do not make individual vertical cuts more than 2 feet (0.6 m) high in soft materials or more than 3 feet (0.9 m) high in rocky materials.
- Groove the slope using machinery to create a series of ridges and depressions that run across the slope, on the contour.

Fill Slope Roughening:

- Place on fill slopes with a gradient steeper than 3:1 in lifts not to exceed 8 inches (0.2 m), and make sure each lift is properly compacted.
- Ensure that the face of the slope consists of loose, uncompacted fill 4-6 inches (0.1-0.2 m) deep.
- Use grooving or tracking to roughen the face of the slopes, if necessary.
- Do not blade or scrape the final slope face.

Roughening for Slopes to be Mowed:

- Slopes which require mowing activities should not be steeper than 3:1.
- Roughen these areas to shallow grooves by track walking, scarifying, sheepsfoot rolling, or imprinting.
- Make grooves close together (less than 10 inches), and not less than 1 inch deep, and perpendicular to the direction of runoff (i.e., parallel to the slope contours).
- Excessive roughness is undesirable where mowing is planned.

Roughening With Tracked Machinery:

- Limit roughening with tracked machinery to soils with a sandy textural component to avoid undue compaction of the soil surface.
- Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.
- Seed and mulch roughened areas as soon as possible to obtain optimum seed germination and growth.

Costs

Costs are based on the additional labor of tracking or preparation of the slope plus the cost of any required soil amendment materials.

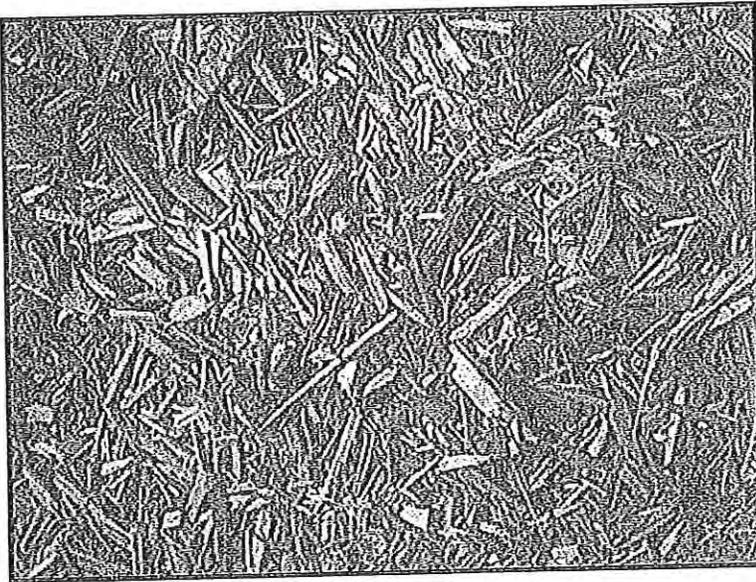
Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check the seeded slopes for signs of erosion such as rills and gullies. Fill these areas slightly above the original grade, then reseed and mulch as soon as possible.
- Inspect BMPs weekly during normal operations, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

References

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



Description and Purpose

Non-vegetative stabilization methods are used for temporary or permanent stabilization of areas prone to erosion and should be used only where vegetative options are not feasible; examples include:

- Areas of vehicular or pedestrian traffic such as roads or paths;
- Arid environments where vegetation would not provide timely ground coverage, or would require excessive irrigation;
- Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
- Areas where vegetation will not grow adequately within the construction time frame.

There are several non-vegetative stabilization methods and selection should be based on site-specific conditions.

Decomposed Granite (DG) is a permanent erosion protection method that consists of a layer of stabilized decomposed granite placed over an erodible surface.

Degradable Mulches of various types (see EC-3, EC-6, EC-8) can be used for temporary non-vegetative stabilization; examples include straw mulch, compost, wood chips or hydraulic mulch.

Geotextiles and Mats can be used for temporary non-vegetative stabilization (see EC-7). These BMPs are typically manufactured

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TR	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None



from degradable or synthetic materials and are designed and specified based on their functional longevity, i.e., how long they will persist and provide erosion protection. All geotextiles and mats should be replaced when they exceed their functional longevity or when permanent stabilization methods are instituted.

Gravel Mulch is a non-degradable erosion control product that is composed of washed and screened coarse to very coarse gravel, 16 mm to 64 mm (0.6" - 2.5"), similar to an AASHTO No. 3 coarse aggregate.

Rock Slope Protection consists of utilizing large rock or rip-rap (4" - 24") to stabilize slopes with a high erosion potential and those subject to scour along waterways.

Soil Binders can be used for temporary non-vegetative stabilization (see EC-5). The key to their use is functional longevity. In most cases, the soil binder will need to be routinely monitored and re-applied to maintain an erosion-resistant coverage.

Suitable Applications

Non-vegetated stabilization methods are suitable for use on disturbed soil areas and on material stockpiles that need to be temporarily or permanently protected from erosion by water and wind. Non-vegetated stabilization should only be utilized when vegetation cannot be established in the required timeframe, due to soil or climactic conditions, or where vegetation may be a potential fire hazard.

Decomposed Granite (DG) and Gravel Mulch are suitable for use in areas where vegetation establishment is difficult, on flat surfaces, trails and pathways, and when used in conjunction with a stabilizer or tackifier, on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used on shallow rocky slopes where vegetation cannot be established for permanent erosion control.

Degradable Mulches can be used to cover and protect soil surfaces from erosion both in temporary and permanent applications. In many cases, the use of mulches by themselves requires routine inspection and re-application. See EC-3 Hydraulic Mulch, EC-6 Straw Mulch, EC-8 Wood Mulch, or EC-14 Compost Blankets for more information.

Geotextiles and Mats can be used as a temporary stand-alone soil stabilization method. Depending on material selection, geotextiles and mats can be a short-term (3 mos - 1 year) or long-term (1-2 years) temporary stabilization method. For more information on geotextiles and mats see EC-7 Geotextiles and Mats.

Rock Slope Protection can be used when the slopes are subject to scour or have a high erosion potential, such as slopes adjacent to flowing waterways or slopes subject to overflow from detention facilities (spillways).

Soil Binders can be used for temporary stabilization of stockpiles and disturbed areas not subject to heavy traffic. See EC-5 Soil Binders for more information.

Limitations

General

- Refer to EC-3, EC-6, EC-8, and EC-14 for limitations on use of mulches. Refer to EC-7 for limitations on use of geotextiles and mats. Refer to EC-5 for limitations on use of Soil Binders.

Decomposed Granite

- Not available in some geographic regions.
- If not tackified, material may be susceptible to erosion even on slight slopes (e.g., 30:1 [H:V]).
- Installed costs may be more expensive than vegetative stabilization methods.

Gravel Mulch

- Availability is limited in some geographic regions.
- If not properly screened and washed, can contain fine material that can erode and/or create dust problems.
- If inadequately sized, material may be susceptible to erosion on sloped areas.
- Pore spaces fill with dirt and debris over time; may provide a growing medium for weeds.

Rock Slope Protection

- Installation is labor intensive.
- Installed costs can be significantly higher than vegetative stabilization methods.
- Rounded stones may not be used on slopes greater than 2:1 [H:V].

Implementation

General

Non-vegetated stabilization should be used in accordance with the following general guidance:

- Should be used in conjunction with other BMPs, including drainage, erosion controls and sediment controls.
- Refer to EC-3, EC-6, EC-8, and EC-14 for implementation details for mulches. Refer to EC-7 for implementation details for geotextiles and mats. Refer to EC-5 for implementation details for soil binders.
- Non-vegetated stabilization measures should be implemented as soon as the disturbance in the areas they are intended to protect has ceased.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Decomposed Granite Stabilization

- If used for a road or path should be installed on a prepared base.

- Should be mixed with a stabilizer if used for roads or pathways, or on slope applications.
- Though porous it is recommended to prevent standing water on or next to a decomposed granite road or pathway.

Gravel Mulch

- Should be sized based on slope, rainfall, and upgradient run-on conditions. Stone size should be increased as potential for erosion increases (steeper slopes, high intensity rainfall).
- If permanent, a weed control fabric should be placed prior to installation.
- Should be installed at a minimum 2" depth.
- Should completely cover all exposed surfaces.

Rock Slope Protection

- Rock slope protection installation should follow Caltrans Standard Specification 72-2: Rock Slope Protection. Refer to the specification for rock conformity requirements and installation methods.
- When using rock slope protection, rock size and installation method should be specified by an Engineer.
- A geotextile fabric should be placed prior to installation.

Costs

- Costs are highly variable depending not only on technique chosen, but also on materials chosen within specific techniques. In addition, availability of certain materials will vary by region/location, which will also affect the cost. Costs of mulches, geotextiles and mats, and soil binders are presented in their respective fact sheets. Costs for decomposed granite, gravel mulch stabilization and rock slope protection may be higher depending on location and availability of materials. Caltrans has provided an estimate for gravel mulch of \$10 - \$15/yd² in flat areas and \$11 - \$23/yd² on side slopes.

Inspection and Maintenance

General

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- For permanent installation, require inspection periodically and after major storm events to look for signs of erosion or damage to the stabilization.
- All damage should be repaired immediately.
- Refer to EC-3, EC-6, EC-8, and EC-14 for inspection and maintenance requirements for mulches. Refer to EC-7 for inspection and maintenance requirements for geotextiles and mats. Refer to EC-5 for inspection and maintenance requirements for soil binders.

Decomposed Granite and Gravel Mulch Stabilization

- Rake out and add decomposed granite or gravel as needed to areas subject to rill erosion. Inspect upgradient drainage controls and repair/modify as necessary.
- Should remain stable under loose surface material. Any significant problem areas should be repaired to restore uniformity to the installation.

References

Arid Zone Forestry: A Guide for Field Technicians. Food and Agriculture Organization of the United Nations, 1989.

Design of Roadside Channels with Flexible Linings, Hydraulic Engineering Circular Number 15, Third Edition, Federal Highway Administration, 2007.

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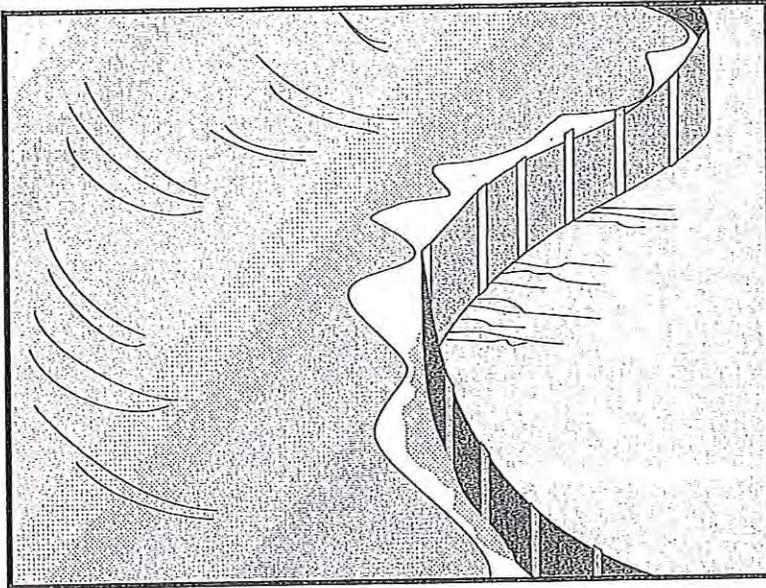
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National Menu of Best Management Practices, US Environmental Protection Agency, 2006.

Standard Specification 72-2: Rock Slope Protection. California Department of Transportation, 2006.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.



Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-10 Storm Drain Inlet Protection
- SE-14 Biofilter Bags



Limitations

- ❑ Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.
- ❑ Do not use in locations where ponded water may cause a flooding hazard. Runoff typically ponds temporarily on the upstream side of silt fence.
- ❑ Do not use silt fence to divert water flows or place across any contour line. Fences not constructed on a level contour, or fences used to divert flow will concentrate flows resulting in additional erosion and possibly overtopping or failure of the silt fence.
- ❑ Improperly installed fences are subject to failure from undercutting, overtopping, or collapsing.
- ❑ Not effective unless trenched and keyed in.
- ❑ Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
- ❑ Do not use on slopes subject to creeping, slumping, or landslides.

Implementation

General

A silt fence is a temporary sediment barrier consisting of woven geotextile stretched across and attached to supporting posts, trenched-in, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

The following layout and installation guidance can improve performance and should be followed:

- ❑ Use principally in areas where sheet flow occurs.
- ❑ Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- ❑ The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- ❑ The maximum slope perpendicular to the fence line should be 1:1.
- ❑ Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft² of ponding area should be provided for every acre draining to the fence.
- ❑ Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- ❑ Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.

- Silt fences should remain in place until the disturbed area is permanently stabilized, after which, the silt fence should be removed and properly disposed.
- Silt fence should be used in combination with erosion source controls up slope in order to provide the most effective sediment control.
- Be aware of local regulations regarding the type and installation requirements of silt fence, which may differ from those presented in this fact sheet.

Design and Layout

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Woven geotextile material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Standard vs. Heavy Duty Silt Fence

Standard Silt Fence

- Generally applicable in cases where the slope of area draining to the silt fence is 4:1 (H:V) or less.
- Used for shorter durations, typically 5 months or less
- Area draining to fence produces moderate sediment loads.

Heavy Duty Silt Fence

- Use is generally limited to 8 months or less.
- Area draining to fence produces moderate sediment loads.
- Heavy duty silt fence usually has 1 or more of the following characteristics, not possessed by standard silt fence.
 - Fence fabric has higher tensile strength.
 - Fabric is reinforced with wire backing or additional support.
 - Posts are spaced closer than pre-manufactured, standard silt fence products.
 - Posts are metal (steel or aluminum)

Materials

Standard Silt Fence

- Silt fence material should be woven geotextile with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The

reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.
- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

Heavy-Duty Silt Fence

- Some silt fence has a wire backing to provide additional support, and there are products that may use prefabricated plastic holders for the silt fence and use metal posts or bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement for health and safety purposes.

Installation Guidelines – Traditional Method

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line of the proposed silt fence (trenches should not be excavated wider or deeper than necessary for proper silt fence installation).
- Bottom of the silt fence should be keyed-in a minimum of 12 in.
- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.
- When standard strength geotextile is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy-duty wire staples at least 1 in. long. The mesh should extend into the trench.
- When extra-strength geotextile and closer post spacing are used, the mesh support fence may be eliminated.
- Woven geotextile should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, geotextile should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.
- The trench should be backfilled with native material and compacted.
- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where, due to specific site conditions, a 3 ft setback is not available, the silt fence may be constructed at the

toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and more difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed $1/3$ the height of the barrier; in no case should the reach exceed 500 ft.
- Cross barriers should be a minimum of $1/3$ and a maximum of $1/2$ the height of the linear barrier.
- See typical installation details at the end of this fact sheet.

Installation Guidelines - Static Slicing Method

- Static Slicing is defined as insertion of a narrow blade pulled behind a tractor, similar to a plow blade, at least 10 inches into the soil while at the same time pulling silt geotextile fabric into the ground through the opening created by the blade to the depth of the blade. Once the geotextile is installed, the soil is compacted using tractor tires.
- This method will not work with pre-fabricated, wire backed silt fence.
- Benefits:
 - Ease of installation (most often done with a 2 person crew). In addition, installation using static slicing has been found to be more efficient on slopes, in rocky soils, and in saturated soils.
 - Minimal soil disturbance.
 - Greater level of compaction along fence, leading to higher performance (i.e. greater sediment retention).
 - Uniform installation.
 - Less susceptible to undercutting/undermining.

Costs

- It should be noted that costs vary greatly across regions due to available supplies and labor costs.
- Average annual cost for installation using the traditional silt fence installation method (assumes 6 month useful life) is \$7 per linear foot based on vendor research. Range of cost is \$3.50 - \$9.10 per linear foot.
- In tests, the slicing method required 0.33 man hours per 100 linear feet, while the trenched based systems required as much as 1.01 man hours per linear foot.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair undercut silt fences.

- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence should be inspected and maintained regularly.
- Remove silt fence when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area.

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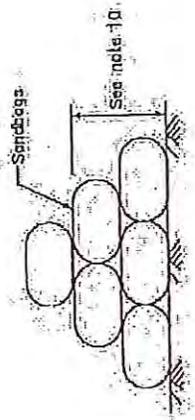
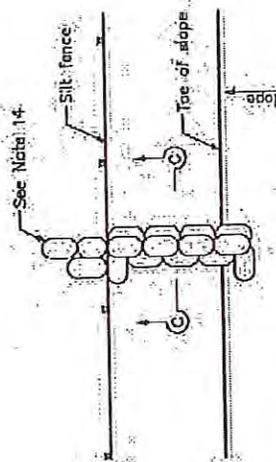
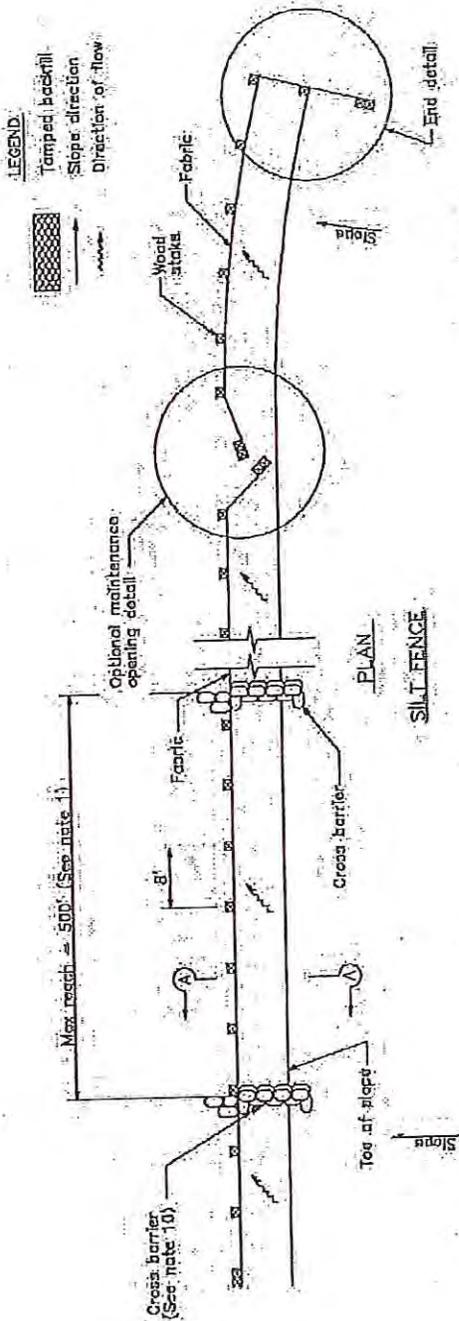
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Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988. Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

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Silt Fence

SE-1

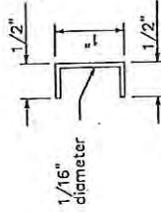
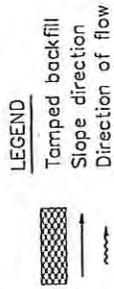


NOTES:

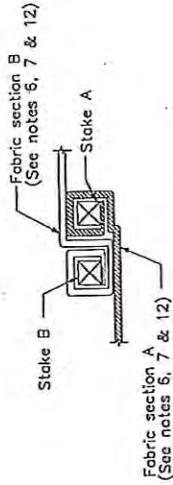
1. Construct the length of each reach so that the average in-basin elevation along the reach does not exceed 1/3 the height of the linear barrier. In no case shall the reach length exceed 500.
2. The last 8'-0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'-0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential "key-through" of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes, one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.
14. Add 3"-4" bags to cross barrier on downgradient side of silt fence as needed to prevent bypass or undermining and as allowable based on site limits of disturbance.

Silt Fence

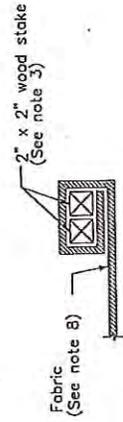
SF-1



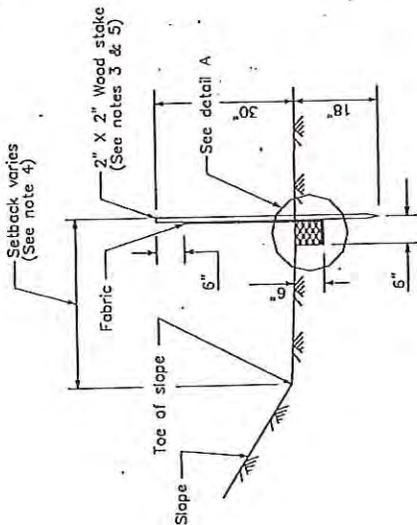
STAPLE DETAIL
(SEE NOTE 9)



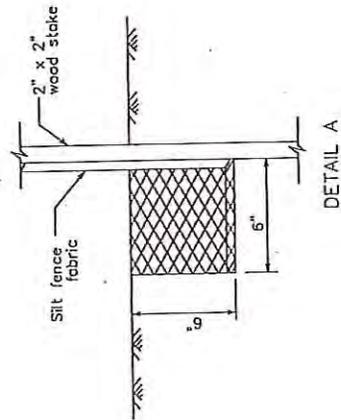
JOINING SECTION DETAIL (TOP VIEW)



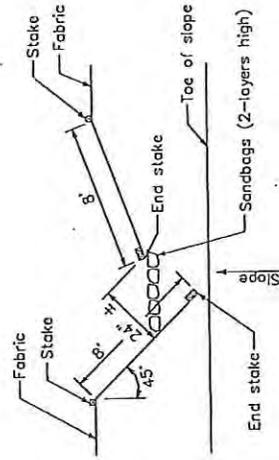
END STAKE DETAIL (TOP VIEW)



SECTION A-A



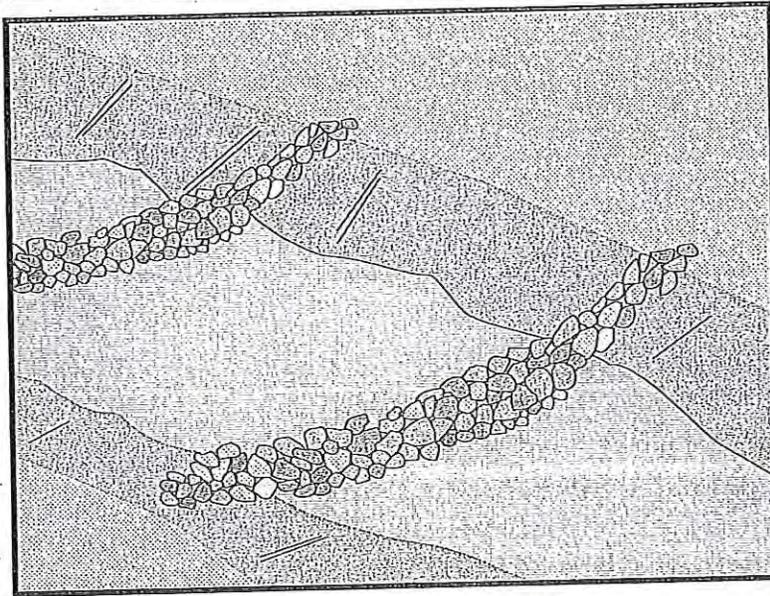
END DETAIL



OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)

Check Dams

SE-4



Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing scour and channel erosion by reducing flow velocity and increasing residence time within the channel, allowing sediment to settle.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam.
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- In small open channels that drain 10 acres or less.
- In steep channels where stormwater runoff velocities exceed 5 ft/s.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.
- To act as a grade control structure.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags



Limitations

- Not to be used in live streams or in channels with extended base flows.
- Not appropriate in channels that drain areas greater than 10 acres.
- Not appropriate in channels that are already grass-lined unless erosion potential or sediment-laden flow is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.
- Do not construct check dams with straw bales or silt fence.
- Water suitable for mosquito production may stand behind check dams, particularly if subjected to daily non-stormwater discharges.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Using check dams to reduce channel slope reduces the velocity of stormwater flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Thus, check dams are dual-purpose and serve an important role as erosion controls as well as as sediment controls. Note that use of 1-2 isolated check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity should be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, either:

- Don't use check dams. Consider alternative BMPs, or.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam (see "Spacing Between Check Dams" detail at the end of this fact sheet). The center section of the dam should be lower than the edge sections (at least 6 inches), acting as a spillway, so that the check dam will direct flows to the center of

the ditch or swale (see "Typical Rock Check Dam" detail at the end of this fact sheet). Bypass or side-cutting can occur if a sufficient spillway is not provided in the center of the dam.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products can also be used as check dams (e.g. HDPE check dams, temporary silt dikes (SE-12)), and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam should completely span the ditch or swale to prevent washout. The rock used should be large enough to stay in place given the expected design flow through the channel. It is recommended that abutments be extended 18 in. into the channel bank. Rock can be graded such that smaller diameter rock (e.g. 2-4 in) is located on the upstream side of larger rock (holding the smaller rock in place); increasing residence time.

Log check dams are usually constructed of 4 to 6 in. diameter logs, installed vertically. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

See fiber rolls, SE-5, for installation of fiber roll check dams.

Gravel bag and sand bag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet (see "Gravel Bag Check Dam" detail at the end of this fact sheet).

Manufactured products, such as temporary silt dikes (SE-12), should be installed in accordance with the manufacturer's instructions. Installation typically requires anchoring or trenching of products, as well as regular maintenance to remove accumulated sediment and debris.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- For multiple check dam installation, backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap should be cleaned following each storm event.

- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.

Materials

- Rock used for check dams should typically be 8-12 in rock and be sufficiently sized to stay in place given expected design flows in the channel. Smaller diameter rock (e.g. 2 to 4 in) can be placed on the upstream side of larger rock to increase residence time.
- Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms.
- Sandbags used for check dams should conform to SE-8, Sandbag Barrier.
- Fiber rolls used for check dams should conform to SE-5, Fiber Rolls.
- Temporary silt dikes used for check dams should conform to SE-12, Temporary Silt Dikes.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section (pyramid approach). Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Upper rows of gravel and sand bags shall overlap joints in lower rows.
- Fiber rolls should be trenched in, backfilled, and firmly staked in place.
- Install along a level contour.
- HDPE check dams, temporary silt dikes, and other manufactured products should be used and installed per manufacturer specifications.

Costs

Cost consists of labor costs if materials are readily available (such as gravel on-site). If material must be imported, costs will increase. For other material and installation costs, see SE-5, SE-6, SE-8, SE-12, and SE-14.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Replace missing rock, bags, rolls, etc. Replace bags or rolls that have degraded or have become damaged.

- If the check dam is used as a sediment capture device, sediment that accumulates behind the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Inspect areas behind check dams for pools of standing water, especially if subjected to daily non-stormwater discharges.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

References

Draft – Sedimentation and Erosion Control, and Inventory of Current Practices, USEPA, April 1990.

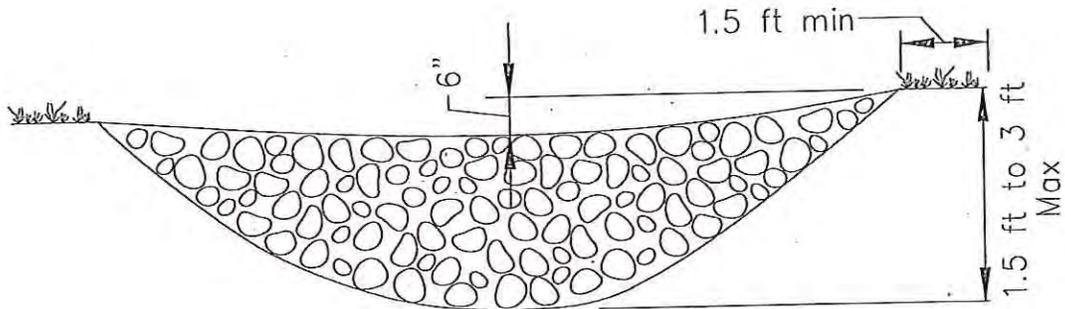
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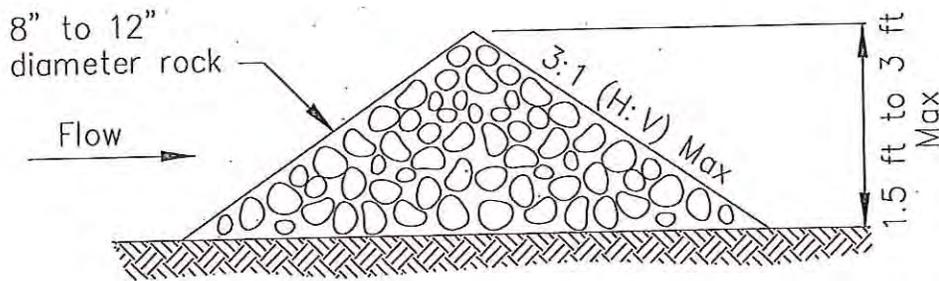
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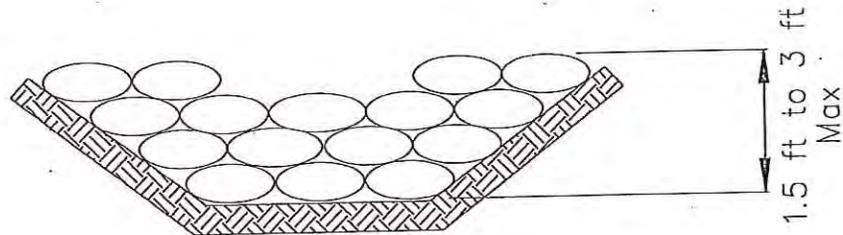


ELEVATION

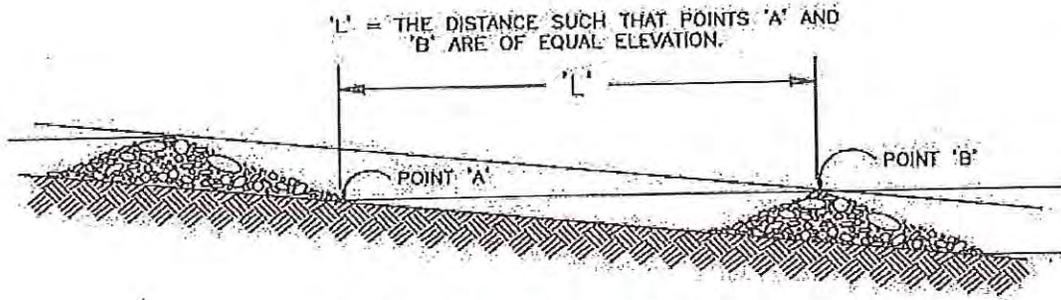


TYPICAL ROCK CHECK DAM SECTION

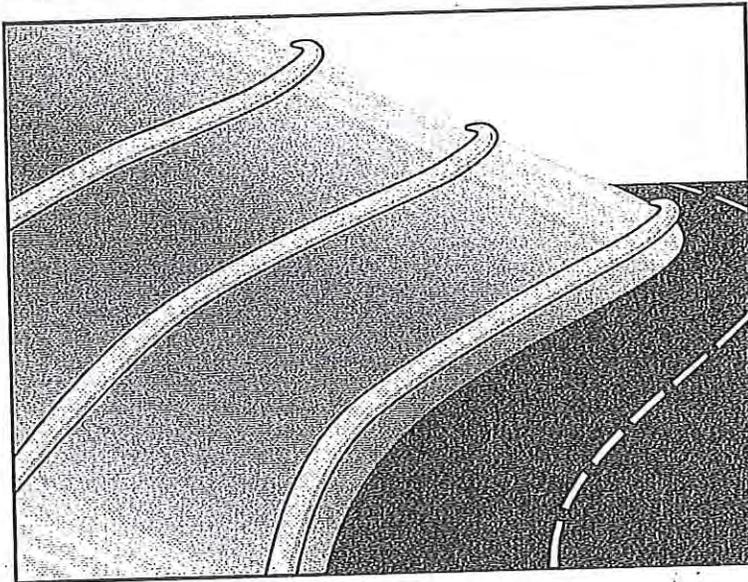
ROCK CHECK DAM
NOT TO SCALE



GRAVEL BAG CHECK DAM ELEVATION
NOT TO SCALE



SPACING BETWEEN CHECK DAMS



Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-1 Silt Fence
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags



- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
 - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
 - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
 - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be $\frac{1}{4}$ to $\frac{1}{3}$ of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
 - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
 - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Costs

Material costs for regular fiber rolls range from \$20 - \$30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-\$9.00 per linear foot, based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

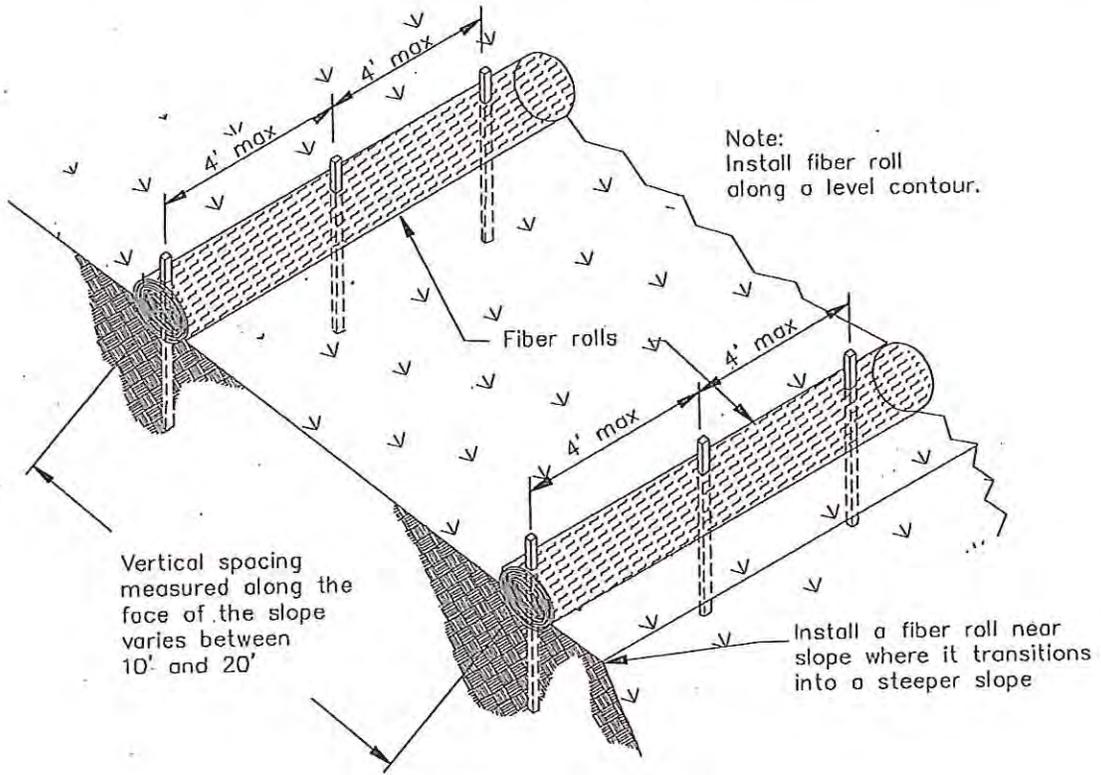
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

References

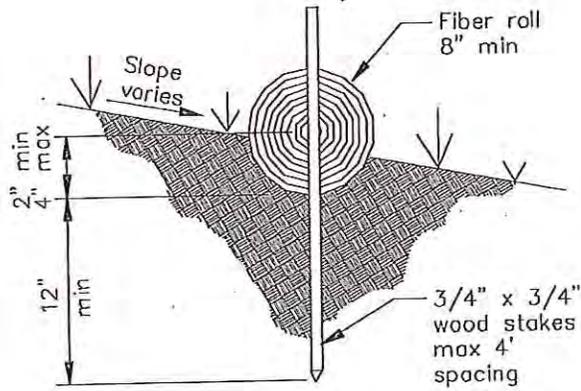
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Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



TYPICAL FIBER ROLL INSTALLATION

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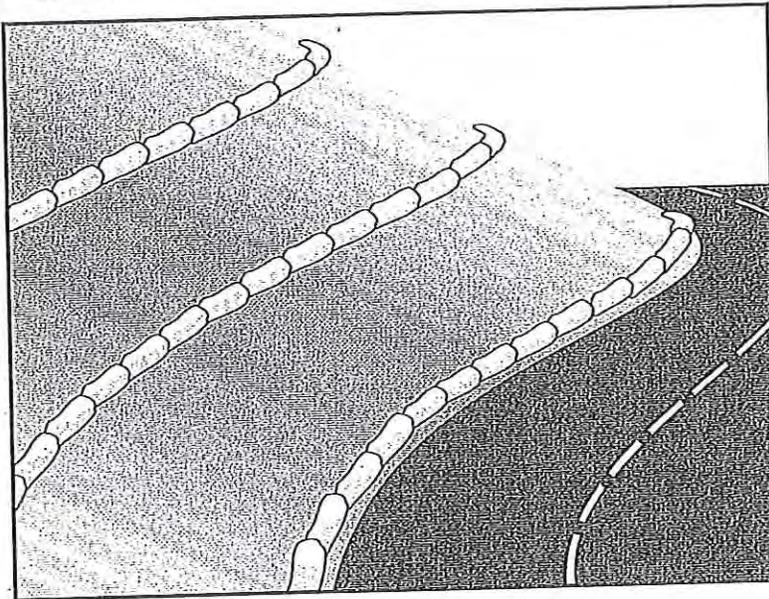


ENTRENCHMENT DETAIL

N.T.S.

Gravel Bag Berm

SE-6



Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
 - Below the toe of slopes and erodible slopes
 - As sediment traps at culvert/pipe outlets
 - Below other small cleared areas
 - Along the perimeter of a site
 - Down slope of exposed soil areas
 - Around temporary stockpiles and spoil areas
 - Parallel to a roadway to keep sediment off paved areas
 - Along streams and channels
- As a linear erosion control measure:
 - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Roll
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags



- At the top of slopes to divert runoff away from disturbed slopes.
- As chevrons (small check dams) across mildly sloped construction roads. For use check dam use in channels, see SE-4, Check Dams.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the berm, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Durability of gravel bags is somewhat limited and bags may need to be replaced when installation is required for longer than 6 months.
- Easily damaged by construction equipment.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel-filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

Design and Layout

- Locate gravel bag berms on level contours.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
 - Slope inclination of 4:1 (H:V) or flatter: Gravel bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
 - Slope inclination between 4:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

Slope inclination 2:1 (H:V) or greater: Gravel bags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, gravel bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the gravel bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
 - Height = 18 in. maximum
 - Top width = 24 in. minimum for three or more layer construction
 - Top width = 12 in. minimum for one or two layer construction
 - Side slopes = 2:1 (H:V) or flatter
- In Construction Traffic Areas:
 - Height = 12 in. maximum
 - Top width = 24 in. minimum for three or more layer construction.
 - Top width = 12 in. minimum for one or two layer construction.
 - Side slopes = 2:1 (H:V) or flatter.
- Butt ends of bags tightly.
- On multiple row, or multiple layer construction, overlap butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- **Bag Material:** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd², Mullen burst strength exceeding 300 lb/in² in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

- **Bag Size:** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- **Fill Material:** Fill material should be 0.5 to 1 in. crushed rock, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Material costs for gravel bags are average and are dependent upon material availability. \$2.50-3.00 per filled gravel bag is standard based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Remove gravel bag berms when no longer needed and recycle gravel fill whenever possible and properly dispose of bag material. Remove sediment accumulation and clean, re-grade, and stabilize the area.

References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

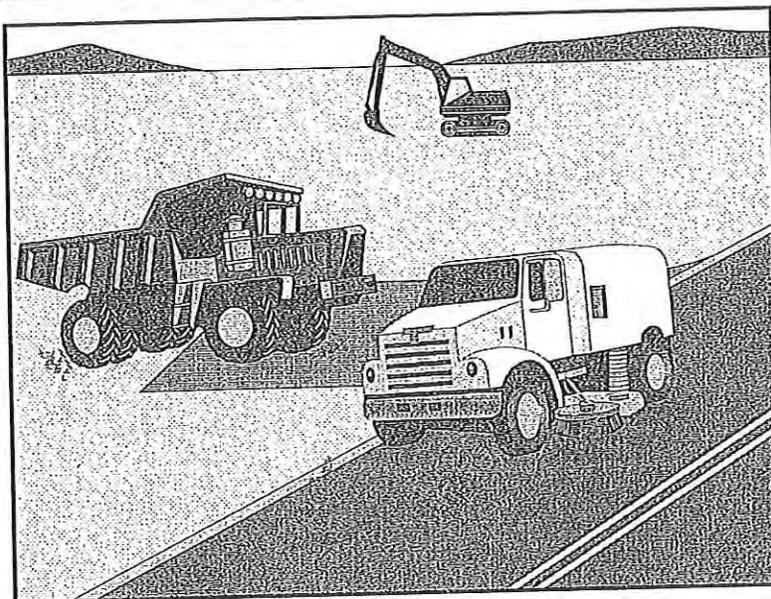
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Street Sweeping and Vacuuming

SE-7



Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

Potential Alternatives

None



- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from \$58/hour (3 yd³ hopper) to \$88/hour (9 yd³ hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

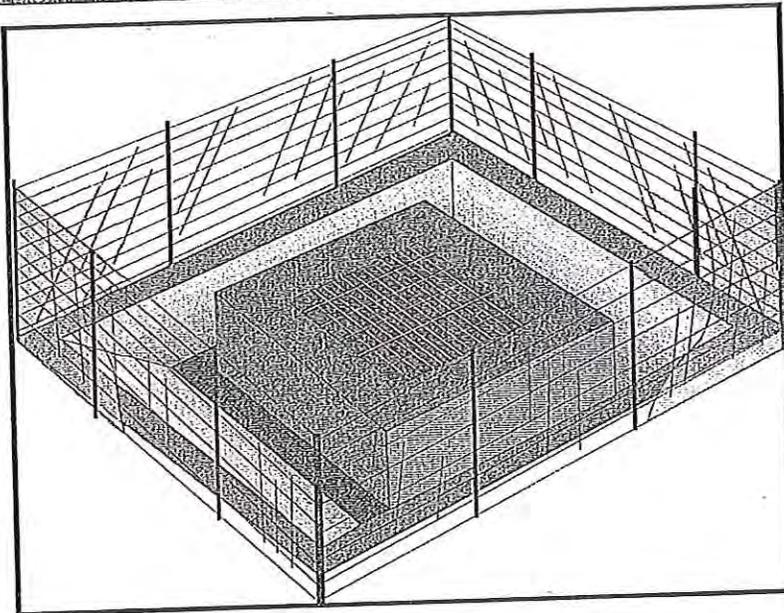
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Storm Drain Inlet Protection

SE-10



Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

Suitable Applications

Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Limitations

- ❑ Drainage area should not exceed 1 acre.
- ❑ In general straw bales should not be used as inlet protection.
- ❑ Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.

Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags



- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use other onsite sediment trapping techniques in conjunction with inlet protection.
- Frequent maintenance is required.
- Limit drainage area to 1 acre maximum. For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap and/or used in conjunction with other drainage control, erosion control, and sediment control BMPs to protect the site. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Alternative methods are available in addition to the methods described/shown herein such as prefabricated inlet insert devices, or gutter protection devices.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff that is directed toward the inlet to be protected will pond or be diverted as a result of installing the protection device.
 - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
 - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.

- Six types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.
 - Silt Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
 - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
 - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
 - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
 - Temporary Geotextile Storm drain Inserts: Different products provide different features. Refer to manufacturer details for targeted pollutants and additional features.
 - Biofilter Bag Barrier: Used to create a small retention area upstream of inlets and can be located on pavement or soil. Biofilter bags slowly filter runoff allowing sediment to settle out. Appropriate for flows under 0.5 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
- Provide area around the inlet for water to pond without flooding structures and property.
- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- **DI Protection Type 1 - Silt Fence** - Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced and water flow through the grate will be blocked resulting in flooding. See typical Type 1 installation details at the end of this fact sheet.
 1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
 2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes should be at least 48 in.
 3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
 4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.

5. Backfill the trench with gravel or compacted earth all the way around.
- **DI Protection Type 2 - Excavated Drop Inlet Sediment Trap** - Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd³/acre of drainage area. See typical Type 2 installation details at the end of this fact sheet.
 - **DI Protection Type 3 - Gravel bag** - Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability. See typical Type 3 installation details at the end of this fact sheet.
 1. Construct on gently sloping street.
 2. Leave room upstream of barrier for water to pond and sediment to settle.
 3. Place several layers of gravel bags – overlapping the bags and packing them tightly together.
 4. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.
 - **DI Protection Type 4 – Block and Gravel Filter** - Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction. See typical Type 4 installation details at the end of this fact sheet.
 1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place woven geotextile over the wire mesh.
 2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.
 3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.
 4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.
 - **DI Protection Type 5 – Temporary Geotextile Insert (proprietary)** – Many types of temporary inserts are available. Most inserts fit underneath the grate of a drop inlet or inside of a curb inlet and are fastened to the outside of the grate or curb. These inserts are removable and many can be cleaned and reused. Installation of these inserts differs between manufacturers. Please refer to manufacturer instruction for installation of proprietary devices.

- **DI Protection Type 6 - Biofilter bags** – Biofilter bags may be used as a substitute for gravel bags in low-flow situations. Biofilter bags should conform to specifications detailed in SE-14, Biofilter bags.
 1. Construct in a gently sloping area.
 2. Biofilter bags should be placed around inlets to intercept runoff flows.
 3. All bag joints should overlap by 6 in.
 4. Leave room upstream for water to pond and for sediment to settle out.
 5. Stake bags to the ground as described in the following detail. Stakes may be omitted if bags are placed on a paved surface.

Costs

- Average annual cost for installation and maintenance of DI Type i-4 and 6 (one year useful life) is \$200 per inlet.
- Temporary geotextile inserts are proprietary and cost varies by region. These inserts can often be reused and may have greater than 1 year of use if maintained and kept undamaged. Average cost per insert ranges from \$50-75 plus installation, but costs can exceed \$100. This cost does not include maintenance.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Silt Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes. At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.
- Gravel Filters. If the gravel becomes clogged with sediment, it should be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Inspect and maintain temporary geotextile insert devices according to manufacturer's specifications.
- Remove storm drain inlet protection once the drainage area is stabilized.

- Clean and regrade area around the inlet and clean the inside of the storm drain inlet, as it should be free of sediment and debris at the time of final inspection.

References

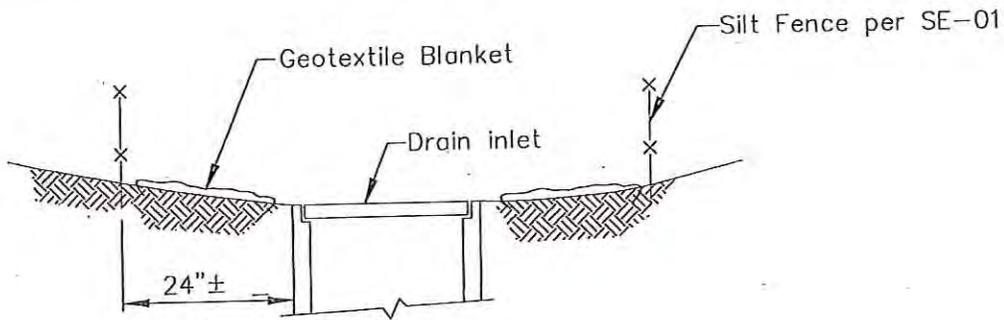
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Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

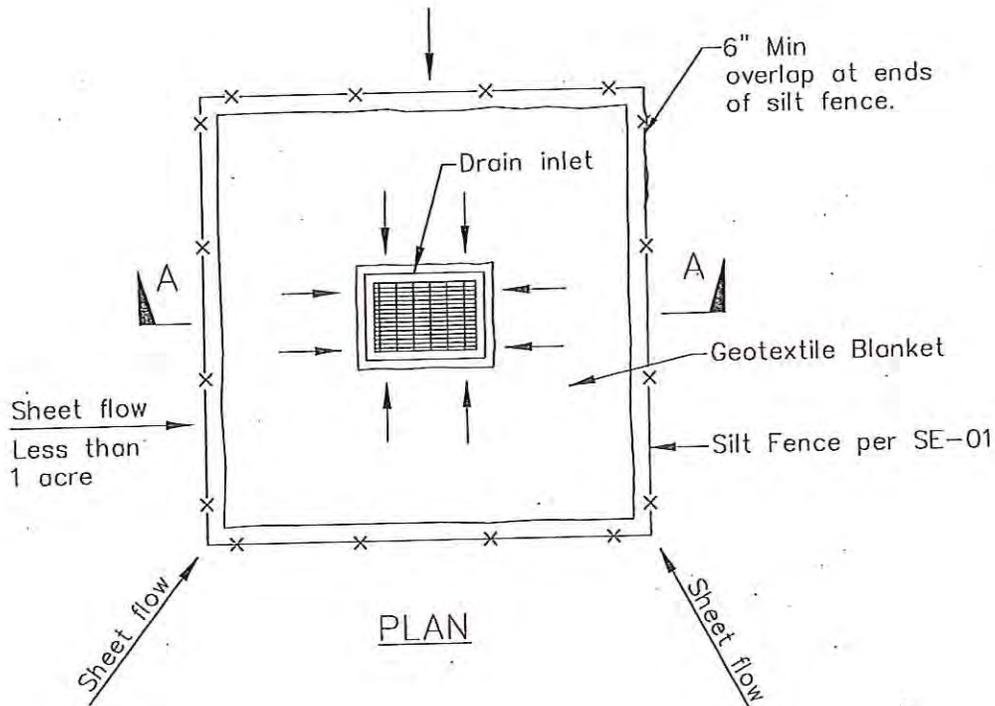
Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Storm Drain Inlet Protection

SE-10



SECTION A-A



PLAN

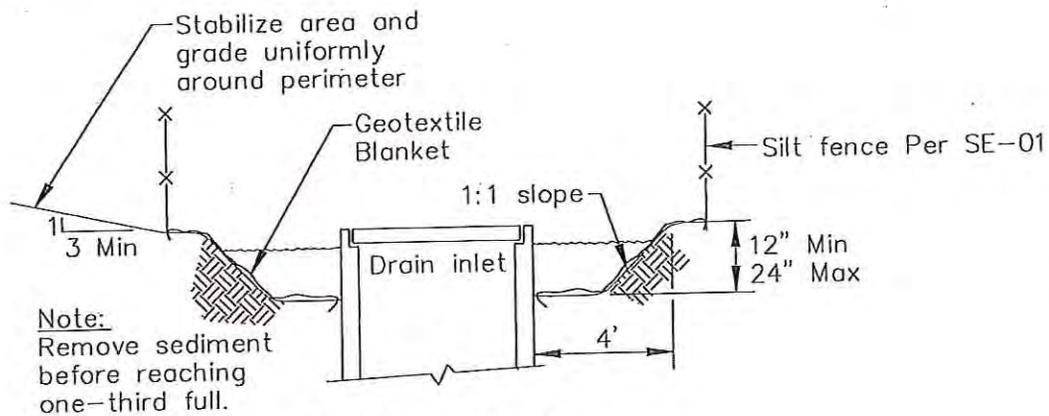
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

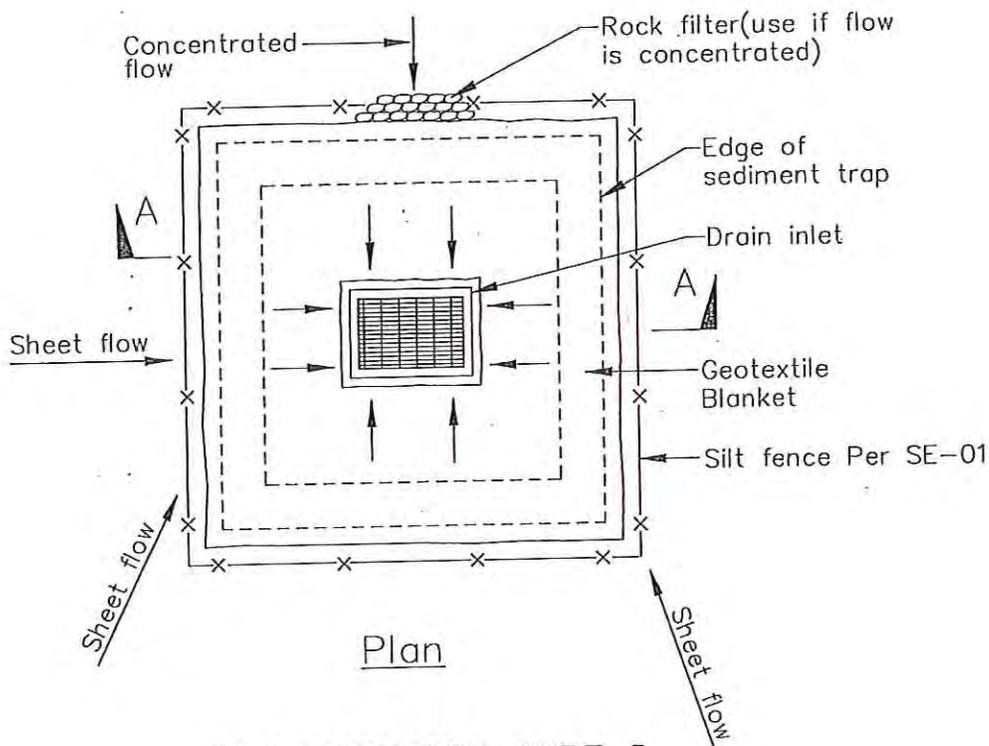
1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.

Storm Drain Inlet Protection

SE-10



Section A-A

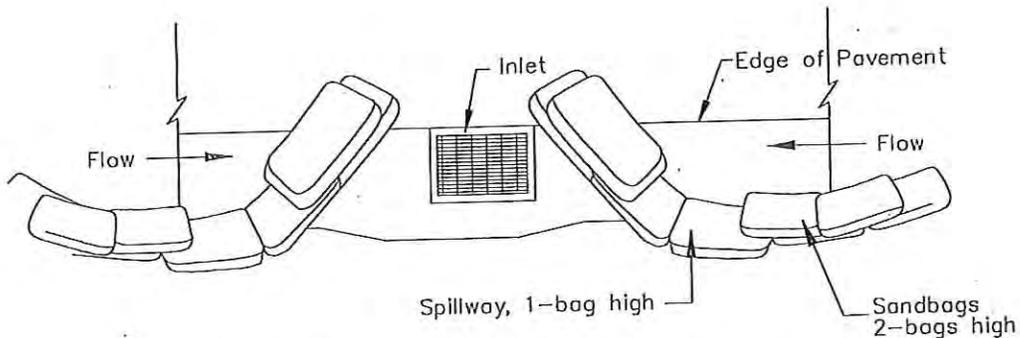


Plan

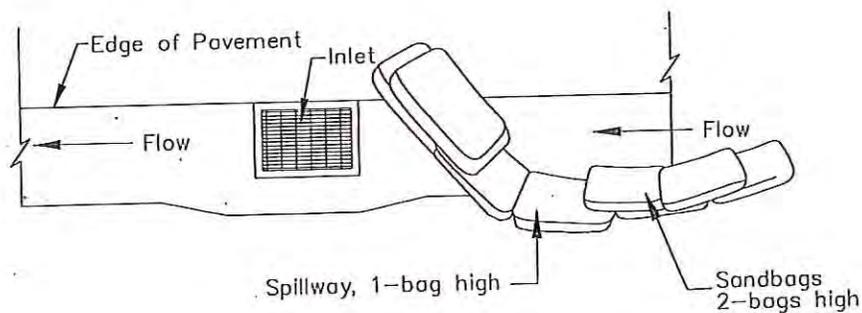
DI PROTECTION TYPE 2
NOT TO SCALE

Notes

1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP



TYPICAL PROTECTION FOR INLET ON GRADE

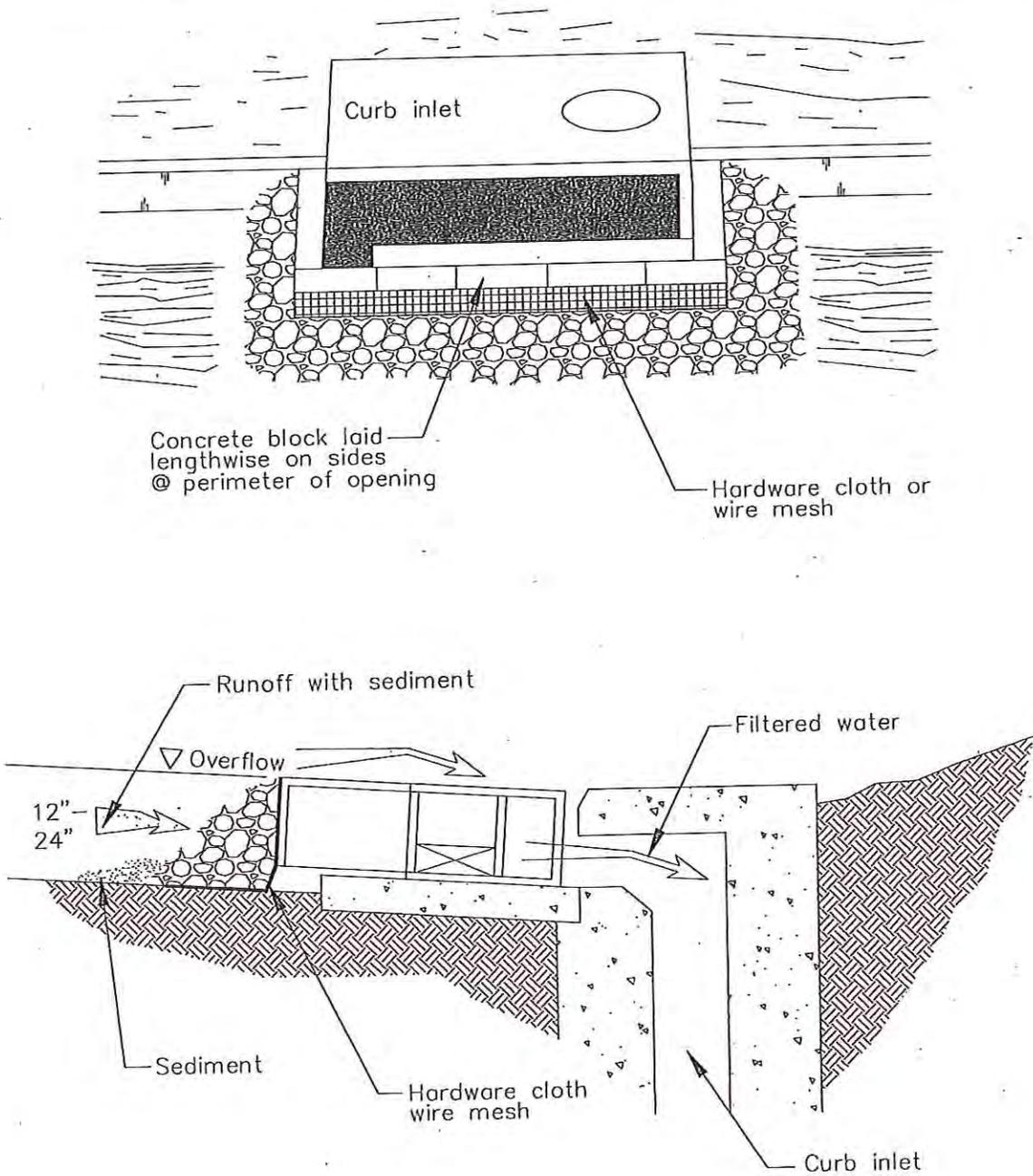
NOTES:

1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

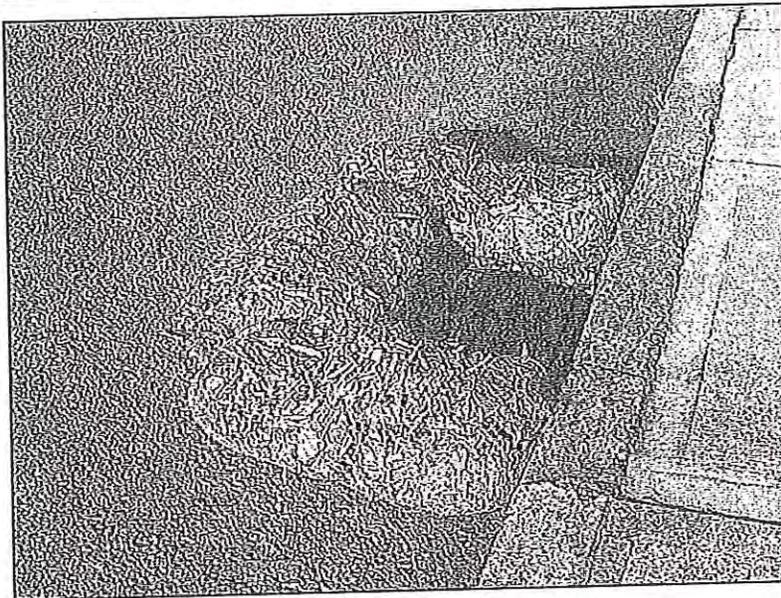
DI PROTECTION TYPE 3
NOT TO SCALE

Storm Drain Inlet Protection

SE-10



DI PROTECTION – TYPE 4
NOT TO SCALE



Description and Purpose

Biofilter bags, or bio-bags, are a multi-purpose sediment control BMP consisting of a plastic mesh bag filled with 100% recycled wood product waste. Biofilter bags come in a variety of sizes (30" X 18" and 30" X 9" being common) and generally have between 1-2 cubic yards of recycled wood waste (or wood chips). Biofilter bags work by detaining flow and allowing a slow rate of discharge through the wood media. This action removes suspended sediment through gravity settling of the detained water and filtration within the bag.

Suitable Applications

Biofilter bags are a short-term BMP that can be rapidly deployed, maintained, and replaced. Biofilter bags can be an effective short-term solution to place in developed rills to prevent further erosion until permanent measures can be established. Suitable short-term applications include:

- As a linear sediment control measure:
 - Below the toe of slopes and erodible slopes
 - Below other small cleared areas
 - Along the perimeter of a site (with low-expected flow)
 - Down slope of exposed soil areas
 - Around temporary stockpiles and spoil areas
 - Parallel to a roadway to keep sediment off paved areas

Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-1 Silt Fence
- SE-4 Check Dams
- SE-5 Fiber Roll
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-10 Storm Drain Inlet Protection



- Along streams and channels
- As linear erosion control measure:
 - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
 - At the top of slopes to divert runoff away from disturbed slopes
 - As check dams across mildly sloped construction roads
- Inlet Protection (See SE-10)
- Supplement to silt fences or other sediment control devices

Limitations

- Short life-span (2-3 months); regular maintenance and replacement required to ensure effectiveness. Bags will rapidly fill with sediment and reduce permeability.
- Easily damaged by construction vehicles.
- If not properly staked, will fail on slope applications.
- If improperly installed can allow undercutting or side-cutting flow.
- Not effective where water velocities or volumes are high.
- Potentially buoyant and easily displaced if not properly installed.

Implementation

General

Biofilter bags are a relatively low cost temporary BMP that are easily deployed and have a simple installation that can be performed by hand. Without proper installation, however, biofilter bags can fail due to their light weight, potential displacement, and multiple joint locations. One of the benefits of utilizing biofilter bags is that the media (wood-product) can be recycled or used onsite when no longer needed (where acceptable).

Design and Layout – Linear control

- Locate biofilter bags on level contours.
 - Slopes between 20:1 and 4:1 (H:V): Biofilter bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
 - Slopes between 4:1 and 2:1 (H:V): Biofilter bags should be placed at a maximum interval of 15 ft, with the first row near the slope toe.
 - Slopes 2:1 (H:V) or steeper: Biofilter bags should be placed at a maximum interval of 10 ft., with the first row placed the slope toe.

- Turn the ends of the biofilter bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the biofilter bag berm to allow ponding, and to provide room for sediment storage.
- Stake biofilter bags into a 1 to 2 in. deep trench with a width equal to the bag.
 - Drive one stake at each end of the bag.
 - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- Biofilter bags should be overlapped (6 in.), not abutted.

Costs

Pre-filled biofilter bags cost approximately \$2.50-\$3.50 per bag, dependent upon size.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Biofilter bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace biofilter bags as needed.
- Repair washouts or other damage as needed.
- Sediment that is retained by the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Remove biofilter bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Biofilter media may be used on-site, if allowed.

References

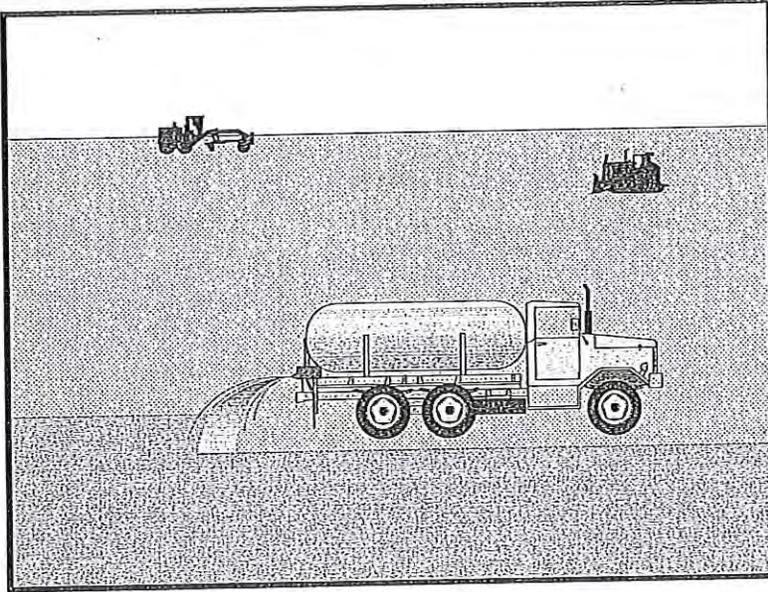
Catalog of Stormwater Best Management Practices for Idaho Cities and Counties. Volume 2, Section 7, BMP 34 – Biofilter Bags, Idaho Department of Environmental Quality, 2005.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Wind Erosion Control

WE-1



Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California's Mediterranean climate, with a short "wet" season and a typically long, hot "dry" season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:



- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be effective.
- Over watering may cause erosion and track-out.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Chemical dust suppression agents may have potential environmental impacts. Selected chemical dust control agents should be environmentally benign.
- Effectiveness of controls depends on soil, temperature, humidity, wind velocity and traffic.
- Chemical dust suppression agents should not be used within 100 feet of wetlands or water bodies.
- Chemically treated subgrades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.
- If the soil surface has minimal natural moisture, the affected area may need to be pre-wetted so that chemical dust control agents can uniformly penetrate the soil surface.

Implementation

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table presents dust control practices that can be applied to varying site conditions that could potentially cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph or less, and controlling the number and activity of vehicles on a site at any given time.

Chemical dust suppressants include: mulch and fiber based dust palliatives (e.g. paper mulch with gypsum binder), salts and brines (e.g. calcium chloride, magnesium chloride), non-petroleum based organics (e.g. vegetable oil, lignosulfonate), petroleum based organics (e.g. asphalt emulsion, dust oils, petroleum resins), synthetic polymers (e.g. polyvinyl acetate, vinyls, acrylic), clay additives (e.g. bentonite, montmorillonite) and electrochemical products (e.g. enzymes, ionic products).

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X			X
Disturbed Areas Subject to Traffic			X	X	X	X		X
Material Stockpiles		X	X	X			X	X
Demolition			X			X	X	
Clearing/Excavation			X	X				X
Truck Traffic on Unpaved Roads			X	X	X	X	X	
Tracking					X	X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (see EC-1, Scheduling).
- Quickly treat exposed soils using water, mulching, chemical dust suppressants, or stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Restrict construction traffic to stabilized roadways within the project site, as practicable.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality

Control Board (RWQCB) requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."

- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and wheel wash areas.
- Stabilize inactive areas of construction sites using temporary vegetation or chemical stabilization methods.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater and should meet all applicable regulatory requirements.

Costs

Installation costs for water and chemical dust suppression vary based on the method used and the length of effectiveness. Annual costs may be high since some of these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check areas protected to ensure coverage.
- Most water-based dust control measures require frequent application, often daily or even multiple times per day. Obtain vendor or independent information on longevity of chemical dust suppressants.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

California Air Pollution Control Laws, California Air Resources Board, updated annually.

Construction Manual, Chapter 4, Section 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative", California Department of Transportation (Caltrans), July 2001.

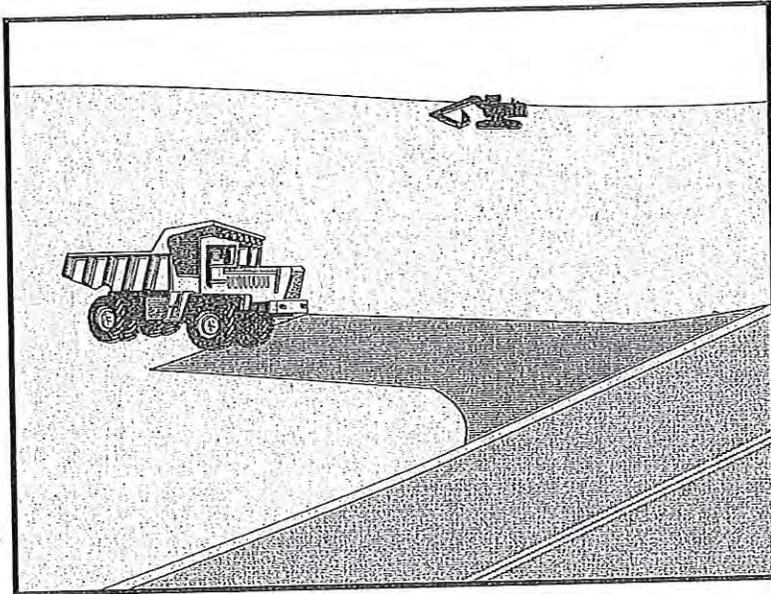
Wind Erosion Control

WE-1

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM₁₀), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stabilized Construction Entrance/Exit TC-1



Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None



Stabilized Construction Entrance/Exit TC-1

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft or maximum site will allow, and 10 ft minimum width or to accommodate traffic.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

Stabilized Construction Entrance/Exit TC-1

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used:
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction.

Costs

Average annual cost for installation and maintenance may vary from \$1,200 to \$4,800 each, averaging \$2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from \$1,200 - \$6,000 each, averaging \$3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stabilized Construction Entrance/Exit TC-1

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

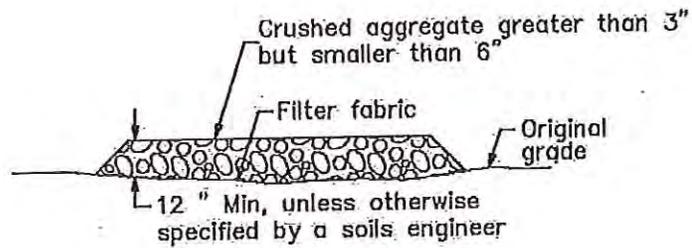
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

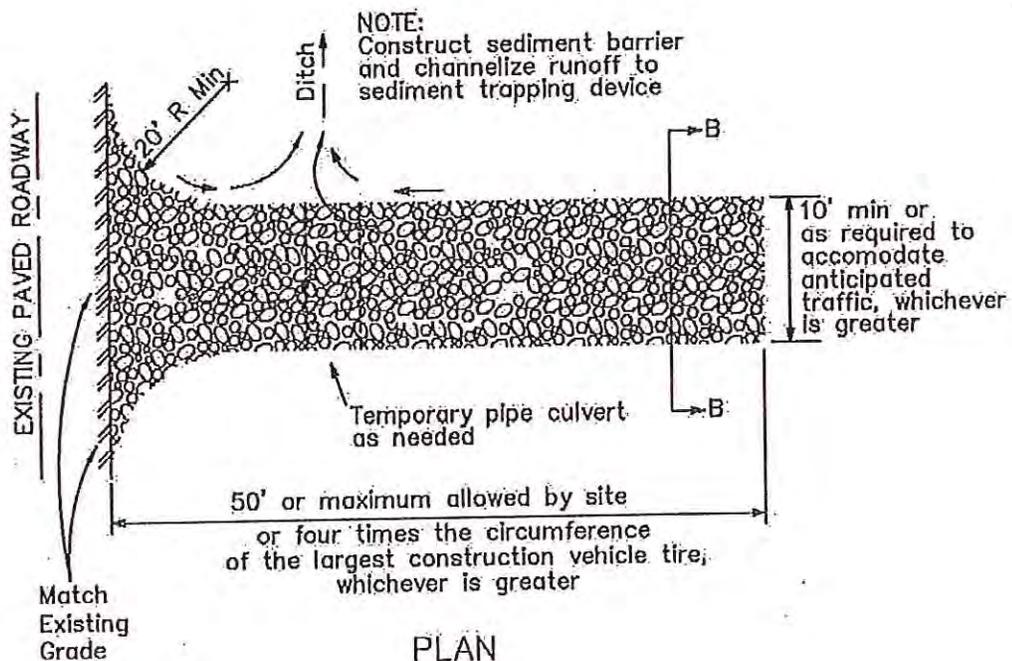
Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance/Exit TC-1

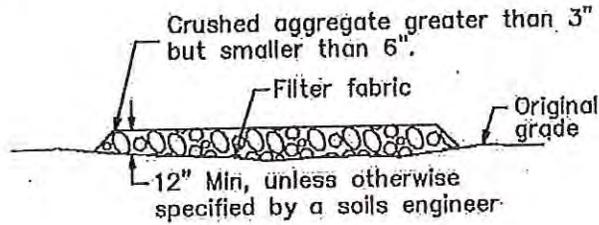


SECTION B-B
NTS

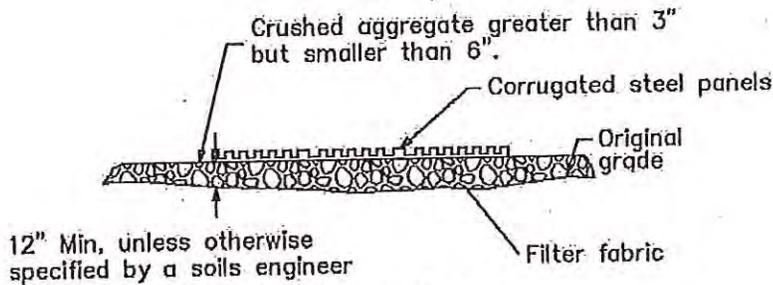


PLAN
NTS

Stabilized Construction Entrance/Exit TC-1

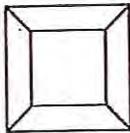


SECTION B-B
NTS

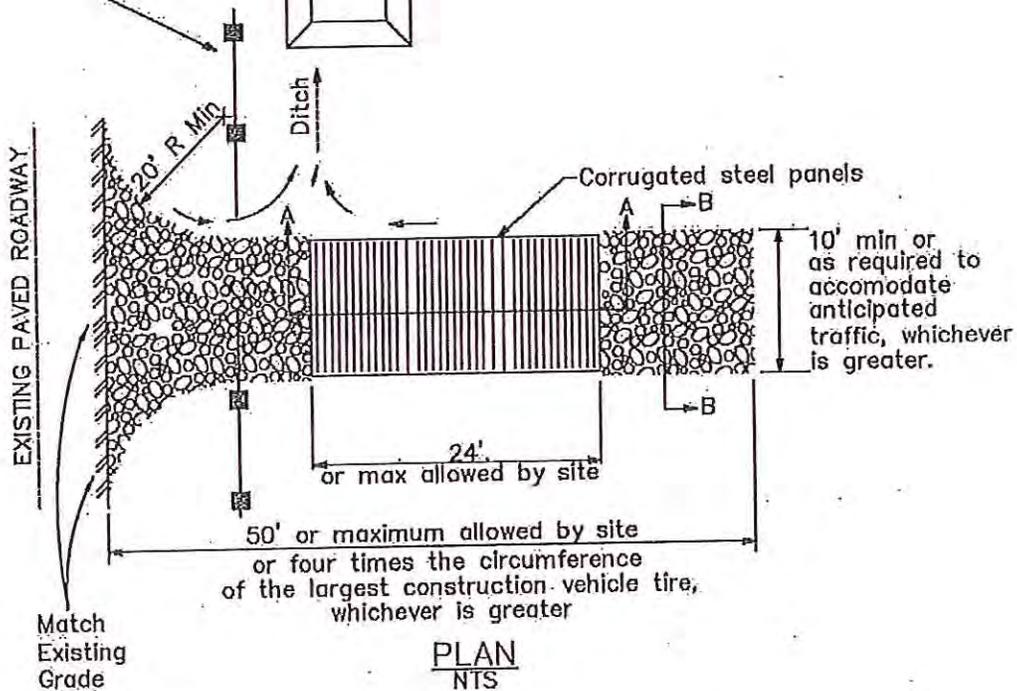


SECTION A-A
NOT TO SCALE

NOTE:
Construct sediment barrier and channelize runoff to sediment trapping device.

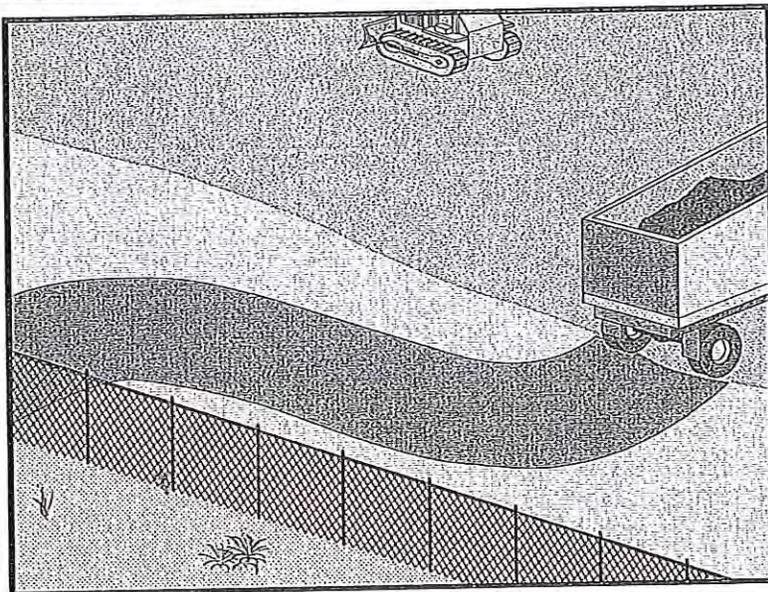


Sediment trapping device



Stabilized Construction Roadway

TC-2



Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Access roads, subdivision roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

Suitable Applications

This BMP should be applied for the following conditions:

- Temporary Construction Traffic:
 - Phased construction projects and offsite road access
 - Construction during wet weather
- Construction roadways and detour roads:
 - Where mud tracking is a problem during wet weather
 - Where dust is a problem during dry weather
 - Adjacent to water bodies
 - Where poor soils are encountered

Limitations

- The roadway must be removed or paved when construction is complete.
- Certain chemical stabilization methods may cause stormwater or soil pollution and should not be used. See WE-1, Wind Erosion Control.



- Management of construction traffic is subject to air quality control measures. Contact the local air quality management agency.
- Materials will likely need to be removed prior to final project grading and stabilization.
- Use of this BMP may not be applicable to very short duration projects.

Implementation

General

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surfaces. During wet weather, they often become muddy quagmires that generate significant quantities of sediment that may pollute nearby streams or be transported offsite on the wheels of construction vehicles. Dirt roads can become so unstable during wet weather that they are virtually unusable.

Efficient construction road stabilization not only reduces onsite erosion but also can significantly speed onsite work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather

Installation/Application Criteria

Permanent roads and parking areas should be paved as soon as possible after grading. As an alternative where construction will be phased, the early application of gravel or chemical stabilization may solve potential erosion and stability problems. Temporary gravel roadway should be considered during the rainy season and on slopes greater than 5%.

Temporary roads should follow the contour of the natural terrain to the maximum extent possible. Slope should not exceed 15%. Roadways should be carefully graded to drain transversely. Provide drainage swales on each side of the roadway in the case of a crowned section or one side in the case of a super elevated section. Simple gravel berms without a trench can also be used.

Installed inlets should be protected to prevent sediment laden water from entering the storm sewer system (SE-10, Storm Drain Inlet Protection). In addition, the following criteria should be considered.

- Road should follow topographic contours to reduce erosion of the roadway.
- The roadway slope should not exceed 15%.
- Chemical stabilizers or water are usually required on gravel or dirt roads to prevent dust (WE-1, Wind Erosion Control).
- Properly grade roadway to prevent runoff from leaving the construction site.
- Design stabilized access to support heaviest vehicles and equipment that will use it.

- Stabilize roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete (AC) grindings for stabilized construction roadway is not allowed.
- Coordinate materials with those used for stabilized construction entrance/exit points.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep all temporary roadway ditches clear.
- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.
- Periodically apply additional aggregate on gravel roads.
- Active dirt construction roads are commonly watered three or more times per day during the dry season.

Costs

Gravel construction roads are moderately expensive, but cost is often balanced by reductions in construction delay. No additional costs for dust control on construction roads should be required above that needed to meet local air quality requirements.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stabilized Construction Roadway

TC-2

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

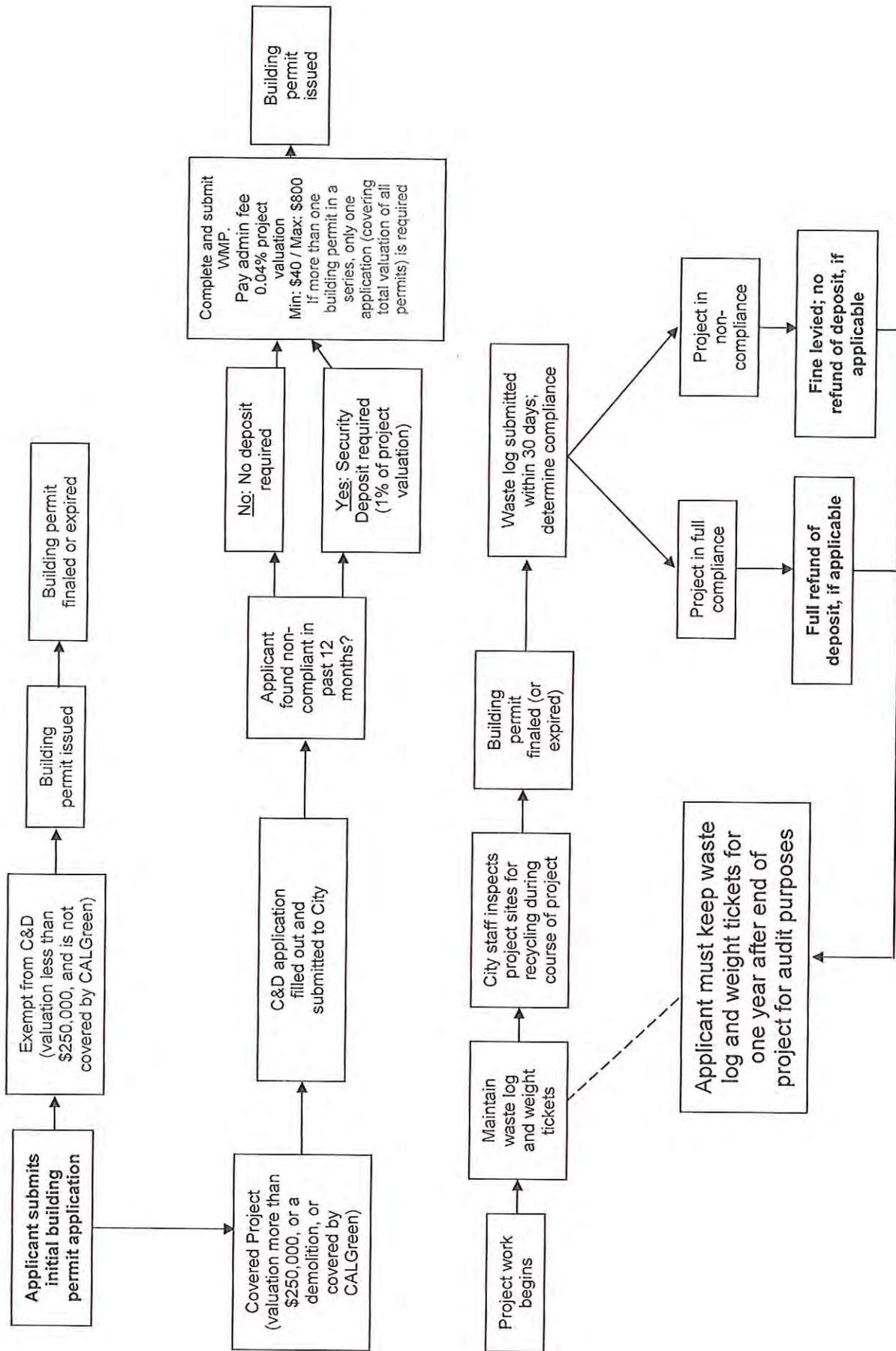
C&D Debris Ordinance Overview

C&D Debris Waste Management Plan
City of Sacramento Solid Waste Services
2812 Meadowview Road, Building 1
Sacramento, CA 95832
Phone: (916) 808-4839 / Fax: (916) 808-4999
C&D@cityofsacramento.org

Construction and Demolition (C&D) Debris Ordinance

When a project is covered by the updated C&D ordinance, it must recycle 50% of the debris it generates. The below table shows the differences between the old requirements and the new. If a project is filed before 2011, the old requirements apply.

Effective Date	January 1, 2011 <i>Applies to the application filing date.</i>
Covered Projects	Old: All projects with a valuation of \$250,000 or more, and all down-to-the-ground demolitions, regardless of valuation. New: All projects designated as "CALGreen", including, but not necessarily limited to: <ul style="list-style-type: none"> • New construction • First tenant improvements • Grading permits Projects with a valuation of \$250,000 or more, as well as demolition, are still covered.
Materials required to be recycled	Old: <ul style="list-style-type: none"> - Scrap metal - Inert materials (dirt, soil, rocks, concrete, asphalt paving, etc.) - Corrugated cardboard - Wood pallets - Clean wood waste (unpainted, untreated lumber and plywood, etc.) New: 50% of all generated waste must be diverted/recycled. There is no longer a list of required materials, but recycling these types is highly recommended.
How to recycle <i>(unchanged)</i>	<u>Mixed C&D:</u> All debris (no wet garbage) into one bin <u>Source-separated:</u> separate by type
Who can haul debris <i>(unchanged)</i>	<u>Mixed C&D:</u> permit-holder, waste generator, franchised hauler, or City of Sacramento <u>Source-separated:</u> anyone
Where debris may go <i>(unchanged)</i>	<u>Mixed C&D:</u> SWA-certified Mixed C&D facility only <u>Source-separated:</u> any facility that accepts the material
Fee <i>(unchanged)</i>	0.04% of project valuation Minimum: \$40 / Maximum: \$800
Security Deposit <i>(unchanged)</i>	1% of project valuation (max \$10,000), due with fee when applying. <i>Only applicable if permit applicant has been fined in past 12 months.</i>
Fines <i>(unchanged)</i>	If found to be non-compliance: \$50-\$250 for first offense \$251-\$500 for second offense \$501-\$1500 for subsequent offenses
Documentation <i>(unchanged)</i>	Permit holder must keep a waste log of all materials hauled away from project site, as well as all weight tickets of disposed and recycled material. The waste log must be submitted at the end of the project, within 30 days after permit has been finalized or expired.





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- 

Certified Construction and Demolition (C&D) Debris Sorting Facilities

Solid Waste Facilities in the SWA region are governed by [Title III](#) of the SWA Code. Title III authorizes a voluntary program for C&D facilities. With a sorting and recycling program for mixed C&D materials, facilities can be certified. Builders who are required to recycle by City or County ordinance can comply by sending mixed loads of C&D to these facilities. It is an easier way for builders to recycle if their job-site is too crowded for multiple bins or if they have other reasons why mixed recycling is preferable to source separating their wood, metal and cardboard.

[Administrative Rule 2009-01](#) designates recyclables for extraction from mixed C&D debris by SWA-certified C&D sorting facilities.

[Administrative Rule 2009-02](#) identifies source-separated recyclable materials that will be excluded from a SWA-certified C&D sorting facility's performance calculation.

Download the [Application for Certification](#)

The following facilities have been certified as C&D Debris Sorting Facilities:

Allied Waste / Elder Creek Transfer and Recovery
 8642 Elder Creek Road, Sacramento
 916-387-8425
 Also provides jobsite debris hauling service

Florin-Perkins Public Disposal
 4201 Florin Perkins Road, Sacramento
 916-443-5120
 Also arranges jobsite debris hauling service

L&D Landfill
 8635 Fruitridge Road, Sacramento
 916-737-8640
 For jobsite debris hauling service: Atlas Disposal 916-455-2800

For more information about the SWA, email SWAInfo@SacCounty.net.

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 - Report Early Morning Noise
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 - Sacramento GreenCycle ▶
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SWA Recycling Services

Subscribe to a recycling service from the Franchised Hauler list or Authorized Recycler list below.

The following is the current list of Franchised Haulers and Authorized Recyclers permitted to provide services in the SWA Region, which consists of unincorporated Sacramento County and the City of Sacramento. Franchised Haulers provide waste and recycling services while Authorized Recyclers provide recycling services only.

Franchised Haulers	Phone number
AAA Services	916-568-3456
Aces Waste Service, Inc.	866-488-8837
Advance Disposal, Inc.	888-468-8728
Allied Waste Services	916-631-0600
All Waste Systems, Inc.	916-456-1555
Atlas Disposal Industries, LLC	916-455-2800
California Waste Recovery Systems	916-441-1985
Central Valley Waste Services	209-369-8274
Elk Grove Waste Management, LLC	916-689-4052
Green Waste of Sacramento	916-429-9900
North Cal Hauling Company	916-381-9033
North West Recyclers	916-686-8575
Patrick's Construction Clean-up, Inc.	916-452-5495
Recology Auburn Placer	916-381-5300
Waste Management of Sacramento	916-387-1400
Waste Removal & Recycling	916-453-1400
Western Strategic Materials, Inc	916-388-1076

Authorized Recycler	Phone number
AAA Services	916-568-3456
C & C Paper Recycling	916-920-2673
California Electronic Asset Recovery	916-388-1777
International Paper	916-371-4634
Modern Waste Solutions	916-339-3676
Recycling Industries, Inc.	916-452-3961
Rock-Tenn Recycling & Waste Solutions	916-381-3340
Sacramento Regional Conservation Corps	916-386-8394
Sims Recycling Solutions, Inc.	916-772-5681
Southside Art Center	916-387-8080
Spencer Building Maintenance	916-922-1900
Stay Safe Shred and Recycle	916-640-1300

The City of Sacramento also provides waste and recycling services within the City's limits. Please contact the City of Sacramento Solid Waste Division at 916-808-4937 for more information. Please continue to check this website for the most current information about Franchised Haulers and Authorized Recyclers.

If you are interested in becoming an Authorized Recycler, please download the [Authorized Recycler Certificate Of Operation Application](#) and [Insurance Requirements](#) .

Download the [Business Recycling Program Booklet](#) to learn more about the business recycling program requirements. For more information about Business Recycling, email SWABusinessRecycling@SacCounty.net.



C&D Debris Recyclers Database

C&D Recycling Facilities

Search Criteria:

- » Material Type: (All)
- » County: Sacramento

Number of facilities found: 32

[New Search](#)

Facility Name	City
A-1 Metals	Rio Linda
Allied Waste Transfer Station	Sacramento
AMS (Sacramento)	Sacramento
Bell Marine Co.	Sacramento
Consolidated Pallet Co., Inc.	Sacramento
Crete Crush, LLC	Rancho Cordova
Crete Crush, LLC Bradshaw Yard	Sacramento
Elder Creek Transfer & Recovery	Sacramento
five star aggregates inc	elk grove
Golden State Crushing	Sacramento
Granite Construction - Bradshaw Aggregates	Sacramento
Granite Construction - Elkhorn Plant	Rio Linda
Granite Construction Company (Sacramento)	Sacramento
Habitat For Humanity - Sacramento	Sacramento
Jose Luis Pallets	Sacramento
Kelly-Moore Paint Co.	Sacramento
Kiefer Landfill c/o Sacramento County, Dept of Waste Mgt & Recycling	Sloughouse
L and D Landfill	Sacramento
North Area Recovery Station-Recycling Area	North Highlands
Ruland's-used Office Furniture	Sacramento
Rustic Brick & Stone Company	Sacramento
Sacramento Recycling and Transfer Station	Sacramento
Schnitzer Steel	Rancho Cordova
Schnitzer Steel-Sacramento	Rancho Cordova
SIMS METAL-Rancho Cordova	Rancho Cordova
SIMS METAL-Sacramento	Sacramento
Smurf-it Stone	Sacramento
Teichert Aggregates-Perkins	Sacramento
Teichert Aggregates-Prairie City	Rancho Cordova
The City of Sacramento PHHWCF	Sacramento
Visions Recycling, Inc.	McClellan
Waste Management Recycle America LLC	Sacramento



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Last Updated: Data updated continuously.
 Construction & Demolition Debris Recycling, <http://www.calrecycle.ca.gov/ConDemo/>
 C&D Program Staff, condemo@calrecycle.ca.gov (916) 341-6489

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Solid Waste Facilities

The following solid waste facilities are located within the SWA Region - City of Sacramento and the unincorporated area of Sacramento County.

ELDER CREEK RECOVERY AND TRANSFER STATION

8642 Elder Creek Road, Sacramento, 916-387-8425

Hours/Days of Operation:

Open: Monday-Friday, 8:00am-3:00pm

Closed: Saturday and Sunday

FLORIN PERKINS PUBLIC DISPOSAL SITE

4201 Florin Perkins Road, Sacramento, 916-443-5120

Hours/Days of Operation:

Open: Monday-Friday, 6:00am-4:30pm; Saturday and Sunday, 8:00am-3:45pm

K&M RECYCLING/WASTE MANAGEMENT

3562 Ramona Avenue, Sacramento, 916-452-0142

Hours/Days of Operation:

Open: Monday-Friday, 7:00am-5:00pm

Closed: Saturday and Sunday

KIEFER LANDFILL

12701 Kiefer Blvd., Sloughhouse, 916-875-5555

Hours/Days of Operation:

Open: Monday-Friday, 6:30am-4:00pm; Saturday and Sunday, 8:30am-4:30pm

L&D LANDFILL

8635 Fruitridge Road, Sacramento, 916-383-9420

Hours/Days of Operation:

Open: Monday-Friday, 6:30am-4:00pm; Saturday 8:00am-1:00pm

Closed: Sunday

NORTH AREA RECOVERY STATION

4450 Roseville Road, Sacramento, 916-875-5555

Hours/Days of Operation:

Open: Monday-Friday, 6:30am-6:00pm; Saturday and Sunday 8:00am-6:00pm

SACRAMENTO RECYCLING AND TRANSFER STATION

8491 Fruitridge Road, Sacramento, 916-379-0500

Hours/Days of Operation:

Open: Monday-Saturday, 8:00am-5:00pm

Closed: Sunday

For more information about the SWA, email SWAInfo@SacCounty.net.

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Construction & Demolition Waste Management Plan

C&D Debris Waste Management Plan
City of Sacramento Solid Waste Services
2812 Meadowview Road, Building 1
Sacramento, CA 95832
Phone: (916) 808-0965 / Fax: (916) 808-4999
C&D@cityofsacramento.org

Building
Permit
Numbers

COM-

Please put all known permit numbers related to this project.

Form
submitted by:

City of Sacramento, Dennis Day, dday@cityofsacramento.org ☐

Please attach a business card, or put your name with a phone number and/or an email address.

This Waste Management Plan (WMP) must be submitted and approved before your building permit(s) will be issued. Only one WMP is required if a project has multiple building permits associated to it (i.e., multiple houses in a subdivision, or multiple related permits at one address). The administration fee and security deposit (if applicable) must be submitted for this form to be approved. Administration fee is 0.04% of project valuation (min \$40, max \$800); security deposit is 1% of valuation (max \$10,000). **The accompanying Waste Log must be submitted within 30 days of final inspection (or permit expiration) of the project, or a fine may be imposed.** Approval may also be delayed if the waste log from a previous project is due.

Building Project Information:

Job Address: 2501 New Market Drive

Contractor:

Phone:

Address:

Email:

Owner:

City of Sacramento

Phone:

(916) 808-7633

Address:

915 I street, 3rd Flr

Email:

dday@cityofsacramento.org

Briefly describe the project:

finish grading, drainage, concrete walkway, curbs, metal shade structures, automatic irrigation system, electrical, drinking fountain, landscaping, signage, and site furniture

Materials Required to be Recycled

50% of all debris must be recycled if generated during the course of your project. You can either source-separate them, which may be hauled by anyone, or mix them in one container and send the mixed C&D debris load to a Certified Mixed C&D Sorting Facility. Mixed C&D loads can only be hauled by a franchised hauler or self-hauled. Please see the Definitions section, on the next page, for more information.

50%
of all debris
must be recycled

Material Management

How the C&D debris will be stored on the project site: Mixed C&D Source-Separated

Company to haul away debris: _____

Facilities to receive debris: _____

Waste Log and tickets must be submitted within 30 days of permit being finalized.

Office Use Only:

Received by: _____

On date: _____

Logged

Approved

Scanned

Payment Processed

Filed

Fee amount: \$ _____

Construction & Demolition Waste Management Plan

C&D Debris Waste Management Plan
City of Sacramento Solid Waste Services
2812 Meadowview Road, Building 1
Sacramento, CA 95832
Phone: (916) 808-4839 / Fax: (916) 808-4999
C&D@cityofsacramento.org

Definitions.

Please read and understand these terms. Call Solid Waste at (916) 808-0965 if these terms are not clear to you. More information is also available online at <http://www.sacrecycle.org/>.

1. **Self-haul or self-hauling:** This is when the permit holder, general contractor, or a subcontractor *who is doing work on the project* hauls their own waste materials for recycling or disposal. Note that a *jobsite cleanup crew is not doing other work on the project and is not self-hauling*. Jobsite cleanup crews need to be franchised in order to haul mixed C&D debris away.
2. **Franchised hauler:** See Solid Waste web site (<http://www.sacrecycle.org/>) for a list of these haulers. These companies are the only companies in Sacramento who can legally collect and haul mixed C&D debris for a fee.
3. **Source separation:** This is achieving compliance with the recycling requirement by keeping wood, metal, cardboard, or other recyclables in separate containers, and sending it to an authorized recycler. (A list of recyclers is on the Solid Waste web site at <http://www.sacrecycle.org/>.) Source-separated material may be hauled by anyone.
4. **Mixed C&D debris:** This is achieving compliance with the recycling requirement by putting all recyclable (and a small amount of unrecyclable) debris into one container. Mixed material must be sent to a certified mixed C&D sorting facility to have the recyclable material extracted and recovered. Mixed material also must be either self-hauled, or hauled by a franchised hauler. If your job site is crowded, this option saves the most space.
5. **Certified Mixed C&D Sorting Facility:** See the Solid Waste web site for a list. These facilities have been certified by the Sacramento Regional Solid Waste Authority to extract recyclable materials from mixed C&D debris. If you achieve compliance by mixed recovery, your debris must go to a certified mixed sorting facility.

Terms and Conditions

- Your approved Waste Management Plan and Waste Log must be kept on the job site in the permit folder for the duration of the project.
- City of Sacramento staff may enter the jobsite to inspect waste collection areas.
- Only SWA-Certified Mixed C&D Sorting Facilities may be used to recycle these materials if mixed with other materials.
- Only SWA-Franchised Haulers or self-haulers (as defined above) may collect and transport trash or mixed C&D material from the jobsite.
- Construction and Demolition Debris may not be burned or dumped illegally.
- Your Waste Log must be completed and submitted within 30 days of your permit being finalized or expired. All waste hauling and disposal or recycling activity must be entered on the Waste Log, including information from any subcontractors who self-hauled their own debris off-site. *Enter your Permit Number on your Waste Log now!*
- You must keep all receipts or weight-tickets from your project for a period of one year from the submittal of your waste log.
- Failure to comply with these terms and conditions may result in a fine and a security deposit on future projects.