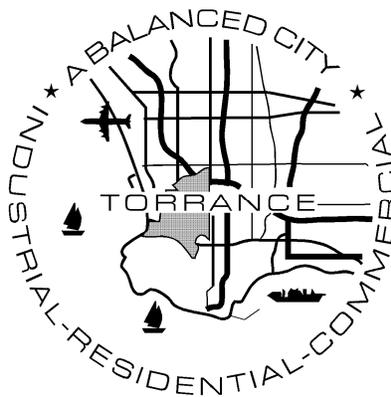


**PROPOSAL, SPECIFICATIONS, BOND  
AND AFFIDAVIT  
FOR THE CONSTRUCTION OF  
WALTERIA RESERVOIR SLOPE STABILITY PROJECT  
C.I.P. No. I 95**

**B2010-17**



**ELIZABETH OVERSTREET  
Acting City Engineer**

**August 2010**

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**SECTION A**

**NOTICE INVITING BIDS**

**CITY OF TORRANCE, CALIFORNIA**

**NOTICE INVITING BIDS**

Notice is hereby given that sealed bids for performing the following described work will be received at the Office of the City Clerk of the City of Torrance, California, **until 2:00 p.m. on Thursday, September 23, 2010**, after which time they will be publicly opened and read at 2:15 p.m. in the Council Chambers of said City:

**CONSTRUCTION OF  
Walteria Reservoir Slope Stability Project, C.I.P. No. I-95  
B2010-17**

Plans, Bid Schedule and Specifications are available for viewing and printing by prospective bidders and subcontractors on the City's website at [http://www.torranceca.gov/public\\_works/civil\\_and\\_traffic\\_engineering](http://www.torranceca.gov/public_works/civil_and_traffic_engineering)

Those who only view and/or print the Plans, Bid Schedule and Specifications from the City's website will not be added to the City's Plan Holder list for this project.

**The official and required form of Proposal must be obtained at the Office of the City Clerk (310) 618-2870, City Hall, 3031 Torrance Boulevard, Torrance, California. There is no cost if picked up at City Hall. A payment of \$5 is required if requested by mail.** The amount includes tax and is not refundable. A prospective bidder must provide to the City Clerk the firm's name, address, telephone and fax numbers, a contact person and a valid email address. This will ensure that your firm is listed as a "Plan Holder" and that you will be informed of any and all information issued subsequent to obtaining the official form of Proposal. Addenda will be issued only by email and only to those that provide the required information to the City Clerk. Receipt of any Addendum must be acknowledged by a bidder in its submitted form of Proposal.

Full-size 24" x 36" Plans and a bound Specifications booklet may also be obtained at the Office of the City Clerk (310) 618-2870, City Hall, 3031 Torrance Boulevard, Torrance, California upon payment of \$35 if picked up at City Hall, or payment of \$40 if requested by mail. Both amounts include tax. Neither amount is refundable. The \$35 includes a copy of the official form of Proposal.

If requesting any item(s) by mail, please send check to the following:

**CITY OF TORRANCE  
OFFICE OF THE CITY CLERK  
3031 TORRANCE BLVD  
TORRANCE, CA 90509  
ATTN: B2010-17**

The Engineer's estimate of the contract total is between \$350,000 and \$600,000. All work shall be completed within 180 working days from the date of the Notice to Proceed (NTP).

Per Division 2, Chapter 2 of the Torrance Municipal Code, the Torrance City Council may reject any and all bids, waive any informality or irregularity in such bids, and determine the lowest responsible bidder. No facsimile bids shall be accepted by the City.

Bidders are advised that, as required by federal law, the State has established a statewide overall Disadvantaged Business Enterprise (DBE) goal. To provide assistance in meeting the

statewide goal, the Agency is including a DBE Availability Advisory of 9% in this contract. Although bidders need not achieve this DBE Availability Advisory as a condition of award, they are encouraged to solicit bids from DBE subcontractors and suppliers.

Substitution of securities for withheld funds is permitted per Section 22300 of the Public Contract Code.

The City has determined that a Class **A** Contractor's license is necessary to bid this project, but reserves the right to accept another Class at the sole discretion of either the Public Works Director or Engineer.

**This project is subject to the "Buy America" provisions of the Surface Transportation Assistance Act of 1982 as amended by the Intermodal Surface Transportation Efficiency Act of 1991.**

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available from the California Department of Industrial Relations' Internet web site at <http://www.dir.ca.gov/DLSR/PWD>. The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in the Bid book and in copies of this book that may be examined at the offices described above where project plans, special provisions, and bid forms may be seen. Addenda to modify the Federal minimum wage rates, if necessary, will be issued to holders of Bid book. Future effective general prevailing wage rates, which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

The U.S. Department of Transportation (DOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., Eastern Time, Telephone No. 1-800-424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

By order of the City Council of the City of Torrance, California.

For further information, please contact John Dettle, P.E., Engineering Manager in the Public Works Department at (310) 618-3059 or via the main office at (310) 781-6900.

**SECTION B**

**INSTRUCTIONS TO BIDDERS**

**CITY OF TORRANCE,  
CALIFORNIA**

**INSTRUCTIONS TO BIDDERS**

**A. QUALIFICATION OF BIDDERS**

1. Competency of Bidders

The Bidder shall be thoroughly competent and capable of satisfactorily performing the Work covered by the Bid. As specified in the Bid Documents, the Bidder shall furnish statements of previous experience on similar work. When requested, the Bidder shall also furnish the plan of procedure proposed; the organization, machinery, plant and other equipment available for the Work; evidence of its financial condition and resources; and any other such documentation as may be required by the City to determine if the Bidder is responsible.

2. Contractor's License

At the time of submitting the Bid, the Bidder shall be licensed as a contractor in accordance with the provisions of Chapter 9, Division 3, of the California Business and Professions Code. The required prime contractor license class for the Work is shown in the project Notice Inviting Bids. However, the City reserves the right to award the Contract to a contractor with another class if the City determines that the license is proper for the work.

**B. BIDDER RESPONSIBILITY**

A responsible Bidder is a Bidder who has demonstrated the attribute of trustworthiness, as well as ability, fitness, capacity and experience to satisfactorily perform the work.

Bidders are notified that, in accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council may determine whether the Bidder is responsible based on a review of the Bidder's performance on other contracts.

If, based on the provision and criteria in Division 2, Chapter 2 of the Torrance Municipal Code, the Engineering Director proposes not to recommend the award of contract to the apparent low bidder, the Director shall notify the Bidder in writing of its intention to recommend to the City Council that the Council award the contract to the 2<sup>nd</sup> lowest responsible bidder. If the Bidder presents evidence in rebuttal to the recommendation, the Director shall evaluate the merits of such evidence, and based on that evaluation, make a recommendation to the City Council.

C. ADDENDA TO THE CONTRACT DOCUMENTS

The City may issue Addenda to the Contract Documents during the period of advertising for any reason. The Bidder shall acknowledge the receipt of the Addenda in their Bid. Failure of the Bidder to do so may result in the rejection of the Bid as non-responsive.

D. PREPARATION OF THE BID

1. Examination of Site, Plans and Specifications

Prior to submitting a Bid, the Bidder shall examine the Plans and the Work site, carefully read the Specifications, and satisfy itself that it has the abilities and resources to complete the Work. The Bidder agrees that if it is awarded the Contract, no claim will be made against the City based on ignorance or misunderstanding of the provisions of the Contract Documents, the nature and amount of the work, and the physical and climatic conditions of the work site.

2. Estimated Quantities

The quantities shown in the Bid are approximate only. The Contractor will be paid for the actual quantities of work based on field measurements as provided for in these Specifications. The City reserves the right to increase or decrease the amount of any item or portion of work to be performed or materials furnished, or to delete any item, in accordance with the Specifications.

3. Bid Instructions and Submissions

The Bid shall be submitted on the Bid Proposal forms included with the Specifications. All Bid Documents must be completed, executed and submitted with the Bid by the Bidder.

Required sixteen (16) Bid Proposal Documents:

- 1) Bidder's Proposal
- 2) Addenda Acknowledgment
- 3) Contractor's Affidavit
- 4) Bid Bond (10%)
- 5) List of Subcontractors
- 6) References (2 pages)
- 7) DBE Bidders List
- 8) Violations of Federal or State Law
- 9) Disqualification or Debarment

All prices submitted will be considered as including any and all sales or use taxes.

In the case of discrepancy between unit bid price and total bid, the unit price shall prevail.

4. Disadvantaged Business Enterprise (DBE) Requirements

The City requires that Disadvantaged Business Enterprise (DBE) have the opportunity to participate in public works projects. To assist the City in establishing DBE goals, all proposing prime bidders are required to submit a DBE Bidder's List form for each subcontractor and supplier, whether DBE or not, contacted during preparation of the Bid.

E. BID BOND

The Bid must be accompanied by either cash, a certified or cashier's check or a surety bond (bid bond) payable to the City of Torrance. Bids must be submitted on the proposal forms furnished by the Public Works Department. The Bid Guaranty shall be in an amount equivalent to at least 10% of the Total Contract Bid Price.

F. NONRESPONSIVE BIDS AND BID REJECTION

1. A Bid in which any one (1) of the required sixteen (16) Bid proposal documents are not completed, executed and submitted may be considered non-responsive and be rejected.
2. A Bid in which the Contract Unit Prices are unbalanced, which is incomplete or which shows alteration of form or irregularities of any kind, or which contains any additions or conditional or alternate Bids that are not called for, may be considered non-responsive and be rejected.

G. AWARD OF CONTRACT

In accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council reserves the right to reject any and all bids received, to take all bids under advisement for a period not-to-exceed sixty (60) days after date of opening thereof, to waive any informality or irregularity in the Bid, and to be the sole judge of the merits of material included in the respective bids received.

H. EXECUTION OF CONTRACT

After the Contract is awarded, the awardee shall execute the following eight (8) documents:

- 1) Bond (100% of Bid)
- 2) Labor and Material Bond (100% of Bid)

- 3) Contract - Public Works Agreement
- 4) Verification of Insurance Coverage (Certificates and Endorsements)
- 5) Construction or Service Contract Endorsement
- 6) Workers' Compensation Insurance Certificate
- 7) Construction Permit Application Form
- 8) Business License Application Form

I. APPRENTICESHIP EMPLOYMENT STANDARDS

The Contractor is directed to the provisions in Sections 1776, 1777.5 and 1777.6 of the California Labor Code concerning the employment of apprentices by the contractor or any subcontractor under them.

J. PERMITS, LICENSES AND PUBLIC WORKS AGREEMENT

The Contractor shall procure and execute all permits, licenses, pay all charges and fees, and give all notices necessary and incidental to the completion of the Work. The Contractor shall execute a Public Works Agreement. No fee is charged for a Construction-Excavation Permit issued by the City of Torrance for a public works project. The Contractor shall obtain a City of Torrance Business License.

The Contractor shall be required to obtain a rider to the City of Torrance's encroachment permit from the State.

K. INSURANCE

The Contractor shall maintain Automobile Liability, General Liability and Workers' Compensation Insurance as specified in the Public Works Agreement included in the Project Specifications.

L. PRE-BID INQUIRIES

A Bidder with a Pre-Bid Inquiry must fax their question(s) in writing to Mr. John Dettle of the Torrance Public Works Department at (310) 781-6902. All questions must be received no later than 5:00 p.m. on the Thursday prior to the date for opening the bids. Questions received after this date may not be considered. For questions of a general nature, a bidder may call Mr. John Dettle directly at (310) 618-3059.

**SECTION C**  
**BID DOCUMENTS**

# BIDDER'S PROPOSAL

Company: \_\_\_\_\_

**B2010-17**

Total Bid: \_\_\_\_\_

**PROPOSAL, SPECIFICATIONS, BOND AND AFFIDAVIT  
FOR THE CONSTRUCTION OF  
WALTERIA RESERVOIR SLOPE STABILITY PROJECT, C.I.P. PROJECT NO. I-95**

---

Honorable Mayor and Members  
of the Torrance City Council  
Torrance, California

Members of the Council:

In accordance with the Notice Inviting Bids pertaining to the receiving of sealed proposals by the City Clerk of the City of Torrance for the above titled improvement, the undersigned hereby proposes to furnish all Work to be performed in accordance with the Plans, Specifications, Standard Drawings, and the Contract Documents, for the unit price or lump sum set forth in any or all of the following three (3) bid schedules. The City will accept the lowest overall bid regardless of schedule.

**WALTERIA RESERVOIR SLOPE STABILITY PROJECT, C.I.P. NO. I-95**

**BID SCHEDULE A  
SHOTCRETE WALL WITH SOIL NAILING**

<b>Item No.</b>	<b>Approx. Qty</b>	<b>Unit of Measure</b>	<b>Item Description</b>	<b>Unit Price</b>	<b>Total Bid</b>
1	1	LS	MOBILIZATION (5% MAX. OF CONTRACT BID)		
2	1	LS	CONSTRUCTION SURVEYING		
3	1	LS	CONSTRUCTION BMPs AND SWPPP		
4	17,500	SF	CLEARING AND GRUBBING		
5	1	LS	REMOVE PORTION OF EXISTING WROUGHT IRON FENCE AND REPLACE AFTER COMPLETION OF CONSTRUCTION		
6	1	EA	REMOVE EXISTING TRASH ENCLOSURE AND REPLACE IN KIND AFTER COMPLETION OF CONSTRUCTION		

Item No.	Approx. Qty	Unit of Measure	Item Description	Unit Price	Total Bid
7	25	SF	CONSTRUCT 4" THICK CONCRETE SPLASH PAD		
8	370	LF	REMOVE EXISTING PARKING LOT CURB AND PLANTER WALL AND CONSTRUCT 2' CONCRETE CURB AND GUTTER		
9	20	LF	CONSTRUCT 4' CONCRETE SWALE		
10	40	LF	CONSTRUCT 4" DIA. CURB DRAIN PIPES		
11	17,500	SF	FURNISH AND INSTALL PARKING LOT SLURRY SEAL, AND REPLACE IN KIND STRIPING AND PAVEMENT MARKING		
<b>PRE-PRODUCTION TESTING OF SOIL NAILS</b>					
12	3	EA	PRE-PRODUCTION VERIFICATION TESTING OF SACRIFICIAL TEST SOIL NAILS		
<b>SOIL NAIL WALL CONSTRUCTION</b>					
13	2,100	CY	EXCAVATE AND DISPOSE OFF SITE SOIL FOR SOIL NAIL WALL CONSTRUCTION AND SITE GRADING		
14	3,220	LF	SUPPLY AND INSTALL SOIL NAILS INCLUDING DRILLING, NAIL PLATES, ALL MATERIALS AND GROUTING; ALSO INCLUDING PRODUCTION TESTING OF SOIL NAILS		
15	8,550	SF	SUPPLY AND INSTALL DRAIN STRIPS, SOLID AND SLOTTED PVC DRAINAGE PIPES, AND WEEPHOLES (PRICE PER SF OF TOTAL WALL SURFACE)		
16	8,550	SF	SUPPLY AND INSTALL TEMPORARY SHOTCRETE FACING INCLUDING ALL REINFORCEMENT		
17	8,550	SF	SUPPLY AND INSTALL FINAL SHOTCRETE FACING AND TOP AND BOTTOM V-DITCHES INCLUDING ALL REINFORCEMENT AND FINAL SURFACE FINISH		
18	350	LF	SUPPLY AND CONSTRUCT 18-IN. WIDE V-DITCH AT THE BOTTOM OF THE WALL		
19	375	LF	SUPPLY AND CONSTRUCT 12-IN. WIDE V-DITCH AT THE TOP AND SOUTH END OF THE WALL		
<b>PLANTING, IRRIGATION AND LANDSCAPING</b>					
20	8,700	SF	HYDROSEEDING		

Item No.	Approx. Qty	Unit of Measure	Item Description	Unit Price	Total Bid
21	1	LS	IRRIGATION (SPRINKLER) SYSTEM MODIFICATIONS		
22	1	LS	PLANTING, TREE REPLACEMENT, AND OTHER LANDSCAPING WORK		
23	1	LS	90 DAY PLANT ESTABLISHMENT AND MAINTENANCE		
24	8,700	SF	SUPPLY AND INSTALL EROSION PROTECTION FABRIC AND POST CONSTRUCTION BMPs		

**BID SCHEDULE A**

TOTAL BID PRICE \$ \_\_\_\_\_  
(Figures)\*

TOTAL BID PRICE: \_\_\_\_\_  
(Words)\*

**\*BID MAY BE REJECTED IF TOTAL IS NOT SHOWN IN FIGURES AND WORDS.**

**B2010-17**

**BID SCHEDULE B  
BLOCK WALLS WITH REINFORCED COMPACTED FILL**

<b>Item No.</b>	<b>Approx. Qty</b>	<b>Unit of Measure</b>	<b>Item Description</b>	<b>Unit Price</b>	<b>Total Bid</b>
1	1	LS	MOBILIZATION (5% MAX. OF CONTRACT BID)		
2	1	LS	CONSTRUCTION SURVEYING		
3	1	LS	CONSTRUCTION BMPs AND SWPPP		
4	17,500	SF	CLEARING AND GRUBBING		
5	1	LS	REMOVE PORTION OF EXISTING WROUGHT IRON FENCE AND REPLACE AFTER COMPLETION OF CONSTRUCTION		
6	1	EA	REMOVE EXISTING TRASH ENCLOSURE AND REPLACE IN KIND AFTER COMPLETION OF CONSTRUCTION		
7	3,330	CY	EXCAVATE, DISPOSE OFF SITE AND KEY AND BENCH SOIL FOR BLOCK WALL CONSTRUCTION AND SLOPE RE-GRADING		
8	368	CY	FURNISH AND PLACE WALL BACKDRAIN MATERIAL		
9	467	LF	FURNISH AND INSTALL SUBDRAIN COLLECTION PIPING		
10	3,140	CY	FURNISH AND PLACE REINFORCED COMPACTED FILL		
11	1,554	SY	FURNISH AND INSTALL WELDED WIRE REINFORCEMENT		
12	3,900	SF	FURNISH AND INSTALL KEYSTONE SEGMENTAL HYBRID RETAINING BLOCK WALLS (PRICE PER SF OF TOTAL WALL SURFACE)		
13	25	SF	CONSTRUCT 4" THICK CONCRETE SPLASH PAD		
14	370	LF	REMOVE EXISTING PARKING LOT CURB AND PLANTER WALL AND CONSTRUCT NEW 2' CURB AND GUTTER		
15	20	LF	CONSTRUCT 4' CONCRETE SWALE		
16	40	LF	CONSTRUCT 4" DIA. CURB DRAIN PIPES		
17	17,500	SF	FURNISH AND INSTALL PARKING LOT SLURRY SEAL, AND REPLACE IN KIND		

Item No.	Approx. Qty	Unit of Measure	Item Description	Unit Price	Total Bid
			STRIPING AND PAVEMENT MARKING		
18	17,500	SF	HYDROSEEDING		
19	1	LS	IRRIGATION (SPRINKLER) SYSTEM MODIFICATIONS		
20	1	LS	PLANTING, TREE REPLACEMENT, AND OTHER LANDSCAPING WORK		
21	1	LS	90 DAY PLANT ESTABLISHMENT AND MAINTENANCE		
22	17,500	SF	SUPPLY AND INSTALL EROSION PROTECTION FABRIC AND POST CONSTRUCTION BMPs		
23	500	CY	ADDITIONAL EXCAVATION AND RECOMPACTION AS DIRECTED BY ENGINEER		

**BID SCHEDULE B**

TOTAL BID PRICE \$ \_\_\_\_\_  
 (Figures)\*

TOTAL BID PRICE: \_\_\_\_\_  
 (Words)\*

**\*BID MAY BE REJECTED IF TOTAL IS NOT SHOWN IN FIGURES AND WORDS.**

**B2010-17**

**BID SCHEDULE C  
REINFORCED COMPACTED FILL**

<b>Item No.</b>	<b>Approx. Qty</b>	<b>Unit of Measure</b>	<b>Item Description</b>	<b>Unit Price</b>	<b>Total Bid</b>
1	1	LS	MOBILIZATION (5% MAX. OF CONTRACT BID)		
2	1	LS	CONSTRUCTION SURVEYING		
3	1	LS	CONSTRUCTION BMPs AND SWPPP		
4	17,500	SF	CLEARING AND GRUBBING		
5	1	LS	REMOVE PORTION OF EXISTING WROUGHT IRON FENCE AND REPLACE AFTER COMPLETION OF CONSTRUCTION		
6	1	EA	REMOVE EXISTING TRASH ENCLOSURE AND REPLACE IN KIND AFTER COMPLETION OF CONSTRUCTION		
7	5,100	CY	EXCAVATE, DISPOSE OFF SITE AND KEY AND BENCH SOIL FOR REINFORCED COMPACTED FILL CONSTRUCTION AND SLOPE RE-GRADING		
8	735	LF	FURNISH AND INSTALL SUBDRAIN COLLECTION PIPING		
9	5,600	CY	FURNISH AND PLACE REINFORCED COMPACTED FILL		
10	6,281	SY	FURNISH AND INSTALL WELDED WIRE REINFORCEMENT		
11	25	SF	CONSTRUCT 4" THICK CONCRETE SPLASH PAD		
12	370	LF	REMOVE EXISTING PARKING LOT CURB AND CONSTRUCT 2' CONCRETE CURB AND GUTTER		
13	20	LF	CONSTRUCT 4' CONCRETE SWALE		
14	40	LF	CONSTRUCT 4" DIA. CURB DRAIN PIPES		
15	17,500	SF	FURNISH AND INSTALL PARKING LOT SLURRY SEAL, AND REPLACE IN KIND STRIPING AND PAVEMENT MARKING		
16	17,500	SF	HYDROSEEDING		
17	1	LS	IRRIGATION (SPRINKLER) SYSTEM MODIFICATIONS		

Item No.	Approx. Qty	Unit of Measure	Item Description	Unit Price	Total Bid
18	1	LS	PLANTING, TREE REPLACEMENT, AND OTHER LANDSCAPING WORK		
19	1	LS	90 DAY PLANT ESTABLISHMENT AND MAINTENANCE		
20	17,500	SF	SUPPLY AND INSTALL EROSION PROTECTION FABRIC AND POST CONSTRUCTION BMPs		
21	1,000	CY	ADDITIONAL EXCAVATION AND RECOMPACTION AS DIRECTED BY ENGINEER		

**BID SCHEDULE C**

**TOTAL BID PRICE \$** \_\_\_\_\_  
 (Figures)\*

**TOTAL BID PRICE:** \_\_\_\_\_  
 (Words)\*

**\*BID MAY BE REJECTED IF TOTAL IS NOT SHOWN IN FIGURES AND WORDS.**

**B2010-17**

**B2010-17**

The undersigned furthermore agrees to enter into and execute a contract, with necessary bonds, at the unit prices set forth herein and in case of default in executing such contract, with necessary bonds, the check or bond accompanying this bid and the money payable thereon shall be forfeited thereby to and remain the property of the City of Torrance.

The above unit prices include all work appurtenant to the various items as outlined in the Specifications and all work or expense required for the satisfactory completion of said items. In case of discrepancies between unit prices and totals, the unit prices shall govern.

The undersigned declares that it has carefully examined the Plans, Specifications, and Contract Documents, and has investigated the site of the work and is familiar with the conditions thereon.

\_\_\_\_\_  
Contractor

Date: \_\_\_\_\_ By: \_\_\_\_\_

Contractor's State License Address: \_\_\_\_\_

No. \_\_\_\_\_

Class \_\_\_\_\_ Phone: \_\_\_\_\_

**ACKNOWLEDGMENT OF ADDENDA RECEIVED – B2010-17**

The Bidder shall acknowledge the receipt of addenda by placing an "X" by each addendum received.

Addendum No. 1 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_

Addendum No. 3 \_\_\_\_\_

Addendum No. 4 \_\_\_\_\_

Addendum No. 5 \_\_\_\_\_

Addendum No. 6 \_\_\_\_\_

Addendum No. 7 \_\_\_\_\_

Addendum No. 8 \_\_\_\_\_

If an addendum or addenda have been issued by the City and not noted above as being received by the Bidder, the Bid Proposal may be rejected.

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date



**CONTRACTOR'S AFFIDAVIT (CONTINUED)**

7. That the Contractor did not, directly or indirectly, submit the Contractor's bid price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any individual or group of Individuals, except to the City of Torrance, or to any person or persons who have a partnership or other financial interest with said Contractor in its business.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Subscribed and Sworn to  
before me this \_\_\_\_\_ day  
of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(Contractor)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
Notary Public in and for said  
County and State.  
(Seal)

**BID BOND**

**B2010-17**

**KNOW ALL MEN BY THESE PRESENTS:** That we, \_\_\_\_\_

\_\_\_\_\_

as principal, and \_\_\_\_\_

as sureties, are held and firmly bound unto the City of Torrance, State of California, in the penal sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_), for the payment whereof we hereby bind ourselves, our successors, heirs, executors or administrators jointly and severally, firmly by these presents.

The condition of this obligation is such that, whereas the above bounded principal is about to file with and submit to the City of Torrance a bid or proposal for the performance of certain work as required in the City of Torrance, Project No. B2010-17, said work being: Walteria Reservoir Slope Stability Project, C.I.P. No. I-95, and in compliance with the Specifications therefor under an invitation of said City contained in a notice or advertisement for bids or proposals; now if the bid or proposal of the said principal shall be accepted and if the said work be thereupon awarded to the principal by said City and if the said principal shall enter into a contract with the said City in accordance with said bid or proposal, or if the bid or proposal of the said principal is rejected, then this bond shall be void and of no effect and otherwise in full force and effect.

**WITNESS** our hands this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety/Attorney-in-Fact

\_\_\_\_\_  
Signature

Name: \_\_\_\_\_  
Local Address: \_\_\_\_\_  
\_\_\_\_\_  
Phone No.: \_\_\_\_\_  
Fax No.: \_\_\_\_\_

## LIST OF SUBCONTRACTORS

The Bidder is required to fill in the following blanks in accordance with the provisions of the Subletting and Subcontracting Fair Practices Act (Chapter 2 of Division 5, Title 1 of the Government Code of the State of California) and should familiarize itself with Section 2-3 of the Standard Specifications.

Name Under Which Subcontractor is Licensed: \_\_\_\_\_

License Number: \_\_\_\_\_

Address of Office, Mill or Shop: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

Name Under Which Subcontractor is Licensed: \_\_\_\_\_

License Number: \_\_\_\_\_

Address of Office, Mill or Shop: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

Name Under Which Subcontractor is Licensed: \_\_\_\_\_

License Number: \_\_\_\_\_

Address of Office, Mill or Shop: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

Name Under Which Subcontractor is Licensed: \_\_\_\_\_

License Number: \_\_\_\_\_

Address of Office, Mill or Shop: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

Subcontractors listed in accordance with the provisions of Section 2-3 must be properly licensed under the laws of the State of California for the type of work which they are to perform. Do not list alternate subcontractors for the same work.

**REFERENCES**

(Work similar in magnitude and degree of difficulty completed by Contractor within the past three [3] years.)

1. Name (Firm/Agency): \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_  
Title of Project: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Date of Completion: \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_
  
2. Name (Firm/Agency): \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_  
Title of Project: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Date of Completion: \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_
  
3. Name (Firm/Agency): \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_  
Title of Project: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Date of Completion: \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_
  
4. Name (Firm/Agency): \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_  
Title of Project: \_\_\_\_\_  
Project Location: \_\_\_\_\_  
Date of Completion: \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_

**REFERENCES**

If Contractor has not performed work for the City of Torrance within the last five (5) years, list all work done within said five years (attach additional sheets if necessary). Note if work was done as subcontractor [include only subcontract amount]:

Work Description & Contract Amount	Agency	Date Completed

Contractor's License No.: \_\_\_\_\_ Class: \_\_\_\_\_

a. Date first obtained: \_\_\_\_\_ Expiration \_\_\_\_\_

b. Has License ever been suspended or revoked? \_\_\_\_\_

If yes, describe when and why: \_\_\_\_\_

c. Any current claims against License or Bond? \_\_\_\_\_

If yes, describe claims: \_\_\_\_\_

Principals in Company (List all – attach additional sheets if necessary):

<u>NAME</u>	<u>TITLE</u>	<u>LICENSE NO.</u> (If Applicable)
_____	_____	_____
_____	_____	_____
_____	_____	_____

**DBE**

**DBE BIDDERS LIST  
B2010-17**

All bidders are required to provide the following information for each DBE and non-DBE subcontractor or subconsultant who provided a proposal, bid, quote, or were contacted by the proposed prime bidder. This information is required from the proposed prime bidder and must be submitted with their bid/proposal. The City of Torrance will use this information to maintain and update a "Bidders" List to assist in the overall annual DBE goal-setting process.

<b>Firm Name:</b> _____	<b>Phone:</b> _____
<b>Address:</b> _____	<b>Fax:</b> _____
<b>Contact Person:</b> _____	<b>No. of years in business:</b> _____
<b>Is the firm currently certified as a DBE under 49 CFR Part 26: YES: ____ NO: ____</b>	
<b>Type of work/services/materials provided by firm?</b> _____ _____	
<b>What was your firm's Gross Annual receipts for last year?</b>	
<b>Less than \$1 Million</b> <b>Less than \$5 Million</b> <b>Less than \$10 Million</b> <b>Less than \$15 Million</b> <b>More than \$15 Million</b>	

This form can be duplicated if necessary to report all bidders (DBEs and non-DBEs) information.

**VIOLATIONS OF FEDERAL, STATE OR LOCAL LAWS**

1. Has your firm or its officers been assessed any penalties by an agency for noncompliance or violations of Federal, State or Local labor laws and/or business or licensing regulations within the past five (5) years relating to your construction projects?

Yes/No: \_\_\_\_\_ Federal/State: \_\_\_\_\_

If "yes," identify and describe, (including agency and status): \_\_\_\_\_

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Have the penalties been paid? Yes/No: \_\_\_\_\_

2. Does your firm or its officers have any ongoing investigations by any public agency regarding violations of the State Labor Code, California Business and Professions Code or State Licensing Laws?

Yes/No: \_\_\_\_\_ Code/Laws: \_\_\_\_\_ Section/Article: \_\_\_\_\_

If "yes," identify and describe, (including agency and status): \_\_\_\_\_

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**DISQUALIFICATION OR DEBARMENT**

Has your firm, any officer of your firm, or any employee who has a proprietary interest in your firm ever been disqualified, removed, or otherwise prevented from bidding on, performing work on, or completing a federal, state or local project because of a violation of law or a safety regulation? Yes/No: \_\_\_\_\_. If yes, provide the following information (if more than once, use separate sheets):

Date: \_\_\_\_\_ Entity: \_\_\_\_\_

Location: \_\_\_\_\_

Reason: \_\_\_\_\_

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Provide Status and any Supplemental Statement: \_\_\_\_\_

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Has your firm been reinstated by this entity? Yes/No: \_\_\_\_\_

**SECTION D**

**DOCUMENTS TO BE COMPLETED  
AND DELIVERED TO CITY PRIOR  
TO AWARD OF CONTRACT**

## PERFORMANCE BOND

### KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_ as Principal(s) and \_\_\_\_\_ a corporation, incorporated, organized, and existing under the laws of the State of \_\_\_\_\_, and authorized to execute bonds and undertakings and to do a general surety business in the State of California, as Surety, are jointly and severally held and firmly bound unto the City of Torrance, a municipal corporation, located in the County of Los Angeles, State of California, in the full and just sum of: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, representative, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH**, that: **WHEREAS**, said Principal(s) have/has entered into, or are/is about to enter into, a certain written contract or agreement, dated as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, with the said City of Torrance for the Construction of **Walteria Reservoir Slope Stability Project, C.I.P. No. I-95, B2010-17**, all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

**NOW, THEREFORE**, if the said Principal(s) shall faithfully and well and truly do, perform and complete, or cause to be done, performed and complete, each and all of the covenants, terms, conditions, requirements, obligations, acts and things, to be met, done or performed by said Principal(s), including any guarantee period as set forth in, or required by, said contract or agreement, all at and within the time or times, and in the manner as therein specified and contemplated, then this bond and obligation shall be null and void; otherwise it shall be and remain in full force, virtue and effect.

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration or addition to said contract or agreement, or of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or thereunder.

**PERFORMANCE BOND (CONTINUED)**

In the event any suit, action or proceedings is instituted to recover on this bond or obligation, said Surety will pay, and does hereby agree to pay, as attorney's fees for said City, such sum as the Court in any such suit, action or proceeding may adjudge reasonable.

**EXECUTED, SEALED AND DATED** this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_.

CORPORATE SEAL

PRINCIPAL(S):

BY \_\_\_\_\_

BY \_\_\_\_\_

CORPORATE SEAL

SURETY:

BY

## LABOR AND MATERIAL BOND

### KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_  
As \_\_\_\_\_ Principal(s) \_\_\_\_\_ and  
\_\_\_\_\_ a corporation,  
incorporated, organized, and existing under the laws of the State of \_\_\_\_\_,  
and authorized to execute bonds and undertakings and to do a general surety business  
in the State of California, as Surety, are jointly and severally held and firmly bound unto:

- (a) The State of California for the use and benefit of the State Treasurer, as ex-officio Treasurer and custodian of the Unemployment Fund of said State; and
- (b) The City of Torrance, California; and
- (c) Any and all persons who do or perform or who did or performed work or labor upon or in connection with the work or improvement referred to in the contract or agreement hereinafter mentioned; and
- (d) Any and all material-men, persons, companies, firms, association, or corporations, supplying or furnishing any materials, provisions, provender, transportation, appliances or power, or other supplies used in, upon, for or about or in connection with the performance of the work or improvement contracted to be executed, done, made or performed under said contract or agreement; and
- (e) Any and all persons, companies, firms, associations, or corporations furnishing, renting, or hiring teams, equipment, implements or machinery for, in connection with, or contributing to, said work to be done or improvement to be made under said contract or agreement; and
- (f) Any and all persons, companies, firms, associations, or corporations who supply both work and materials;

and whose claim has not been paid by said Principal(s), in full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which will and truly to be made, said Principal(s) and said Surety do hereby bind themselves and their respective heirs, executors, administrators, representatives, successors and assigns, jointly and severally, firmly by these presents.

**LABOR AND MATERIAL BOND (CONTINUED)**

**THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, THAT: WHEREAS,** said Principal(s) have/has entered into or are/is about to enter into a certain written contract or agreement, dated as of the \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_, with the City of Torrance for the Construction of **Walteria Reservoir Slope Stability Project, C.I.P. No. I-95, B2010-17**, all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

**NOW, THEREFORE,** if the said Principal(s) (or any of his/her, its, or their subcontractors) under said contract or agreement fails or fail to pay:

- (1) For any materials, provisions, provender, transportation, appliances, or power, or other supplies; or
- (2) For the hire of any teams, equipment, implements, or machinery; or
- (3) For any work or labor; supplies, furnished, provided, used, done or performed in, upon, for or about or in connection with the said work or improvement; or
- (4) For amounts due under the Unemployment Insurance Act of the State of California with respect to such work or improvement;

the Surety on this bond will pay the same in an amount not exceeding the sum hereinabove specified in this bond; and, also, in case suit is brought upon this bond, said Surety will (and does hereby agree to) pay a reasonable attorney's fee, to be fixed and taxed as costs, and included in the judgment therein rendered.

This bond shall (and it is hereby made to) insure to the benefit of any and all persons entitled to file claims under Section 1192.1 of the Code of Civil Procedure of the State of California, so as to give a right of action to them or their assigns in any suit brought upon this bond, all as contemplated under the provisions of Section 4205 of the Government Code, and of Chapter 1 of Title 4 of Part 3 of the Code of Civil Procedure, of the State of California.

This bond is executed and filed in connection with said contract or agreement hereunto attached to comply with each and all of the provisions of the laws of the State of California above mentioned or referred to, and of all amendments thereto, and the obligors so intend and do hereby bind themselves accordingly.

**LABOR AND MATERIAL BOND (CONTINUED)**

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration, or addition to said contract or agreement, or of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or thereunder.

**EXECUTED, SEALED AND DATED** this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_

CORPORATE SEAL

PRINCIPAL:

BY \_\_\_\_\_

CORPORATE SEAL

SURETY:

BY \_\_\_\_\_

## PUBLIC WORKS AGREEMENT

This PUBLIC WORKS AGREEMENT (“Agreement”) is made and entered into as of DATE (the “Effective Date”), by and between the CITY OF TORRANCE, a municipal corporation (“CITY”), and CONTRACTOR NAME, type of entity (“CONTRACTOR”).

### RECITALS:

- A. The CITY wishes to retain the services of an experienced and qualified CONTRACTOR to construct the **Walteria Reservoir Slope Stability Project, C.I.P. No. I-95.**;
- B. In order to obtain the desired services, The CITY has circulated a Notice Inviting Bids for the construction of the **Walteria Reservoir Slope Stability Project, C.I.P. No. I-95. Notice Inviting Bids No. B2010-17** (the “NIB”); and
- C. CONTRACTOR has submitted a Bid (the “Bid”) in response to the NIB. CONTRACTOR represents that it is qualified to perform those services requested in the Plans and Specifications. Based upon its review of all Bids submitted in response to the NIB, The CITY is willing to award the contract to CONTRACTOR.

### AGREEMENT:

#### 1. SERVICES TO BE PERFORMED BY CONTRACTOR

CONTRACTOR will provide the services and install those materials listed in the Plans and Specifications, which are on file in the Engineering Department. The NIB and the Plans and Specifications are made a part of this Agreement. A copy of the Bid is attached as Exhibit A.

#### 2. TERM

Unless earlier terminated in accordance with Paragraph 4 below, this Agreement will continue in full force and effect for two years from the Effective Date.

#### 3. COMPENSATION

- A. CONTRACTOR’s Fee.

For services rendered pursuant to this Agreement, CONTRACTOR will be paid in accordance with CONTRACTOR’s Bid; provided, however, that in no event will the total amount of money paid the CONTRACTOR, for services initially contemplated by this Agreement, exceed the sum of \$INSERT DOLLAR AMOUNT (“Agreement Sum”), unless otherwise first approved in writing by the CITY.

B. Schedule of Payment.

Provided that the CONTRACTOR is not in default under the terms of this Agreement, upon presentation of an invoice, CONTRACTOR will be paid monthly, within 30 days after the date of the monthly invoice.

**4. TERMINATION OF AGREEMENT**

A. Termination by CITY for Convenience.

1. CITY may, at any time, terminate the Agreement for CITY's convenience and without cause.
2. Upon receipt of written notice from CITY of such termination for CITY's convenience, CONTRACTOR will:
  - a) cease operations as directed by CITY in the notice;
  - b) take actions necessary, or that CITY may direct, for the protection preservation of the work; and
  - c) except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
3. In case of such termination for CITY's convenience, CONTRACTOR will be entitled to receive payment for work executed; and costs incurred by reason of such termination, along with reasonable overhead and profit on the work not executed.

B. Termination for Cause.

1. If either party fails to perform any term, covenant or condition in this Agreement and that failure continues for 15 calendar days after the nondefaulting party gives the defaulting party notice of the failure to perform, this Agreement may be terminated for cause; provided, however, that if during the notice period the defaulting party has promptly commenced and continues diligent efforts to remedy the default, the defaulting party will have such additional time as is reasonably necessary to remedy the default.
2. In the event this Agreement is terminated for cause by the default of the CONTRACTOR, the CITY may, at the expense of the CONTRACTOR and its surety, complete this Agreement or cause it to be completed. Any check or bond delivered to the CITY in connection with this Agreement, and the money payable thereon, will be forfeited to and remain the property of the CITY. All moneys due the CONTRACTOR under the terms of this Agreement will be retained by the CITY, but the

retention will not release the CONTRACTOR and its surety from liability for the default. Under these circumstances, however, the CONTRACTOR and its surety will be credited with the amount of money retained, toward any amount by which the cost of completion exceeds the Agreement Sum and any amount authorized for extra services.

3. Termination for cause will not affect or terminate any of the rights of the CITY as against the CONTRACTOR or its surety then existing, or which may thereafter accrue because of the default; this provision is in addition to all other rights and remedies available to the CITY under law.

#### C. Termination for Breach of Law.

In the event the CONTRACTOR or any of its officers, directors, shareholders, employees, agents, subsidiaries or affiliates is convicted (i) of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of a contract or subcontract; (ii) under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a public consultant or contractor; (iii) under state or federal antitrust statutes arising out of the submission of bids or proposals; or (iv) of violation of Paragraph 19 of this Agreement; or for any other cause the CITY determines to be so serious and compelling as to affect CONTRACTOR's responsibility as a public consultant or contractor, including but not limited to, debarment by another governmental agency, then the CITY reserves the unilateral right to terminate this Agreement or to impose such other sanctions (which may include financial sanctions, temporary suspensions or any other condition deemed appropriate short of termination) as it deems proper. The CITY will not take action until CONTRACTOR has been given notice and an opportunity to present evidence in mitigation.

## 5. **FORCE MAJEURE**

If any party fails to perform its obligations because of strikes, lockouts, labor disputes, embargoes, acts of God, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or hostile governmental action, civil commotion, fire or other casualty, or other causes beyond the reasonable control of the party obligated to perform, then that party's performance shall be excused for a period equal to the period of such cause for failure to perform.

**6. RETENTION OF FUNDS**

CONTRACTOR authorizes the CITY to deduct from any amount payable to CONTRACTOR (whether or not arising out of this Agreement) any amounts the payment of which may be in dispute or that are necessary to compensate the CITY for any losses, costs, liabilities, or damages suffered by the CITY, and all amounts for which the CITY may be liable to third parties, by reason of CONTRACTOR's negligent acts or omissions or willful misconduct in performing or failing to perform CONTRACTOR's obligations under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by CONTRACTOR, or any indebtedness exists that appears to be the basis for a claim of lien, the CITY may withhold from any payment due, without liability for interest because of the withholding, an amount sufficient to cover the claim. The failure of the CITY to exercise the right to deduct or to withhold will not, however, affect the obligations of CONTRACTOR to insure, indemnify, and protect the CITY as elsewhere provided in this Agreement.

**7. THE CITY'S REPRESENTATIVE**

The Public Works Director is designated as the "City Representative," authorized to act in its behalf with respect to the work and services specified in this Agreement and to make all decisions in connection with this Agreement. Whenever approval, directions, or other actions are required by the CITY under this Agreement, those actions will be taken by the City Representative, unless otherwise stated. The City Manager has the right to designate another City Representative at any time, by providing notice to CONTRACTOR.

**8. CONTRACTOR REPRESENTATIVE(S)**

The following principal(s) of CONTRACTOR are designated as being the principal(s) and representative(s) of CONTRACTOR authorized to act in its behalf with respect to the work specified in this Agreement and make all decisions in connection with this Agreement:

Representative 1  
Representative 2

**9. INDEPENDENT CONTRACTOR**

The CONTRACTOR is, and at all times will remain as to the CITY, a wholly independent contractor. Neither the CITY nor any of its agents will have control over the conduct of the CONTRACTOR or any of the CONTRACTOR's employees, except as otherwise set forth in this Agreement. The CONTRACTOR may not, at any time or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of the CITY.

**10. BUSINESS LICENSE**

The CONTRACTOR must obtain a City business license prior to the start of work under this Agreement, unless CONTRACTOR is qualified for an exemption.

**11. OTHER LICENSES AND PERMITS**

CONTRACTOR warrants that it has all professional, contracting and other permits and licenses required to undertake the work contemplated by this Agreement.

**12. FAMILIARITY WITH WORK**

By executing this Agreement, CONTRACTOR warrants that CONTRACTOR (a) has thoroughly investigated and considered the scope of services to be performed, (b) has carefully considered how the services should be performed, and (c) fully understands the facilities, difficulties and restrictions attending performance of the services under this Agreement. If the services involve work upon any site, CONTRACTOR warrants that CONTRACTOR has or will investigate the site and is or will be fully acquainted with the conditions there existing, prior to commencement of services set forth in this Agreement. Should CONTRACTOR discover any latent or unknown conditions that will materially affect the performance of the services set forth in this Agreement, CONTRACTOR must immediately inform the CITY of that fact and may not proceed except at CONTRACTOR's risk until written instructions are received from the CITY.

**13. CARE OF WORK**

CONTRACTOR must adopt reasonable methods during the life of the Agreement to furnish continuous protection to the work, and the equipment, materials, papers, documents, plans, studies and other components to prevent losses or damages, and will be responsible for all damages, to persons or property, until acceptance of the work by the CITY, except those losses or damages as may be caused by the CITY's own negligence.

**14. CONTRACTOR'S ACCOUNTING RECORDS; OTHER PROJECT RECORDS**

Records of the CONTRACTOR's time pertaining to the project, and records of accounts between the CITY and the CONTRACTOR, will be kept on a generally recognized accounting basis. CONTRACTOR will also maintain all other records, including without limitation specifications, drawings, progress reports and the like, relating to the project. All records will be available to the CITY during normal working hours. CONTRACTOR will maintain these records for three years after final payment.

**15. INDEMNIFICATION**

CONTRACTOR will indemnify, defend, and hold harmless CITY, the City Council, each member thereof, present and future, its officers, agents and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages whatsoever, including, but not limited to, those arising from breach of contract, bodily injury, death, personal injury, property damage, loss of use, or property loss however the same may be caused and regardless of the responsibility for negligence. The obligation to indemnify, defend and hold harmless includes, but is not limited to, any liability or expense, including defense costs and legal fees, arising from the negligent acts or omissions, or willful misconduct of CONTRACTOR, its officers, employees, agents, subcontractors or vendors. It is further agreed, CONTRACTOR's obligations to indemnify, defend and hold harmless will apply even in the event of concurrent negligence on the part of CITY, the City Council, each member thereof, present and future, or its officers, agents and employees, except for liability resulting solely from the negligence or willful misconduct of CITY, its officers, employees or agents. Payment by CITY is not a condition precedent to enforcement of this indemnity. In the event of any dispute between CONTRACTOR and CITY, as to whether liability arises from the sole negligence of the CITY or its officers, employees, agents, subcontractors or vendors, CONTRACTOR will be obligated to pay for CITY's defense until such time as a final judgment has been entered adjudicating the CITY as solely negligent. CONTRACTOR will not be entitled in the event of such a determination to any reimbursement of defense costs including but not limited to attorney's fees, expert fees and costs of litigation.

**16. NON-LIABILITY OF THE CITY'S OFFICERS AND EMPLOYEES**

No officer or employee of the CITY will be personally liable to CONTRACTOR, in the event of any default or breach by the CITY or for any amount that may become due to CONTRACTOR.

**17. INSURANCE**

A. CONTRACTOR must maintain at its sole expense the following insurance, which will be full coverage not subject to self insurance provisions:

1. Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
  - a. Combined single limits of \$2,000,000 per occurrence.
2. General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$3,000,000 per occurrence, with an annual aggregate of no less than \$5,000,000.

3. Workers' Compensation with limits as required by the State of California and Employers Liability with limits of at least \$1,000,000.
- B. The insurance provided by CONTRACTOR will be primary and non-contributory.
- C. The CITY of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer must be named as additional insureds under the automobile and general liability policies.
- D. CONTRACTOR must provide certificates of insurance and/or endorsements to the City Clerk of the City of Torrance before the commencement of work.
- E. Each insurance policy required by this Paragraph must contain a provision that no termination, cancellation or change of coverage can be made without thirty days notice to the CITY.
- F. CONTRACTOR must include all subcontractors as insureds under its policies or must furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors will be subject to all of the requirements of this Paragraph 17.

**18. SUFFICIENCY OF INSURERS**

Insurance required by this Agreement will be satisfactory only if issued by companies admitted to do business in California, rated "B+" or better in the most recent edition of Best's Key Rating Guide, and only if they are of a financial category Class VII or better, unless these requirements are waived by the Risk Manager of the CITY ("Risk Manager") due to unique circumstances. In the event the Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the CITY, the CONTRACTOR agrees that the minimum limits of any insurance policies and/or the performance bond required by this Agreement may be changed accordingly upon receipt of written notice from the Risk Manager; provided that CONTRACTOR will have the right to appeal a determination of increased coverage by the Risk Manager to the City Council of the CITY within 10 days of receipt of notice from the Risk Manager.

**19. CONFLICT OF INTEREST**

- A. No officer or employee of the CITY may have any financial interest, direct or indirect, in this Agreement, nor may any officer or employee participate in any decision relating to the Agreement that effects the officer or employee's financial interest or the financial interest of any corporation,

partnership or association in which the officer or employee is, directly or indirectly interested, in violation of any law, rule or regulation.

- B. No person may offer, give, or agree to give any officer or employee or former officer or employee, nor may any officer or employee solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any way pertaining to any program requirement, contract or subcontract, or to any solicitation or proposal.

## 20. **NOTICE**

- A. All notices, requests, demands, or other communications under this Agreement will be in writing. Notice will be sufficiently given for all purposes as follows:
1. Personal delivery. When personally delivered to the recipient: notice is effective on delivery.
  2. First Class mail. When mailed first class to the last address of the recipient known to the party giving notice: notice is effective three mail delivery days after deposit in an United States Postal Service office or mailbox.
  3. Certified mail. When mailed certified mail, return receipt requested: notice is effective on receipt, if delivery is confirmed by a return receipt.
  4. Overnight delivery. When delivered by an overnight delivery service, charges prepaid or charged to the sender's account: notice is effective on delivery, if delivery is confirmed by the delivery service.
  5. Facsimile transmission. When sent by fax to the last fax number of the recipient known to the party giving notice: notice is effective on receipt. Any notice given by fax will be deemed received on the next business day if it is received after 5:00 p.m. (recipient's time) or on a non-business day.

7. Addresses for purpose of giving notice are as follows:

CONTRACTOR: **CONTRACTOR'S NAME AND ADDRESS**

Fax: INSERT FAX NUMBER

CITY: City Clerk  
City of Torrance  
3031 Torrance Boulevard  
Torrance, CA 90509-2970  
Fax: (310) 618-2931

with a copy to: Attn: John Dettle  
Public Works Department  
City of Torrance  
20500 Madrona Aveune  
Torrance, CA 90503  
Fax: (310)781-6902

- B. Any correctly addressed notice that is refused, unclaimed, or undeliverable because of an act or omission of the party to be notified, will be deemed effective as of the first date the notice was refused, unclaimed or deemed undeliverable by the postal authorities, messenger or overnight delivery service.
- C. Either party may change its address or fax number by giving the other party notice of the change in any manner permitted by this Agreement.

**21. PROHIBITION AGAINST ASSIGNMENT AND SUBCONTRACTING**

This Agreement and all exhibits are binding on the heirs, successors, and assigns of the parties. The Agreement may not be assigned or subcontracted by either the CITY or CONTRACTOR without the prior written consent of the other.

**22. INTEGRATION; AMENDMENT**

This Agreement represents the entire understanding of the CITY and CONTRACTOR as to those matters contained in it. No prior oral or written understanding will be of any force or effect with respect to the terms of this Agreement. The Agreement may not be modified or altered except in writing signed by both parties.

**23. INTERPRETATION**

The terms of this Agreement should be construed in accordance with the meaning of the language used and should not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction that might otherwise apply.

**24. SEVERABILITY**

If any part of this Agreement is found to be in conflict with applicable laws, that part will be inoperative, null and void insofar as it is in conflict with any applicable laws, but the remainder of the Agreement will remain in full force and effect.

**25. TIME OF ESSENCE**

Time is of the essence in the performance of this Agreement.

**26. GOVERNING LAW; JURISDICTION**

This Agreement will be administered and interpreted under the laws of the State of California. Jurisdiction of any litigation arising from the Agreement will be in Los Angeles County, California.

**27. COMPLIANCE WITH STATUTES AND REGULATIONS**

CONTRACTOR will be knowledgeable of and will comply with all applicable federal, state, county and city statutes, rules, regulations, ordinances and orders.

**28. WAIVER OF BREACH**

No delay or omission in the exercise of any right or remedy by a nondefaulting party on any default will impair the right or remedy or be construed as a waiver. A party's consent or approval of any act by the other party requiring the party's consent or approval will not be deemed to waive or render unnecessary the other party's consent to or approval of any subsequent act. Any waiver by either party of any default must be in writing and will not be a waiver of any other default concerning the same or any other provision of this Agreement.

**29. ATTORNEY'S FEES**

Except as provided for in Paragraph 15, in any dispute, litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party will be awarded reasonable attorney's fees, together with any costs and expenses, to resolve the dispute and to enforce any judgment.

**30. EXHIBITS**

All exhibits identified in this Agreement are incorporated into the Agreement by this reference.

**31. CONTRACTOR'S AUTHORITY TO EXECUTE**

The persons executing this Agreement on behalf of the CONTRACTOR warrant that (i) the CONTRACTOR is duly organized and existing; (ii) they are duly authorized to execute this Agreement on behalf of the CONTRACTOR; (iii) by so executing this Agreement, the CONTRACTOR is formally bound to the provisions of this Agreement; and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which the CONTRACTOR is bound.

CITY OF TORRANCE,  
a Municipal Corporation

FIRM NAME  
TYPE OF ENTITY

\_\_\_\_\_  
Frank Scotto, Mayor

By: \_\_\_\_\_  
SIGNER, TITLE

ATTEST:

\_\_\_\_\_  
Sue Herbers, City Clerk

APPROVED AS TO FORM:

JOHN L. FELLOWS III  
City Attorney

By: \_\_\_\_\_

Deputy City Attorney

Attachments: Exhibit A: Bid

**EXHIBIT A**

**Bid**

**[To be attached]**

**CITY OF TORRANCE  
CONSTRUCTION OR SERVICE CONTRACT ENDORSEMENT**

To be attached to and made a part of all policies insuring the liability of any person, form or corporation performing services under contract for the City of Torrance.

Notwithstanding any inconsistent expression in the policy to which this endorsement is attached, or in any other endorsement now or hereafter attached thereto, or made a part thereof, the protection afforded by said policy shall:

1. Include the City of Torrance as an additional insured. (To include the elected officials, appointed officials, and employees.)
2. Indemnify and save harmless the City of Torrance against any and all claims resulting from the undertaking specified in the contract known as:

**PROPOSAL, SPECIFICATIONS, BOND AND AFFIDAVIT  
FOR THE CONSTRUCTION OF  
WALTERIA RESERVOIR SLOPE STABILITY PROJECT, C.I.P. NO. I-95**

**B2010-17**

This hold harmless assumption on the part of the underwriters shall include all costs of investigation and defense, including claims based on damage to substructures not shown, not located on the plans, or shown incorrectly.

3. Not be cancelled except by notice to the City Attorney of the City of Torrance at least thirty (30) days prior to the date of cancellation.
4. Provide single limit for Bodily Injury Liability and Property Damage Liability combined, \$1,000,000 each Occurrence, and \$1,000,000 Aggregate.
5. Limited classifications, restricting endorsements, exclusions or other special provisions contained in the policy shall not act to limit the benefits of coverage as they shall apply to the City of Torrance as enumerated in this endorsement. However, nothing herein contained shall affect any rights of the insurer against the insured.
6. It is further expressly agreed by and between the parties hereto that the following two provisions, (a) and (b), are a part of this contract:
  - (a) That the Contractor specifically agrees to comply with applicable provisions of Section 1777.5 of the Labor Code relating to the employment by contractor or subcontractor under it, of journeyman or apprentices, or workmen, in any apprenticeable craft or trade.

- (b) By my signature hereunder, as Contractor, I certify that I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Workers' 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.

The limits of liability as stated in this endorsement apply to the insurance afforded by this endorsement notwithstanding that the policy may have lower limits of liability applying elsewhere in the policy.

\_\_\_\_\_  
Duly Authorized Agent

Attached to and forming part of  
Policy No. \_\_\_\_\_  
of the \_\_\_\_\_

Date: \_\_\_\_\_  
Expiration Date: \_\_\_\_\_

**WORKERS' COMPENSATION INSURANCE CERTIFICATION**

In compliance with Section 7-4 of the Standard Specifications, the Contractor shall complete and submit the following certification with a Certificate of Insurance before execution of the contract.

I am aware of, and will comply with, Section 3700 of the Labor Code, requiring every employer to be insured against liability for Workers' Compensation or to undertake self-insurance before commencing any of the work.

\_\_\_\_\_  
CONTRACTOR

By: \_\_\_\_\_

Title: \_\_\_\_\_

## **SECTION E**

### **SPECIAL PROVISIONS**

**The following general Special Provisions supplement and amend the Standard Specifications for Public Works Construction (latest edition) and the Standard Specifications of the State of California Department of Transportation (Caltrans), latest edition, as noted herein. These Special Provisions have been arranged into a format that parallels the Standard Specifications for Public Works Construction.**

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# PART 1 - GENERAL PROVISIONS

## SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

**1-2 DEFINITIONS.** Add or redefine the following:

**Agency** – The City of Torrance, herein referred to as CITY.

**Board** – The City Council of the City of Torrance, herein referred to as City Council.

**Engineer** –The Public Works Director of the City of Torrance, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

**Claim** – A separate demand by the Contractor for (A) a time extension, (B) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the Agency.

### 1-3 ABBREVIATIONS

#### 1-3.2 Common Usage:

Add the following abbreviations:

Approx	Approximate
ARHM	Asphalt rubber hot mix
CA	City Arborist
Exist.	Existing
L.A.C.D.P.W.	Los Angeles County Department of Public Works
Med.	Median
M.L.	Main Line
OH	Overhead
Ped.	Pedestrian
Reconst.	Reconstruct
Temp.	Temporary
Theo.	Theoretical
WM	Wire mesh or water meter

## **SECTION 2 - SCOPE AND CONTROL OF THE WORK**

**2-1 AWARD AND EXECUTION OF CONTRACT.** Replace the entire subsection with the following:

Within ten (10) working days after the date of the CITY'S award of contract, the Contractor shall execute and return all Contract Documents required by the CITY. The CITY reserves the right to terminate the award if the above requirement is not met. Such termination will result in the forfeiture of the Proposal Guaranty.

The Contract shall not be considered binding upon the CITY until executed by the authorized CITY officials.

### **2-3 SUBCONTRACTS**

**2-3.2 Additional Responsibility.** Replace the second sentence of the second paragraph with the following:

The following work will be considered as "Specialty Items":

- Grading
- Landscaping
- Irrigation

**2-4 CONTRACT BONDS.** Revise the second sentence of the fourth paragraph to read as follows:

The "Performance Bond" shall remain in effect for one year following the date specified in the Notice of Completion or, if no Notice of Completion is recorded, for one year following the date of final acceptance by the Engineer.

### **2-5. PLANS AND SPECIFICATIONS.**

**2-5.1 General.** Add the following sentence to the first paragraph to read as follows:

The Contractor shall maintain a control set of Plans and Specifications on the Work site at all times. All final locations determined in the field, and any deviations from the Plans and Specifications, shall be marked in red on this control set to show as-built conditions. Upon completion of the Work, the Contractor shall submit the control set to the Engineer for approval. Final payment will not be made until this requirement is met.

Add the following subsections:

**2-5.1.1 Plans.** Included as part of the Contract Documents are the following, which show the location, character, dimensions or details of the Work:

1) Project Plans

The plans and data provided with the Contract Documents are based on existing plans and documents. The plans and data are provided for information only. The Owner does not guarantee their accuracy and correctness. If the Bidder in preparing the Bid Proposal uses this information, the Bidder assumes all risks resulting from conditions different from the information shown. The Bidder, in consideration for the information being provided, hereby releases the Owner from any responsibility of obligation as to the accuracy of such information or for any additional compensation for work performed due to assumptions based on the use of such information.

2) Standard Plans

- a. City of Torrance Standard Plans, latest edition
- b. Standard Plans for Public Works Construction, latest edition, promulgated by Public Works Standards, Inc.

Applicable Standard Plans for this project are included in the Appendices of these Specifications.

**2-5.1.2 Specifications.** The Work shall be performed or executed in accordance with these Special Provisions and the following:

- 1) Standard Specifications for Public Works Construction, latest edition and supplements thereto, hereinafter referred to as the Standard Specifications, as written and promulgated by Public Works Standards, Inc. The Standard Specifications are published by BNi Building News, Inc., 1612 South Clementine Street, Anaheim, CA 92802, Phone: (800) 873-6397.
- 2) American Water Works Association Standards, latest edition.
- 3) Standard Plans for Public Works, latest edition and supplements hereto
- 4) City of Torrance Standard Plans, latest edition

**2-5.2 Precedence of Contract Documents.** Replace the entire subsection with the following:

If there is a conflict between any of the Contract Documents, the document highest in precedence shall control. The order of precedence shall be as follows:

- 1) Permits issued by other agencies.
- 2) Change Orders (including Plans and Specifications attached thereto).

- 3) Public Works Agreement
- 4) Addenda
- 5) Special and General Provisions
- 6) Plans
- 7) City Standard Plans
- 8) Other Standard Plans
- 9) Standard Specifications for Public Works Construction
- 10) Reference Specifications

With reference to the Plans/Drawings, the order of precedence is as follows:

- 1) Change Order plans govern over Addenda and Contract plans
- 2) Addenda plans govern over Contract plans
- 3) Contract plans govern over standard plans
- 4) Detail plans govern over general plans
- 5) Figures govern over scaled dimensions

Within the Specifications, the order of precedence is as follows:

- 1) Change Orders
- 2) Permits from other agencies/Supplemental Agreements
- 3) Special Provisions
- 4) Instruction to Bidders
- 5) Referenced Standard Plans
- 6) Referenced Standard Specifications

If the Contractor, in the course of the Work, becomes aware of any claimed errors or omissions in the Contract Documents or in the CITY's fieldwork, the Contractor shall immediately inform the Engineer. The Engineer shall promptly review the matter, and if the Engineer finds an error or omission has been made the Engineer shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the Contract, the CITY shall issue an appropriate Change Order in accordance with 3-3. After discovery of an error or omission by the Contractor, any related work performed by the Contractor shall be done at the Contractor's risk unless authorized by the Engineer.

### **2-5.3 Submittals**

#### **2-5.3.2 Working Drawings.**

Revise the fourth paragraph of the Standard Specifications to read as follows:

Shop drawings listed as, if required, shall be prepared, wet stamped, and signed by a Civil or Structural Engineer registered by the State of California.

**2-5.3.3 Supporting Information.** Replace the second paragraph with the following:

Submittals are required for the following:

- 1) Contractor's experience
- 2) Contractor's Key Personnel
- 3) Construction Survey
- 4) Drilling Method
- 5) Nail Grout Placement Procedures and Equipment
- 6) Shotcrete Materials and Methods
- 7) Soil Nail Testing Methods and Equipment Setup
- 8) Manufacturer Certificate of Compliance for the Soil Nails
- 9) Segmental Retaining Wall System
- 10) Geogrid Reinforcing
- 11) Erosion Control Fabric
- 12) Construction and Excavation Plan
- 13) Irrigation System Modifications
- 14) Landscaping

In addition to the above, submittals may be required for any product, manufactured item, or system not specifically listed above.

**2-6 WORK TO BE DONE.** Add the following:

The Work generally consists of the construction of one of three slope stabilization methods, landscaping, irrigation, drainage and slurry seal as shown on City of Torrance Plan No. WP-280 (sheets 1 through 12) and all other incidental work in this specification document.

**2-7 SUBSURFACE DATA.** Add the following:

Geotechnical investigation reports associated with this project (Leighton, 2005, and Geo-Environmental, 2009) are referenced and are available for review at the office of the Engineer.

**2-9 SURVEYING.**

**2-9.2 Survey Service.** Replace the entire subsection with the following:

All construction surveying necessary to complete the Work shown on the Plans and provided in these Contract Documents shall be accomplished by or under the direction of a Registered Land Surveyor or Registered Civil Engineer authorized to practice land surveying in the State of California, retained or provided by the Contractor. The CITY reserves the right to direct additional construction survey work be performed at no additional cost when the City determines it is required to adequately construct the Work.

The Contractor shall notify the Engineer in writing at least 2 working days prior to the actual survey. The Contractor shall provide the traffic control necessary for construction

surveying.

Stakes shall be set and stationed by the Contractor for curbs, v-ditches, rough grade, and other items as necessary. A corresponding cut or fill to finished grade (or flow line) shall be indicated on a grade sheet. A copy of each grade sheet shall be furnished to the Engineer. If any construction survey stakes are lost or disturbed and need to be replaced, such replacement shall be by the Contractor at its expense.

Construction stakes shall be set for the following:

- a. All slopes greater than 10 percent, a square grid no wider than 50 feet shall be used, but in any case, a line at the crest, midpoint, and toe of the slope should be taken.
- b. A line of survey points no further than 50 feet apart must be taken along any slope break.
- c. A line of survey points no further than 50 feet apart must be taken at centerline of any v-ditch.

The Contractor shall submit to the City within 2 days after completion of each respective survey, setting of each stake and heading check a copy of the survey notes and calculations certified by the licensed Land Surveyor for the following:

- a. Level and horizontal control circuit for survey control.
- b. V-ditch heading checks.

All costs for construction survey staking including construction staking, professional services, office calculations, furnishing all labor, materials, equipment, tools and incidentals, and for doing all work involved shall be considered as included in the price for which such work is appurtenant thereto, and no additional allowance will be made therefor.

Payment for construction surveying shall be on a lump sum basis per the Contract Unit Price. When the Contract does not include a pay item for construction surveying as specified above, and unless otherwise provided in these Special Provisions, full compensation for construction surveying required to complete the Work shall be included in the bid price for the appurtenant items of work.

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

Failure of the Contractor to comply with the requirements of the Contract Documents, or to follow the directions of the Engineer, and/or to immediately remedy such noncompliance or to follow directions, may, upon notice from the Engineer, result in the suspension of the Contract monthly progress payments. Any monthly progress payments so suspended may remain in suspension until the Contractor is in compliance with the Contract Documents and the directions of the Engineer, as determined by the

Engineer.

**2-11 INSPECTION.** Replace the entire subsection with the following:

The Work is subject to inspection and approval by the Engineer. The Contractor shall notify the Engineer a minimum of 48 hours in advance of the required inspection.

The Engineer will make, or have made, such inspections and tests as he deems necessary to see that the Work is in conformance with the Contract Documents. In the event such inspections or tests reveal noncompliance with the Contract Documents, the Contractor shall bear the cost of such corrective measures as deemed necessary by the Engineer, as well as the cost of subsequent re-inspection and re-testing.

Work done in the absence of inspection by the Engineer may be required to be removed and replaced under the inspection of the Engineer, and the entire cost of removal and replacement, including the cost of all materials which may be furnished by the CITY and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered without the approval of the Engineer shall, if so directed by the Engineer, be uncovered to the extent required by the Engineer, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, including all costs for additional inspection.

The Engineer and any authorized representatives shall at all times have access to the Work during its construction at shops and yards as well as the Work site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with the Contract Documents.

Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

Add the following subsections:

**2-11.1 Special Inspection Fees.** If the Contractor elects to work under this Contract more than 8 hours/day or more than 40 hours/week, Saturday, Sunday, or CITY holidays, the Contractor shall arrange with the Engineer for the required inspection service and pay the Special Inspection Fees which will be charged at the following rates:

Mondays through Fridays - \$100.00 per hour  
Saturdays, Sundays, Holidays - \$1,000.00 per day

Fees may be deducted from payments due to the Contractor at the discretion of the Engineer.

If the Contractor works under this contract at times other than within the allowed

working hours without permission from or prior arrangement with the Engineer, the Contractor will be charged a lump sum amount of \$500.00 for each occurrence, in addition to the above fees. The amount will be deducted from a Progress Payment.

**2-11.2 Inspections During Construction.** During the construction, the Contractor shall make the Work site available for periodic inspections by the regulatory agencies.

**2-11.3 Material Inspection/Testing and other City Expenses.**

- (a) If a City subcontractor hired to perform material inspection and/or testing is required to work additional time to perform inspection and testing as a result of an action or delay caused by the Contractor, except for specific work allowed by the Engineer, the subcontractor may charge the City an additional fee. The Engineer may deduct the additional fee for said inspection and testing from a Progress Payment to the Contractor. The Engineer also may deduct the cost to perform additional testing when an initial test fails to meet the requirements of this Contract. The typical rates for material testing and inspection are available upon request from the Public Works Department.
- (b) If the Contractor does not comply with a requirement of these Special Provisions or if it does not respond, after being informed, to a request by the Engineer to amend a site condition that jeopardizes the public health, safety or welfare, the Engineer may direct City crews to perform the work. For each occurrence, the City may charge the Contractor a base charge in the amount of \$750 in addition to all costs incurred by City crews for labor, equipment and materials. The standard rates for City crews are available upon request from the Public Works Department.
- (c) For each sign, drum, barricade, warning device, flagger or other type of required traffic control device that is not provided in accordance with the approved Traffic Control Plans, unless otherwise authorized by the Engineer, the Engineer may deduct \$50 per day from a Progress Payment for each missing device. The deduction does not apply to a device that is fraudulently removed by non-construction personnel.
- (d) Temporary lane closures maintained prior to 8:30 A.M. and/or after 3:30 P.M. may have a negative economic effect on the local residential, commercial or industrial community. Unless a temporary lane closure is otherwise authorized, the Engineer may deduct a fee from a Progress Payment for each temporary lane closure maintained prior to 8:30 A.M. or after 3:30 P.M. The fee will be assessed at a rate of \$700 per each travel lane per each thirty (30) minute interval, or fraction thereof.

## SECTION 3 – CHANGES IN WORK

### 3-3 EXTRA WORK

#### 3-3.1 General. Add the following:

Payment for additional work and all expenditures in excess of the Contract Price must be authorized in writing by the Engineer. Such authorization shall be obtained by the Contractor prior to engaging in additional work. It shall be the Contractor's sole responsibility to obtain written approval from the Engineer for any change(s) in material or in the work proposed by suppliers or subcontractors. No payment shall be made to the Contractor for additional work which has not been approved in writing, and the Contractor hereby agrees that it shall have no right to additional compensation for any work not so authorized.

The Contractor shall be responsible to provide all data and to obtain all approvals required by the Specifications, including submittal of Daily Extra Work Reports. No claims or extras shall be approved by the Engineer unless all work was done under the direction of and subject to the approval of the Engineer. Disputed work claims shall comply with 3-3 as modified herein.

#### 3-3.2.2 Basis for Establishing Costs. Replace the second paragraph of part (c) with the following:

The Contractor will be paid for the use of equipment at the lower of the actual rental rates paid by the Contractor or the rental rates listed for such equipment in the "Rental Rate Blue Book" published by Dataquest, Inc., 1290 Ridder Park Drive, San Jose, California 95131; telephone (408) 971-9000, or the California Department of Transportation publication entitled "Labor Surcharge and Equipment Rates" available at the Caltrans web site, [www.dot.ca.gov/hq/eqsc/inforesources.htm](http://www.dot.ca.gov/hq/eqsc/inforesources.htm), which is in effect on the date upon which the work is accomplished, and that hereby is made a part of the Contract, regardless of ownership or any rental or other agreement, if such may exist, for the use of such equipment entered into by the Contractor. If it is deemed necessary by the Engineer to use equipment not listed in the said publication, a suitable rental rate will be established by the Engineer. The Contractor may furnish any cost data that might assist the Engineer in the establishment of such rental rate.

#### 3-3.2.3 Markup. Replace the entire subsection with the following:

The markups mentioned hereinafter shall include, but are not limited to, all costs for the services of superintendents, project managers, timekeepers and other personnel not working directly on the change order, and pickup or yard trucks used by the above personnel. These costs shall not be reported as labor or equipment elsewhere except when actually performing work directly on the change order and then shall only be reported at the labor classification of the work performed.

**(a) Work by Contractor.** The following percentages shall be added to the Contractor's costs and shall constitute the mark-up for all overhead and profit, which shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Subsections 3-3.2.2(a), 3-3.2.2(b), and 3-3.2.2(c).

Labor	20
Materials	15
Equipment Rental	15
Other Expenditures	15

To the sum of the costs and markups provided for in this subsection, one (1) percent shall be added as compensation for bonding.

**(b) Work by Subcontractor.** When any part of the extra work is performed by a subcontractor, the markup established in 3-3.2.3(a) shall be applied to the subcontractor's actual cost of such work. A markup of ten (10) percent on the first \$5,000 of the subcontracted portion of the extra work and a mark-up of 5 percent on work added in excess of \$5,000 of the subcontracted portion of the extra work may be added by the Contractor.

The markups specified in parts (a) and (b) above shall be considered as including, but not limited to, the Contractor's labor costs for personnel not working directly on the extra work, including the cost of any tools and equipment that they may use. Such costs shall not be reported as labor or equipment costs elsewhere except when they are actually used in the performance of the extra work. Labor costs shall in that case be reported for the labor classification corresponding to the type and nature of extra work performed.

### **3-4 CHANGED CONDITIONS.**

Add the following:

This subsection does not apply to utilities.

## **SECTION 4 – CONTROL OF MATERIALS**

### **4-1 MATERIAL AND WORKMANSHIP.**

#### **4-1.1 General.**

Add the following paragraph after the second paragraph:

If the work, or any portion thereof, shall be damaged in any way, or if any defective materials or faulty workmanship shall be discovered at any time prior to the final payment, the Contractor shall forthwith, at its own cost and expense, repair said damage, or replace such defective materials, or remedy such faulty workmanship in a manner satisfactory to the Engineer.

#### **4-1.2 Protection of Work and Materials.**

Add the following:

The Contractor shall assume all risks and expense of interference and delay in his operations, and the protection from or the repair of damage to improvements being built under the contract, as may be caused by water of whatever quantity from floods, storms, industrial waste, irrigation, underground or other sources. However, the Contractor shall be entitled to an extension of time in accordance with the provisions of Subsection 6-6. The Contractor shall also assume full responsibility and expense of protecting, or removing and returning to the site of Work, all equipment or materials under his care endangered by any action of the elements.

Furthermore, the Contractor shall indemnify and hold the City harmless from all claims or suits for damages arising from his operations in dewatering the Work and control of water.

## **SECTION 5 – UTILITIES**

### **5-1 LOCATION.** Add the following:

The Contractor shall provide coordination with all the utility companies involved and shall provide protection from damage to their facilities. The Contractor shall be responsible for repair or replacement to said facilities made necessary by its failure to provide required protection. The Contractor is required to include utility requirements in the Construction Schedule per Section 6-1.

The Contractor shall be solely responsible to check all utility record maps, books, and/or other data in the possession of the CITY, other agencies, and/or all utility companies, and no allowance shall be made for any failure to have done so.

The Contractor shall utilize the services of "Underground Service Alert-Southern California" for utility locating in all public right-of-ways by calling 1-800-227-2600 at least 48 hours prior to any excavation.

Underground lines that are potentially hazardous such as oil company lines, natural gas mains, and electrical conduits will be carefully located by the owner as provided in the Standard Specifications. The Contractor shall take special precautions in determining the precise location and depth of these structures to insure that they will not be damaged by its operations.

Substitute the following for the last paragraph:

Prior to starting construction, the Contractor shall be responsible to determine the location and depth of all utilities which have been marked by the respective owners and which may affect or be affected by its operations. The Contractor also shall determine the location and depth of each service connection, whether or not marked. Full compensation for such work shall be considered as included in the prices bid for other items or work. If a utility which was marked or a service connection is found to interfere with the work after construction has commenced, the Contractor shall be solely responsible for all costs of any delay and for any costs which could have been avoided if the Contractor had located the utility prior to start of construction.

**5-2 PROTECTION.** Add the following:

If, in the course of construction, the Contractor damages a sewer lateral or water lateral, the Contractor shall be responsible to completely expose said lateral from the main line to the point of connection at private property to verify integrity of all joints to the satisfaction of the Engineer. This shall not be considered to be extra work and no extra costs shall be allowed therefor.

Add the following after the final paragraph:

As noted in subsections 5-2.1, 5-2.2 and 5-2.3 utilities are classified and are to be handled in one of three ways by the Contractor in the course of performing the contract.

**5-2.1 Noninterfering Utilities**

Utilities that are not abandoned by the owner and do not physically interfere with the permanent work in its final location shall be supported, protected and maintained in place by the Contractor, and the Contractor shall be solely responsible for any damage, loss or injury, or death resulting from his/her failure to do so and the Contractor shall indemnify and hold harmless the City from any and all such consequences. Noninterfering utilities may, with the permission of the owner and the Public Works Director, be relocated still farther from the permanent work in its final locations, but the Contractor shall not so consider, in submitting his bid, unless the relocation is shown on the plans.

## **5-2.2 Abandoned Utilities**

Abandoned utilities are those portions of any utility which are no longer needed or desired by the owner and whose destruction is consented to by the owner and/or is permitted by notation on the plans. Abandoned utilities which physically interfere with the permanent work or with the construction thereof shall be removed by the Contractor and the Contractor shall be solely responsible for any damage, loss or injury, or death resulting from the removal and the Contractor shall indemnify and hold harmless the City from any and all such consequences.

## **5-2.3 Interfering Utilities**

Any utility shall be deemed an interfering utility (1) which physically occupies any part of the space to be occupied by the permanent work in its final locations, or (2) whose length within the theoretical width of excavation for the permanent work exceeds five times the width of said theoretical excavation whether or not the utility physically interferes with the permanent work. Interfering utilities that are not abandoned by the owner shall be relocated so as not to interfere with the permanent work in its final location. Such relocation will be performed by the owner or the City unless otherwise shown on the plans.

The Contractor shall exercise caution to prevent damage to or movement of the utilities while constructing the permanent work along and adjacent to the utilities.

**5-2.2 Protection of Underground Hazardous Utilities.** This Subsection shall apply to projects where there are underground utilities within the Work area which may be potentially hazardous if damaged. A hazardous substance shall be defined as one having the potential for an immediate disaster such as, but not limited to, gasoline, electricity, fuel oil, butane, propane, natural gas, chlorine or other chemicals.

Abandoned or inoperative utilities designed to carry hazardous substances and unidentified or unknown utilities shall be considered hazardous until determined otherwise. Whenever the Contractor is directed by the Engineer to tap these lines, the Contractor shall provide personnel specialized in this work and payment therefore will be considered as extra work per 3-3 of these Special Provisions.

The Contractor shall comply with the following requirements when working around underground hazardous utilities:

- 1)The Contractor shall not trench or excavate within the area where a utility known to carry a hazardous substance exists until its location has been determined by excavation or other proven methods acceptable to the Engineer. The intervals between exploratory excavations or location points shall be sufficient to determine the exact location of the line. Unless otherwise directed by the Engineer, excavation for underground hazardous utilities shall be performed by the Contractor and paid for as specified per 5-1 of these Special Provisions.

- 2) If it is determined that the horizontal or vertical clearance between the utility known to carry hazardous substances and the construction limit is less than 300 mm (12 inches) (450mm (18 inches) if scarifying), the Contractor shall confer with its owner. Unless the owner elects to relocate the line or take it out of service, the Contractor shall not excavate until the line has been completely exposed within the limits of construction.
- 3) Once the physical location of the utility known to carry hazardous substances has been determined, the Contractor, in cooperation with and with the concurrence of the utility owner, shall determine how to protect and/or support the utility from damage before proceeding with the Work.
- 4) During all excavation and trenching operations, the Contractor shall exercise extreme caution and protect the utilities from damage.
- 5) The Contractor shall notify the Engineer, the public agency maintaining records for the jurisdiction in which the Project is located and the owner, if known, whenever previously unidentified or unknown underground utilities are encountered so that the location can be accurately established and made a part of permanent substructure records.

Full compensation for protecting underground hazardous utilities as specified or noted on the Plans shall be considered as included in the prices bid for the various items of work.

### **5-3 REMOVAL**

Add the following:

It shall be the Contractor's responsibility irrespective of the notations on the plans to confirm or determine that a utility is to be abandoned before treating the same as an abandoned utility and shall assume all risks in so determining.

### **5-5 DELAYS.**

Substitute the following:

The Contractor is responsible for notifying the City in time to prevent delays attributable to utility relocations or alterations. The Contractor shall not be entitled to damage or additional payment, nor shall it be entitled to standby time for men or equipment if such delay does occur. The Engineer will determine the extent of the delay attributable to such interferences, the affect of the delay on the project as a whole, and any commensurate extension of time.

Any failure of the City and/or utility company to accomplish relocations in a reasonable manner in light of the Contractor's operations (to the extent such operations would otherwise be feasible and in accordance with the contract and as disclosed to the City prior to the Contractor encountering any such utility) shall entitle the Contractor to

an extension of contract time to the extent that, in the judgment of the Engineer, the Contractor's completion of the overall contract work has been delayed; however, the Contractor shall be entitled to no other remedy and, in submitting its bid, thereby waives such other remedies, if any, unless the relocation delay is the result of arbitrary, capricious or malicious conduct by the City.

## **SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK**

**6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK.** Replace the entire subsection with the following:

**6-1.1 General.** Within ten (10) working days after the date of the CITY's execution of the Contract, the Contractor shall submit a proposed construction schedule to the Engineer for approval. The schedule shall be in accordance with 6-1.2 and 6-1.3 and shall be in sufficient detail to show chronological relationship of all activities of the Work. These include, but are not limited to: estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials and scheduling of equipment.

Prior to issuing the Notice to Proceed, the Engineer will schedule a Pre-Construction Meeting with the Contractor to review the proposed construction schedule and delivery dates, arrange utility coordination and clarify inspection procedures.

Notwithstanding any other provisions of the Contract, the Contractor shall not be obligated to perform any work and the CITY shall not be obligated to accept or pay for any work performed by the Contractor prior to delivery of a Notice to Proceed. The CITY's knowledge of work being performed prior to delivery of the Notice to Proceed shall not obligate the CITY to accept or pay for such work. The Contractor shall provide all required Contract bonds and evidences of insurance prior to commencing work at the site.

**6-1.2 Criteria.** The construction schedule shall conform to the following criteria:

- 1) The schedule shall be prepared using the latest version of Primavera, Microsoft Project or approved equal.
- 2) Work activities shall be based on the items of work per 2-6, and the following:
  - a) Contract Unit Price items shall be subdivided into those portions to be constructed during each stage or phase of construction.
  - b) Lump sum items shall be subdivided into those portions to be constructed during each stage or phase of construction.
- 3) Utility relocations, if any, in coordination with the Contractor per 5-4 of these Special Provisions shall be considered as activities.

- 4) Required submittals and shop drawings, if any, shall be included as activities.
- 5) The procurement of construction materials and equipment with long lead times for deliveries shall be included as activities.
- 6) Work to be performed by subcontractors shall be identified and shown as work activities.
- 7) Start and completion dates of each activity shall be illustrated.
- 8) Completion of all Work under the Contract shall be within the time specified in 6-7 of these Special Provisions and in accordance with the Plans and Specifications.

**6-1.3 Requirements.** In preparing the construction schedule, the following items shall be considered:

Sequence of Construction - The Contractor shall sequence the Work in a manner to expeditiously complete the project with a minimum of inconvenience to the adjacent owners and to conform to the following:

- 1) Tree and Stump removals per 300-1.3.2(d) are to be performed before concrete removals.
- 2) Concrete removal - All concrete and concrete blocks removed shall be hauled off the Work site no later than the calendar day following the day that the removal is performed.
- 3) Irrigation systems - Irrigation systems disrupted by the Contractor shall not be left inoperable for more than three working days, unless otherwise approved by the City.
- 4) Subsection 307-1.3 regarding the ordering of materials.
- 5) The proposed sequence of pavement construction. The Contractor may proceed with the pavement construction work after the completion of the slope stabilization and concrete work as listed above.
- 6) All Work shall only be performed between the hours of 7:00 a.m. and 3:30 p.m. unless otherwise approved by the Engineer.
- 7) A move-in period of 10 calendar days will be allowed starting on the date in the Notice to Proceed.

Should the Contractor fail to meet Requirements No. 1 through 7, the Engineer reserves the right to prohibit the Contractor from making further removals until the clean up, construction, or rehabilitation of sprinklers is in conformance with the aforementioned requirements. Furthermore, if after notice is given to the Contractor to perform work to meet these requirements, and the Contractor refuses or for any reason

fails to perform sufficiently to meet these schedules, CITY may perform said work and charge the Contractor for all costs incurred.

**6-1.4 Updates.** The Contractor shall submit 2 paper copies of the updated construction schedule to the Engineer on the first working day of each month.

If the Contractor decides to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the Contractor shall submit to the Engineer a revised construction schedule in advance of beginning revised operations.

Full compensation for complying with all requirements of Section 6-1.4 Updates shall be per the Contract Unit Price for Construction Schedule. If the Contractor fails to submit an updated Construction Schedule to the Engineer on the first working day of each month, the CITY will deduct one-fifth the amount of the Contract Unit Price for each work day after the due date, up to maximum of \$300, that each monthly schedule update is not submitted.

## **6-7 TIME OF COMPLETION.**

**6-7.1 General.** Replace the first sentence with the following:

Time shall be of the essence in the Contract. The Contractor shall begin Work after the mailing by the Engineer to the Contractor, first class mail, postage prepaid, a Notice to Proceed and shall diligently prosecute the same to completion within 180 working days from the start date specified in the Notice to Proceed and within 100 working days from start of work on-site.

**6-8 COMPLETION, ACCEPTANCE AND WARRANTY.** Replace the second paragraph with the following:

If, in the Engineer's judgment, the Work has been completed and is ready for acceptance, the Engineer will so certify and will determine the date when the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect the Work. The Engineer may cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office. At the Engineer's option, the Engineer may certify acceptance to the City Council who may then cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office.

Add the following subsection:

**6-8.1 Manufacturer's Warranties.** Manufacturer's warranties shall not relieve the Contractor of liability under these Specifications. Such warranties only shall supplement the Contractor's responsibility.

The Engineer may, at his option, require a manufacturer's warranty on any product offered for use.

**6-9 LIQUIDATED DAMAGES.** In each of the two paragraphs, substitute "\$1,000" in place of "\$250" as the amount of the liquidated damages per each consecutive calendar day.

## **SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR**

### **7-1 THE CONTRACTOR'S EQUIPMENT AND FACILITIES**

**7-1.1 General.** Add the following paragraph:

The staging location(s) for equipment and material shall be subject to the approval of the Engineer. No additional cost shall be allowed in the event that the Contractor is requested to move his staging area to a different location, regardless of the number of moves.

### **7-2 LABOR**

Add the following subsections:

#### **7-2.3 Payrolls and Payroll Records**

Any payroll and payroll records required for this project shall be submitted, for each week in which any contract work is performed, to the Engineer. A retention of \$5,000 per report per pay period will be withheld from a progress payment for a late or missing report. A report shall be deemed as late or missing when not submitted to the Engineer within 10 calendar days from the close of the pay period for which the report applies. In addition, a non-refundable deduction of \$100 per report per day will be deducted from payments due the Contractor for each late or missing report. The \$100 non-refundable deduction per day will be incurred beginning on the first day the report is late or missing.

#### **7-2.4 Subcontractor and DBE Records**

At the completion of the contract if the Contractor does not submit its Subcontractor and DBE Records to the Engineer a retention in the amount of \$10,000 per record will be withheld from a progress payment for a late or missing record. A record shall be deemed as late or missing when not submitted to the Engineer within 15 calendar days from the completion of the contract. In addition, a non-refundable deduction of \$300 per record per day will be deducted from payments due the Contractor for each late or missing record. The \$300 non-refundable deduction per day will be incurred beginning on the first day the record is late or missing.

**7-3 LIABILITY INSURANCE.** Replace the second sentence of the second paragraph with the following:

The Contractor must maintain at its sole expense the following insurance, which will be full coverage not subject to self-insurance provisions:

- 1) Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
  - a). Primary Bodily Injury with limits of at least \$500,000 per person, \$1,000,000 per occurrence; and
  - b). Primary Property Damage of at least \$250,000 per occurrence; or
  - c). Combined single limits of \$1,000,000 per occurrence.
- 2) General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$1,000,000 per occurrence.

Add the following:

The Contractor must include all subcontractors as insureds under its policies or must furnish separate certificates and endorsements for each subcontractor.

**7-4 WORKER'S COMPENSATION INSURANCE.** Add the following after the first sentence of the second paragraph:

Worker's Compensation Insurance shall be with limits as required by the State of California and Employer's Liability with limits of \$1,000,000 per accident.

**7-5 PERMITS.** Replace the second paragraph with the following:

The Contractor shall obtain a City of Torrance Business License and a no-fee Grading Permit before commencing construction. The Contractor shall obtain the permit from the Building and Safety Department before commencing work.

Full compensation for complying with the above requirements shall be considered as included in the prices bid for the appropriate items of work.

**7-6 The Contractor's Representative**

Add a third paragraph to the section stating the following:

The Contractor's Representative shall be approved by the CITY prior to the start of the Work. If the designated representative is rejected, the Contractor shall immediately designate another representative in writing and submit to the City for consideration. The CITY shall have the authority to require the Contractor to remove its representative and/or alternate representative at any time and at no cost to the CITY.

**7-8 PROJECT SITE MAINTENANCE.**

**7-8.1 Cleanup and Dust Control.** The second paragraph is amended to read:

Unless directed otherwise by the Engineer, the Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day to keep paved areas acceptably clean to the City whenever construction, including restoration, is incomplete.

**7-8.3 Noise Control.** Replace with the following:

A noise level limit of 86 Db at a distance of 50 feet shall apply to all construction equipment on or related to the project whether owned by the Contractor or not, unless a permit and variance has been obtained from the City. The use of excessively loud warning signals shall be avoided, except in those cases required for the protection of personnel.

**7-8.5 Temporary Light, Power, and Water.** Add the following:

The Contractor shall obtain a construction water meter from the CITY by calling Torrance Customer Service Operations ("CSO") at (310) 921-6449. A \$1,000 deposit is required and refundable upon return of the meter in good working condition. The Contractor shall pay for the water used, at the CITY's current water rates.

**7-8.6 Water Pollution Control.** Add the following subsections:

*(Note: For construction sites less than one acre, omit sections 7-8.6.1 and 7-8.6.2).*

**7-8.6.1 NPDES General Permit, Notice of Intent (NOI) and Notice of Termination (NOT).** Construction activities including clearing, grading and excavating that result in land disturbances of equal to or greater than one acre are covered by the National Pollutant Discharge Elimination System General Permit No CAS000002 (General Permit).

Construction activities for Small Linear Underground Projects (Small LUP) including clearing, grading and excavating that result in land disturbances greater than once acre and less than five acres are covered by the National Pollutant Discharge Elimination System General Permit No. CAS000005. Small LUP have been categorized into Tier I and Tier II. Tier I Small LUP typically do not have a high potential to impact storm water quality because they are constructed over a short period of time and not typically during a rain event. Tier II Small LUP have a higher potential to impact storm water quality because they (a) occur outside urban areas; (b) have larger areas of soil disturbance that are not closed by the end of day; (c) have on-site stockpiles of soil; (d) they occur in close proximity to sensitive resources which may include steep topography and/or waterbodies; and (e) have larger areas of disturbed soils exposed for longer time before final clean up.

A copy of the General Permit and Notice of Intent are included in the Appendix of these Specifications/Special Provisions.

This General Permit regulates pollutants in discharges of storm water associated with construction activity. To obtain authorization for proposed storm water discharges, pursuant to this General Permit, the Contractor must prepare a Notice of Intent (NOI) with a vicinity map and appropriate fee for submittal by the City to the State Regional Water Quality Control Board (SWQCB). The City shall sign the NOI, and the Contractor shall provide the check for the fee. Coverage under the General Permit shall not occur until the Contractor develops a Storm Water Pollution Prevention Plan (SWPPP), the SWPPP is approved by the City, and the NOI with map and fee are submitted to the SWQCB. The Contractor shall terminate coverage under the General Permit for a complete project by preparing a Notice of Termination (NOT) for the City to sign and submit to the Regional Water Quality Control Board (RWQCB) and when post construction storm water Best Management Practices (BMPs) are in place.

Full compensation for preparation of the NOI, NOT, vicinity map, required fees, construction, and post construction BMPs, sampling and analysis as required by the RWQCB and all other related costs shall be considered as included in the bid for Mobilization (or NPDES Compliance).

**7-8.6.2 Storm Water Pollution Prevention Plan (SWPPP).** Construction activities covered by the General Permit require submittal by the Contractor of a Storm Water Pollution Prevention Plan (SWPPP) prior to the start of any clearing, demolition, grading or excavation. A Storm Water Pollution Prevention Plan (SWPPP) shall be defined as a report that includes site map(s), identification of construction and contractor activities that could pollute storm water, and a description of measures and practices to control the potential pollutants. The preparation and implementation of the SWPPP is intended to ensure that the Contractor will make every reasonable effort to prevent the pollution of water resources during the period of construction. The size and nature of this Contract place it under the regulations of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharge Associated with Construction Activity. In the State of California, these regulations are adopted by the State Water Resources Control Board. These regulations require a SWPPP for any work where clearing, grading, and excavation result in a land disturbance of one or more acres. As a result, the Contractor shall prepare, submit to the CITY for review and approval, and implement a SWPPP for this Contract in compliance with these regulations.

The handbooks specified in 7-8.6.3 shall be followed and adhered to in preparing the SWPPP. The SWPPP shall be prepared under the supervision of, and signed by, a Civil Engineer registered by the State of California. The SWPPP shall include and incorporate BMPs that address contractor activities, erosion, and sedimentation control. The SWPPP shall also include and incorporate appropriate BMPs for run-off generated by construction activities and other non-storm water sources. During all periods of construction, excavated soils which are stored on-site shall be completely covered with waterproof material and sand (or gravel) bagged or bermed in order that, in the event of a storm, no soil becomes mixed with or transported by storm water run-off.

If, during construction operations, field conditions change in a manner which, in the opinion of the Engineer, significantly deviates from how the SWPPP, as approved by

the CITY, addressed the current construction operation, the Engineer may direct the Contractor to revise the current construction operation and/or the SWPPP. Such directions will be made in writing and will specify the items of work for which the SWPPP is inadequate. No further work on these items will be permitted until the Contractor revises the construction operations to the satisfaction of the Engineer and/or until the Contractor submits a revised SWPPP and receives CITY approval. The Engineer will notify the Contractor of the acceptance or rejection of the revised SWPPP within seven (7) working days from the date of submittal.

The SWPPP shall be submitted to the CITY for review and approval a minimum of fifteen (15) working days prior to the commencement of construction operations in accordance with 6-1 of these Special Provisions. The SWPPP shall remain on the construction site while site is under construction, during working hours, commencing with the initial construction activity and ending with Notice of Termination.

Full compensation for preparation of the SWPPP, revisions to the SWPPP, and all other related costs shall be considered as included in the bid price for Mobilization (or NPDES compliance or prices bid for the various items of work).

**7-8.6.3 Best Management Practices (BMPs).** Contractor shall comply with State Water Board Order No. 2009-0009-DWQ. Best Management Practices shall be defined as any program, technology, process, siting criteria, operating method, measure, or device which controls, prevents, removes, or reduces pollution. The Contractor shall obtain and refer to the California Storm Water Best Management Practice Handbooks, Volume 3 Construction BMP Handbook and the Los Angeles County Department of Public Works Best Management Practices Handbook for Construction Activities. These publications are available from:

Los Angeles County  
 Department of Public Works  
 Cashier's Office  
 900 S. Fremont Avenue  
 Alhambra, CA 91803  
 Telephone (626) 458-6959

The Contractor shall have a minimum of two (2) readily accessible copies of each publication on the Work site at all times.

The Contractor shall implement BMPs in conjunction with the following construction operation and activities:

CONSTRUCTION PRACTICES	Clearing, Grading and Excavating
	Water Conservation Practices

	Dewatering
	Paving Operations
	Structure Construction and Painting
MATERIAL MANAGEMENT	Material Delivery and Storage
	Material Use
	Spill Prevention and Control
WASTE MANAGEMENT	Solid Waste Management
	Hazardous Waste Management
	Contaminated Soil Management
	Concrete Waste Management
	Sanitary/Septic Waste Management
VEHICLE AND EQUIPMENT MANAGEMENT	Vehicle and Equipment Cleaning
	Vehicle and Equipment Fueling
	Vehicle and Equipment Maintenance

The Contractor shall implement the following BMPs in conjunction with the previously listed construction operation activities:

VEGETATIVE STABILIZATION	Scheduling of Planting
	Preservation of Existing Vegetation
	Temporary Seeding and Planting
	Mulching
PHYSICAL STABILIZATION	Geotextiles and Mats
	Soil Stabilizer/Dust Control
	Temporary Stream Crossing
	Stabilized Construction Roadway
	Stabilized Construction Entrance
RUNOFF DIVERSION	Sodding, Grass Plugging, and Vegetative Buffer strips
	Earth Dikes, Drainage Swales, and Lined Ditches
	Top and Toe of Slope Diversion Ditches/Berms
	Slope Drains and Subsurface Drains
VELOCITY REDUCTION	Flared Culvert End Sections
	Outlet Protection/Velocity Dissipation Devices
	Check Dams
	Slope Roughening/Terracing/Rounding

SEDIMENT TRAPPING	Slit Fences
	Straw Bale Barrier
	Sand Bag Barrier
	Brush or Rock Filter
	Storm Drain Inlet Protection
	Sediment Traps
	Sediment Basin

Additional BMPs may be required as a result of a change in actual field conditions, contractor activities, or construction operations. When more than one BMP is listed under each specific BMP category, the Contractor shall select the appropriate and necessary number of BMPs within each category in order to achieve the BMP objective.

BMPs for contractor activities shall be continuously implemented throughout the year. BMPs for erosion control and sedimentation shall be implemented during the period from October 15 to April 15, and whenever the National Weather Service predicts rain within 24 hours. BMPs for erosion control and sedimentation shall also be implemented prior to the commencement of any contractor activity or construction operation that may produce run-off, and whenever run-off from other sources may occur.

The CITY, as a permittee, is subject to enforcement actions by the State Water Resources Control Board, the Environmental Protection Agency and private citizens. The CITY may assess the Contractor a penalty of \$1,000 for each calendar day that the Contractor has not fully implemented the appropriate BMPs and/or is otherwise in noncompliance with these provisions. In addition, the CITY will deduct, from the final payment due the Contractor, the total amount of any fines levied on the CITY, plus legal and staff costs, as a result of the Contractor's lack of compliance with these provisions and/or less than complete implementation of the appropriate BMPs.

Full compensation for the implementation of BMPs, including the construction, removal, and the furnishing of all necessary labor, equipment, and materials, shall be considered as included in the price bid for Mobilization (or NPDES compliance or the various items of work).

Add the following subsections:

**7-8.8 Contractor's Storage Yard.** The Contractor shall be responsible for obtaining a storage yard for the duration of the Work. If the proposed location of the yard is located within the boundaries of the CITY, the Contractor shall obtain prior approval from the Engineer.

**7-8.9 Graffiti Removal.** The Contractor shall maintain the Work, all of its equipment, and all traffic control devices, including signage, free of graffiti throughout the duration of the Contract. The Contractor shall respond to any request from the Engineer to remove graffiti within 4 hours of notification. Should the Contractor fail to respond to

such request, the CITY reserves the right to make other arrangements for the requested graffiti removal and deduct the cost from any monies due the Contractor.

## **7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS.**

Add the following paragraphs:

The Contractor shall be responsible to protect all new concrete work from being etched, scratched or otherwise marked or having wet slough material deposited thereon. If new concrete work is marked, the Contractor shall replace it at its expense in accordance with 303-5.7 of these special provisions.

The Contractor shall relocate, repair, replace, or re-establish all existing improvements within the project limits which are not designated for removal (e.g. curbs, sidewalks, driveways, fences, walls, sprinkler systems, signs, utility installations, pavements, structures, etc.) which are damaged or removed as a result of his operations or as required by the Plans and Specifications.

The Contractor shall perform all private lawn, hardscape, and parkway restorations, (not included in the project plans) including restoration of irrigation systems and existing curb drains within five (5) days after the adjacent improvements have been constructed at his own expense. The Contractor shall not delay restorations for tree plantings.

Add the following subsections:

**7-9.1 Replacement of Sprinkler Systems.** Damaged sprinklers shall be replaced so that the area watered by the original system will be adequately watered by the reconstructed system without undue waste of water. Overspray on any area no longer planted should be avoided, and any revised shape or layout of the remaining planted area will be adequately watered. Any additional material or work required to obtain said adequate coverage shall be furnished by the Contractor, at its expense. The Contractor shall be responsible to replace any lawn or plant damaged from lack of irrigation resulting from the Contractor's operations, at its expense, to the satisfaction of the Engineer.

## **7-10 PUBLIC CONVENIENCE AND SAFETY**

**7-10.1 Traffic and Access.** Add the following before the last paragraph:

The Contractor shall provide the necessary measures to prevent public access to private residences and businesses during removal and replacement of existing barrier structures, such as wood and chain link fences, during non-working hours.

The Contractor shall maintain all vehicle and personal access to all existing businesses adjacent to the site. Contractor shall limit the work/staging area to only what is required for that particular work day. Parking for the businesses is limited.

There shall not be any Contractor parking on-site.

The Contractor shall be responsible to provide at least 48 hours written notice to each affected property before closing or partially closing any driveway or pedestrian access.

Add the following subsection:

**7-10.2 Trash Pick-Up.** Trash pick up days are established and will not be changed. Consult the Engineer regarding trash pick up schedule. The Contractor shall ensure areas affected by the work are accessible to the CITY's automated trash trucks on designated pick up days. Contractor shall be responsible to provide and maintain access to large trash containers during the course of the work.

**7-10.3 Street Closures, Detours, Barricades.**

Add the following paragraph after the first paragraph:

In addition to the requirements of this subsection, the Contractor shall conform to the requirements for street closures, detours, and barricades as stipulated in the Special Provisions. However, deviations from the requirements stipulated in the Special Provisions may be permitted upon written approval of the Public Works Director when such deviations are in the best interest of the City.

Replace the second paragraph with the following:

The Contractor shall notify the Public Works Department at (310) 781-6900, at least ten (10) working days in advance of closing or partially closing any street or alley and comply with their requirements. In addition, the Contractor shall notify the Torrance Police Department at (310) 328-3456 and Torrance Fire Department at (310) 781-7040 at least two (2) working days in advance of such closing.

It shall be the Contractor's responsibility to allow passage of the Torrance Transit System coaches through the construction area at all times. The Contractor shall notify the Torrance Transit Department at (310) 618-6927 at least 48 hours prior to construction affecting bus stop zones to allow said Transit System to temporarily abandon and relocate bus stop zones within the construction area.

The Contractor shall immediately notify the above parties upon completion of the construction work and opening or reopening of any street or alley.

Add the following:

The Contractor shall install, maintain, and remove all temporary delineators, barricades, lights, warning signs and other devices necessary to control traffic as specified in the project plans and these specifications. Materials for a temporary facility may be provided from new or used materials. If used materials are provided, they shall be sound, in good condition and otherwise meet the requirements of new materials. All traffic control devices shall be free of graffiti, and the Contractor shall be responsible to immediately clean and/or replace any device to the satisfaction of the Engineer.

Full compensation for furnishing, installing, maintaining and removing the above traffic control devices shall be considered as included in the Contract Unit Prices for various items of work.

Where streets in which improvements are being constructed are specified hereinafter to be closed to through traffic, it shall be understood that such closures shall apply only to the portions of such streets where construction is actually in progress.

After award of the contract, the Contractor shall submit to the City its proposed Traffic Control Plan as required by the Special Provisions and to comply with the requirements specified herein. This submittal shall be made sufficiently in advance (street closure schedules MUST be submitted ten (10) days prior to closing the affected street) of any rerouting or diversion of traffic by the Contractor to allow for a review of the Contractor's proposed traffic control by the Public Works Director.

Revise the final sentence of the third paragraph to include:

Except as modified hereinafter or within the Special Provisions.

Add the following paragraph after the third paragraph:

The Contractor shall conform to Section 74.6.8 of the Torrance Municipal Code. In addition, the Contractor shall comply with directions from the Engineer to provide protection at excavations, trenches and/or other potentially hazardous construction areas. The Contractor shall be required to erect temporary railing (Type K) per Caltrans Standard Plan T3, five-foot high chain link fences, or equivalent protection, to completely enclose all open excavations over three feet (3') in depth. Fencing shall be approved by the Engineer, and provide adequate security. Fencing may be removed during working hours to the extent necessary to provide access and working room, in which case the Contractor shall provide equivalent security, to the satisfaction of the Engineer, during said periods. Any excavation not secured to the satisfaction of the Engineer shall be completely backfilled prior to the end of each day's construction activities. The Engineer may require additional security devices, lighting or other protection in addition to said fencing. Full compensation for furnishing, placing and removing temporary protection shall be considered as included in the price for the various items of work.

## **7-13 LAWS TO BE OBSERVED**

Add the following:

The Contractor shall obtain a CITY Business License, and a no-fee Grading Permit from the Building and Safety Department before commencing construction.

## **SECTION 9 - MEASUREMENT AND PAYMENT**

**9-1 MEASUREMENT AND PAYMENT.** Add the following sections:

### **9-1.2.1 Payment for Labor and Materials.**

The Contractor shall pay and cause the subcontractors to pay any and all accounts for labor, including Worker's Compensation premiums, State Unemployment and Federal Social Security payments and all other wage and salary deductions required by law. The Contractor also shall pay and cause the subcontractors to pay any and all accounts for services, equipment and materials used by it and the subcontractors during the performance of work under this contract. All such accounts shall be paid as they become due and payable. If requested by the Engineer, the Contractor shall immediately furnish the City with proof of payment of such accounts.

### **9-1.2.2 Measurement and Payment**

Payment of each item will include full compensation for furnishing all labor, materials, tools, equipment and backup equipment; transportation and technical competence for performing all work necessary to complete each item as indicated on the plans and as specified in these Contract Documents, including but not limited to obtaining all applicable certifications necessary for specialty personnel and major equipment in conformance with Subsection 7-5, and all other applicable permits; securing a storage yard to store all equipment and materials to be used on the job, disposal of waste materials, restoration of the site, etc. The storage yard may also to be used as a temporary storage for excavated materials, and traffic control items. No separate payment will be made for mobilization and demobilization. Costs for mobilization/demobilization shall be included in the unit prices bid for each work item.

### **9-2 LUMP SUM WORK.** Replace the second paragraph with the following:

The Contractor shall, within five (5) working days of receipt of a request from the Engineer, submit a complete breakdown of lump sum bid prices showing the value assigned to each part of the work, including an allowance for profit and overhead. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents its estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the Engineer as one of the bases for evaluating requests for payment. No extra costs shall be allowed for providing these breakdowns.

### **9-3 PAYMENT.**

#### **9-3.2 Partial and Final Payment.** Replace the third paragraph with the following:

For each progress estimate, 10 percent will be deducted and retained by the CITY, and the remainder less the amount of all previous payments will be paid. In addition 125% of the amount of outstanding "Stop Notices" shall be withheld.

Add the following:

The Contractor shall submit all requests for payment on a Progress Payment Invoice to be provided by the CITY.

Prior to submittal of said invoice, all items for which payment is requested shall be checked and approved in writing by the Engineer. No payments will be made unless all back-up data is submitted with the payment request and the Progress Payment Invoice is signed by both Contractor and Engineer.

**9-3.4 Mobilization.** Replace the entire subsection with the following:

Mobilization shall include the provisions of the Construction Schedule, Best Management Practices and Storm Water Pollution Prevention Plan; Sewage Spillage Prevention; Emergency Response Plan; site review; obtaining all permits, insurance, and bonds; moving onto the site all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities, and removal of same at completion of the Work; and other work, all as required for the proper performance and completion of the Work.

Mobilization shall include, but not be limited to, the following items:

- (a) Submittal and modification, as required, of the Construction Schedule and Storm Water Pollution Prevention Plan.
- (b) Moving on to the site of all Contractor's plant and equipment required for the first month's operations.
- (c) Installing temporary construction power and wiring.
- (d) Establishing fire protection system.
- (e) Developing construction water supply.
- (f) Providing on-site sanitary facilities and portable water facilities, as required.
- (g) Arranging for and erection of Contractor's work and storage yard, if needed.
- (h) Submittal of all required insurance certificates and bonds, including subcontractors.
- (i) Obtaining all required permits.
- (j) Posting all OSHA required notices and establishment of safety programs.
- (k) Potholing and other research and review as necessary to verify site conditions and utility locations.
- (l) Having the Contractor's Superintendent present at the job site full-time.

- (m) Removal, cleanup, and restoration.

**9-3.5 Noncompliance with Plans and Specifications.** Add the following section:

Failure of the Contractor to comply with any requirement of the Plans and Specifications, and/or to immediately remedy any such noncompliance upon notice from the Engineer, may result in suspension of Contract Progress Payments. Any Progress Payments so suspended shall remain in suspension until the Contractor's operations and/or submittals are brought into compliance to the satisfaction of the Engineer. No additional compensation shall be allowed as a result of suspension of Progress Payments due to noncompliance with the plans or specifications. The Contractor shall not be permitted to stop work due to said suspension of Progress Payments.

**9-4 CLAIMS.**

The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the CITY, or the happening of any event, thing or occurrence, unless the Contractor shall have given the CITY due written notice of potential claim as hereinafter specified.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. Said notice shall be submitted on a form approved by the CITY at least forty-eight (48) hours (two working days) in advance of performing said work, unless the work is of an emergency nature, in which case the Contractor shall notify and obtain approval from the Engineer prior to commencing the work. The Engineer may require the Contractor to delay construction involving the claim, but no other work shall be delayed, and the Contractor shall not be allowed additional costs for any said delay but may be allowed an extension of time if the Engineer agrees that the work delayed is a controlling element of the Construction Schedule. The Contractor shall be required to submit any supporting data (or a detailed written explanation justifying further delay) within five (5) work days of a request from the Engineer and shall be responsible for all costs associated with any delays resulting from late and/or incomplete submittals. By submitting a Bid, the Contractor hereby agrees that this subsection shall supersede 6-6.3 and 6-6.4 of the Standard Specifications.

It is the intention of this subsection that differences between the parties arising under and by virtue of the Contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that it shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was timely filed.

## PART 2 - CONSTRUCTION MATERIALS

### SECTION 200 – ROCK MATERIALS

#### 200-2 UNTREATED BASE MATERIALS

**200-2.1 General.** Replace the entire subsection with the following:

Untreated base for pavement, curb, gutter, cross gutters, hardscape and other improvements shall be either Crushed Aggregate Base conforming to 200-2.2 or Crushed Miscellaneous Base conforming to 200-2.4.

### SECTION 202 – MASONRY MATERIALS

#### 202-2 CONCRETE BLOCK

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**202-2.1 Masonry Units.** Replace the entire subsection with the following:

Masonry units shall be a hybrid segmental retaining wall system as manufactured by Keystone Retaining Wall Systems (blocks and anchor pins) or approved equal. Materials, design, and construction of the hybrid walls shall be in accordance with the manufacturer's specifications as referenced in the geotechnical report (Geo-Environmental, 2009) and in Appendix V.

Contractor shall be responsible for coordinating with the manufacturer of the hybrid retaining wall system including submittal and approval of design layout and/or shop drawings prior to the start of installation. The Contractor shall obtain and provide manufacturer's certification for the final installation.

### SECTION 203 – BITUMINOUS MATERIALS

#### 203-5 EMULSION-AGGREGATE SLURRY

**203-5.1 General.** Replace the first sentence with the following:

Emulsion-aggregate slurry shall be a stable mixture of emulsified asphalt, mineral aggregate, water and retardant and is herein referred to as slurry.

**203-5.2 Materials.** Replace the entire subsection with the following:

The ingredients of the slurry shall conform to the following:

- 1) Emulsified asphalt shall be Polymer Modified cationic quick-set type, CQS-1h containing 2.5% minimum Ultrapave 65K styrene/butadiene/rubber latex as manufactured by Textile Rubber and Chemical Company or approved equal. CQS-1h shall conform to the requirement of 203-1.3 and the following specifications when tested according to appropriate ASTM methods:

**TABLE 203-5.2(A)**  
**CQS-1h QUICK SET EMULSION**

Tests	ASTM Test Method	Requirements	
		Min.	Max.
Furol Viscosity @ 77°F, sec.	D244	15	100
Residue from distillation, % by weight	D244	60 Min.	
Sieve Test, % retained on No. 20	D244	.10 Max.	
Particle Charge Test (Cationic)		Positive	
Storage Stability; One-Day Settlement	D244	1% Max.	
<b>Residue</b>			
Penetration 0.1 mm	D5	45	80
Solubility in TCE, %	D2042	97.5 Min.	
Ductility, 77°F, cm	D113	40 Min.	
<b>Test for Polymer Content</b>			
Torsional Recovery, %	Caltrans 322	18.0 Min.	
Polymer Solids Content, % by weight of Asphalt Solids	Caltrans 401	2.5	3.0

- 2) The Retarder for quick-setting emulsion and the asphalt modifier shall be a type approved by the Engineer. The amount of retarder and asphalt modifier to be included in the quick-set slurry shall be that amount necessary to ensure that the applied slurry can support vehicular traffic within 60 minutes after the last application.
- 3) Water shall be potable and compatible with the other ingredients of the slurry.
- 4) Aggregate shall be rock dust produced by the crushing of rock and gravel. The aggregate without any additive shall conform to the following requirements:

TABLE 203-5.2(B)		
TESTS	ASTM METHOD	REQUIREMENTS
Percentage Wear 500 Revolutions <sup>1</sup>	C131	35% Maximum
Sand Equivalent	D2419	55 Minimum
Soundness (5 Cycles)	C 88	15% Maximum

<sup>1</sup>ASTM C131 to be run on plus four graded material before final crushing.

- a) The Contractor shall provide an aggregate stock pile 24-hours prior to starting the work. Location to be approved by the Engineer if within City right-of-way.

- b) Contractor shall schedule and coordinate the delivery of aggregate to the stockpile(s) such that: (1) deliveries originate at the plant and arrive at the stockpile site within normal work hours on the same calendar day; (2) delivery site and project name are explicitly stated on each delivery ticket; (3) successive deliveries on the same calendar day show the cumulative total for that day; (4) copies of all delivery tickets shall be delivered to the Engineer before the end of the working day. Any delivery tickets not so delivered may be rejected by the CITY. Any deviation from this process must have the prior approval of the Engineer.
  
- c) The Contractor shall furnish calibrated vehicle weigh scales at the stockpile site for use by the CITY. The portable scales will be utilized for inspection and all mixers shall be weighed prior to transit. All equipment and tools necessary for field measurement of the emulsion and aggregate by the CITY shall be furnished and maintained by the Contractor.

The Contractor shall be responsible for the initial setup of the weigh scales at the stock-pile site and all necessary relocations during the slurry seal operations.

The cost to furnish the vehicle scales, all equipment, and tools necessary for field testing shall be included in the Contract Unit Price for the Emulsion Aggregate Slurry and no additional compensation shall be allowed.

## **203-6 ASPHALT CONCRETE**

**203-6.1 General.** Add the following:

Asphalt concrete shall be Type Class B-PG-64-10 for the base courses and C2-PG-64-10 for surface courses. For leveling courses of 1-inch thick or greater, asphalt concrete shall be Type Class C2-PG-64-10. For leveling courses between 0.75 inches to 0.99 inches thick, asphalt concrete shall be Type Class D2-PG-64-10.

## **SECTION 206 – MISCELLANEOUS METAL ITEMS**

### **206-1 STRUCTURAL STEEL.**

**206-1.1.1 General.** Add the following:

Steel for the Reinforced Compacted Fill Welded Wire Steepened Slopes (WWSS) shall be Hilfiker Retaining Wall Company 8”X12” WWF or approved equal, as referenced in the geotechnical report (Geo-Environmental, 2009) and in Appendix VI.

Contractor shall be responsible for coordinating with the manufacturer of the WWSS including the submittal of design layout and/or shop drawings prior to the start of installation. The Contractor shall obtain and provide manufacturer’s certification for the

final installation.

## **SECTION 212 – LANDSCAPE AND IRRIGATION MATERIALS**

### **212-1 LANDSCAPE MATERIALS.** Add the following:

All work specified in this section shall conform to the applicable requirements of ANSI Standard Z60.1-1980, "Nursery Stock," and to the rules and grading provisions adopted by the American Association of Nurserymen, Inc.

#### **212-1.1 Topsoil.**

##### **212-1.1.1 General.** Add the following:

Unless otherwise specified on the Plans or required by the Engineer, topsoil shall be Class "C" in accordance with the requirements of 212-1.1.4. Imported soil, if required, shall be Class "A" topsoil in accordance with the requirements of 212-1.1.2.

The Contractor shall provide an Agricultural Soil Suitability Report for topsoil to be furnished, and the requirements for fertilization and amendments as specified herein may be modified as necessary by the Engineer prior to start of the work of this section.

#### **212-1.2 Soil Fertilizing and Conditioning Materials**

##### **212-1.2.3 Commercial Fertilizer.** Add the following:

Commercial Fertilizer shall be 12-12-12 (N-P-K.) Slow release tablets, if used, shall be 12-12-12 (N-P-K).

##### **212-1.2.4 Organic Soil Amendment.** Add the following:

Type I organic soil amendment shall be used. The Contractor shall supply the Engineer with a sample of the proposed amendment accompanied by a laboratory analytical analysis from a testing agency registered by the State, which states that the amendment complies with the specifications.

##### **212-1.2.5 Mulch.** Add the following:

Bark mulch shall be shredded cedar, pine, or fir bark or equal commercial product. Typical mulch size shall be three inches by one-half inch (3" x ½"). Submit two (2) samples to the Engineer for approval prior to installation. The material shall be free of seeds, debris, and deleterious materials, and shall have a rich brown color when supplied.

**212-1.3 Seed.** Add the following:

Seed mix shall be S&S Seeds, (805) 684-0436, "Ornamental, Low Growing Native Mix" or approved equal and shall conform to the following:

Species	Lbs/Acre	Min.%Purity/Germination
Camissonia cheiranthifolia	1.0	90/80
Collinsia heterophylla	3.0	98/85
Encelia californica	3.0	40/60
Eriophyllum confertiflorum	3.0	30/60
Eschscholzia californica	2.0	98/80
Lasthenia californica	1.0	50/60
Linanthus grandiflorus	2.0	95/85
Lotus scoparius	6.0	90/80
Lupinus hirsutissimus	1.0	90/80
Lupinus nanus	4.0	98/80
Mimulus aurantiacus longiflorus	2.0	02/60
Mimulus aurantiacus puniceus	2.0	02/60
Plantago insularis	30.0	98/75
Sisyrinchium bellum	2.0	95/75
Recommended application rate:	62.0	

Add the following subsection:

**212-1.3.1 Hydromulch and Soil Stabilizer (Tackifier)**

Hydromulch shall be a wood fiber mulch applied at a rate of 2000 lbs/acre. The Soil Stabilizer (tackifier) shall be Ecology Controls "M-Binder" or approved equal applied at a rate of 150 lbs/acre. Both the hydromulch and tackifier can be obtained through S&S Seeds, (805) 684-0436.

**212-1.4 Plants.**

**212-1.4.1 General.** Add the following:

All plants furnished by the Contractor shall be true to type or name as shown on the Plans and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of California; however, determination of plant species or variety shall be made by the Engineer, whose decision shall be final.

All plants shall have been grown in nurseries that have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the Contractor, and it shall have secured permits or certificates prior to delivery of plants to site. Certificates of inspection shall be filed with the Engineer.

The Contractor shall obtain clearance from the County Agricultural Commissioner, as required by law, before planting plants delivered from outside the County in which they are to be planted. Evidence that such clearance has been obtained shall be filed with the Engineer.

Plants shall be subject to inspection and approval or rejection by the Engineer at place of growth and/or upon delivery to the site at any time before or during progress of the work. Inspections shall include:

- a) Quantity, quality, size, and variety;
- b) Ball and root condition;
- c) Latent defects and injuries resulting from handling, disease and insects; and
- d) Uniformity of plant materials.

The Contractor shall notify the Engineer forty-eight (48) hours before the delivery of plant material, so the plants can be inspected prior to planting.

The Contractor is responsible to coordinate contract growing any plant material that is not readily available at local nurseries. The Contractor shall research the availability of every plant at the beginning of the project to allow sufficient time to contract grow plant material for installation without delays. Contract grown plant material shall be grown to the size indicated on the plans and delivered to the site in a healthy and vigorous condition.

**212-1.4.2 Trees.** Add the following:

Trees shall be of the type and size as existing or specified in the Specifications.

For single-trunk trees: the trunk shall be straight, slightly tapered at the crown, free of disfigurements or gnarls and well hardened off. The tree shall be free of disease and parasites.

For multi-trunk trees: the trunk shall be well hardened off and the tree free of disease and parasites.

**212-1.5 Headers, Stakes, and Ties**

**212-1.5.3 Tree Stakes.** Replace the first paragraph with the following:

Tree stakes shall be either 2-inch diameter lodge pole pine, treated with copper nathanate or pressure treated with chromated copper arsenate, or galvanized steel pipe, per 308-4.6.1 (Method A) and City of Torrance Standard Plan No. T401.

Add the following:

Tree ties shall be a commercially manufactured tie, split plastic hose with a minimum length of twenty inches (20"). Split plastic hose ties shall be "Cinch-tie" by V.I.T. or approved equal.

#### **212-1.6 Erosion Control Material**

Erosion control material shall be Landlok ® C2 Erosion Control Blanket manufactured by SI Geosolutions (423) 899-0444 or approved equal.

### **212-2 IRRIGATION SYSTEM MATERIALS**

#### **212-2.1 Pipe and Fittings**

**212-2.1.1 General.** Replace the entire subsection with the following:

Irrigation pipe materials and fittings shall be as designated on the Plans and shall comply with 212-2.1.3.

Add the following subsection:

**212-2.1.6 Swing Joint Risers.** Risers shall be ¾ inch double swing type per APWA Standard Plan No. 517-1 modified to allow substitution of Schedule 80 PVC for galvanized steel pipe and 4" minimum nipples. At the sole discretion of the Engineer, swing pipe per Rainbird Model SP-100 or approved equal may be substituted for swing joint risers.

#### **212-2.2 Valves and Valve Boxes.**

**212-2.2.4 Remote Control Valves.** Add the following:

Electric Remote Control Valves shall be Rainbird Series or approved equal.

**212-2.2.6 Quick-coupling Valves and Assemblies.** Add the following:

Quick couplers shall be Rainbird Model No. 33D-LRC or approved equal.

**212-2.2.7 Valve Boxes.** Replace the entire subsection with the following:

Valve boxes shall be made of durable green plastic with locking lids in accordance with SPPWC Standard Plan No. 506-1. Boxes shall be sized to give maintenance freedom and access. All valve box lid locks shall use a common key.

**212-2.3 Backflow Preventer Assembly.** Add the following:

The backflow preventer shall be FEBCO Model No. 825Y or approved equal conforming to the requirements of Los Angeles County Department of Health Services.

**212-2.4 Sprinkler Equipment.** Add to the following:

The full-circle, part-circle or rectangular spray nozzles shall be capable of meeting the requirements for the area or radius shown on the Plans. The pop-up sprinklers shall be Toro, Series 640 or approved equal. Spray plastic nozzles shall be Rainbird, Series 1800 Stream Spray Nozzles or approved equal. Bubbler heads shall be Rainbird, Flood Bubbler Nozzles or approved equal.

Add the following subsection:

**212-2.5 Pressure Relief Valve.** Pressure Relief Valve shall be Cash Acme Model No. F-72 or approved equal; and shall be set at 125 psi.

**SECTION 213 – ENGINEERING FABRICS**

**213-2 GEOSYNTHETICS**

**213-2.1 General.** Replace the first paragraph with the following:

Geotextile fabric shall be non-woven conforming to the requirements of AASHTO Designation M288-99, and shall be Mirafi FW-300 or approved equal. The fabric shall be constructed as one continuous sheet. Where overlapping of the fabric is required, the overlap shall be a minimum of 12 inches.

Delete the last two paragraphs.

**213-2.2 Physical Properties.** Replace the entire subsection with the following:

Where specified in the plans for the purpose of separation between underlying subgrade and aggregate or miscellaneous base, Non-woven geotextiles shall meet the requirements of Type 250N indicated in Table 213-2.2(A).

**213-2.3 Identification.** Delete the last sentence.

**213-3 MOISTURE BARRIER**

The moisture barrier shall conform to the following specifications:

Color	Black
Thickness	.030 Mil.
Depth	30 inches
Tensile Strength	3,850 psi

Flexural Stiffness	120,000 psi
Vicat Softening Point	127 C
Low Temperature Brittleness	-76

The moisture barrier shall be by Century Products (714) 532-7084 or approved equal.

## PART 3 - CONSTRUCTION METHODS

### SECTION 300 – EARTHWORK

#### 300-1 CLEARING AND GRUBBING.

##### 300-1.3 Removal and Disposal of Materials.

**300-1.3.1 General.** Replace the entire subsection with the following:

Unless otherwise stated on the Plans or Specifications, all material removed from the Work shall become the property of the Contractor and shall be disposed of in a lawful manner. Removals shall include, but not limited to, all excess excavation material, trees and plants, debris, interfering portions of curb, gutters, asphalt, and miscellaneous items as shown on the Plans.

All concrete removed shall be hauled off the Work site no later than the calendar day following the day that the removal is performed.

Prior to making removals, the Contractor shall meet with the Engineer to verify the limits of removals, locations of joins, to establish smooth joins and to ensure proper drainage. The Contractor may make minor changes in the location of joins and the limits of removals, provided a smooth join and proper drainage can be achieved and it has obtained prior written approval from the Engineer.

In order to protect the public streets from deterioration due to hauling of materials, the Contractor shall submit, prior to the Pre-Construction Meeting, for approval a proposed route for hauling of materials for disposal. Upon approval, the Contractor shall strictly adhere to that route, unless written permission from the Engineer is obtained to change the route.

**300-1.3.2 Requirements.** Add the following sentence to subparagraphs (b) and (c):

- a) **Bituminous Pavement.** Replace the first and second sentences with the following: Bituminous pavement shall be removed to neatly sawed edges.

Add subparagraphs (d) and (e):

- (d) **Trees.** The City maintains a tree conservation policy. Unless otherwise shown, all trees are to be protected in place. Demolition and destruction of trees and tree parts, including trunks, branches and foliage, shall be limited to tree removals as shown on the Plans. Root pruning and removals shall be limited to the minimum required to construct new improvements where trees are to be conserved.

The Engineer shall place a visible removable “tag” on each tree proposed to be removed at least five (5) work days and no earlier than ten (10) work days prior to removal. Said “tag” is intended to give adjacent residents proof of trees to be removed or saved. Tags shall be on the sidewalk side of trees and located at least five feet (5') above ground.

The Contractor shall remove only trees that have been marked by the Engineer for removal. Trees shall be removed in a workmanlike manner so as not to injure other standing trees, plants, and improvements which are to be preserved.

Stumps shall be ground down three feet (3') below ground surface within five (5) feet of the center of the stump. All surface roots shall be removed within the parkway.

The Contractor shall conform to the following requirements:

- 1) The cutting down or removal of trees is prohibited after the prescribed working hours unless permission is granted by the Engineer.
- 2) All debris from pruning or removing a tree shall be cleaned up and hauled away from the Work site on the same day that the tree is cut or pruned. Firewood-size logs may be left neatly piled for residents to pick up for no longer than three (3) days.
- 3) All holes created from removal of tree stumps shall be backfilled and graded to finish level by the end of the workday.
- 4) Sprinkler systems disrupted by the Contractor shall be capped or restored by the end of the workday. Capped systems shall be restored to original working condition within three (3) days.

(e) **Miscellaneous Removals and Relocations.** This work shall include all removals not specifically listed in the Proposal or otherwise covered by these Specifications, and all necessary relocations and restorations of walls, fences, plants, hardscape, signs and other items, whether shown on the Plans or not, and as necessary to complete the improvements.

**300-1.3.3 Construction and Demolition Debris Recycling.** Add the following the section:

**General.** Consistent with the Agency's efforts to comply with the California Integrated Waste Management Act of 1989 (AB 939), the Contractor shall reduce, reuse, and/or recycle to the maximum extent feasible, the construction and demolition debris (debris) generated by this Contract hereby diverting the debris

from disposal facilities, saving landfill space, and conserving virgin materials and natural resources.

#### **Definitions.**

**"Construction and Demolition Debris or Debris"** means materials resulting from building, construction or demolition-related activities such as excavation, grading, land clearing, renovation, repair, road work and site cleanup and are considered solid waste pursuant to Section 40191 of the California Public Resources Code. The materials include, but are not limited to, asphalt, brick, cardboard, carpet, cinder block, concrete, concrete with reinforcement bars, drywall, excavated materials, fixtures and fittings, glass, gravel, green waste, metal, mixed rubble, packaging materials, paper, plastics, porcelain, road work materials, roofing materials, rock, sand, site clearance materials, soil, trees, tree stumps and other vegetative matter, stones and wood waste.

**"Deconstruction"** means the process of carefully dismantling a structure, piece by piece prior to or instead of conventional demolition, to maximize the recovery of building materials for reuse and/or recycling.

**"Delivery Site"** means recycling facility as defined in Subsection E.14 and recycling or reuse site as defined in Subsection E.15 or any place, including a transfer station as defined in Subsection E.20 where the debris is delivered for the sole purpose of reuse and/or recycling in a manner acceptable to the Director/Designee.

**"Disposal"** means the process of disposing of debris at a Disposal Facility.

**"Disposal Facility"** means a Landfill or any location where the debris is taken for Transformation as defined.

**"Generation"** means the quantity of debris produced by the Work before the debris is reused and/or recycled.

**"Green Waste"** means all vegetative cuttings, shrubs, stumps, logs, brush, tree trimmings, grass, and related materials which have been separated from other solid waste.

**"Landfill"** means a solid waste disposal facility that accepts solid waste for land disposal and is operating under a current Solid Waste Facility Permit issued by a local enforcement agency as defined in Section 40130 of the California Public Resources Code and concurred upon by the California Integrated Waste Management Board.

**"Recyclable"** means material that still has useful physical or chemical properties after serving its original purpose and that can be reused or re-manufactured into additional products.

**"Recycle or Recycling"** means the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste and returning them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace, and in a manner acceptable to the Agency. "Recycle" or "Recycling" does not include Transformation.

**"Recycling Facility"** means any facility (except a transformation facility) whose principal function is to receive, store, convert, separate, or transfer recyclable materials for processing.

**"Recycling or Reuse Site"** means any place other than a recycling facility acceptable to the Agency for recycling and/or reuse of debris.

**"Reduce"** means any action which causes a net reduction in the generation and/or disposal of solid waste.

**"Reuse"** means the use, in the form as it was produced, and in a manner acceptable to the Agency of materials which might otherwise be discarded into a Disposal Facility.

**"Site Clearance Material"** means materials such as trees, brush, earth, mixed concrete, rubble, sand, steel, extraneous paper, plastics, and other waste materials generated from site clearance.

**"Source Separation"** means the segregation, by the generator, of materials designated for separate collection for materials recovery or special handling.

**"Transfer Station"** means a facility utilized to receive solid wastes and to temporarily store, separate, convert, or otherwise process the materials in the solid wastes, and/or to transfer the solid wastes directly from smaller to larger vehicles or railroad trains for transport.

**"Transformation"** means incineration, pyrolysis, distillation, gasification, or biological conversion other than composting.

**"Wood Waste"** means solid waste consisting of wood pieces or particles which are generated from the manufacturing or production of wood products, harvesting, processing or storage of raw wood materials, or construction or demolition activities.

## **RECYCLING SUMMARY.**

The Contractor shall prepare and submit a Recycling Summary report using the form included as Appendix III summarizing the disposal, reuse, and/or recycling activities which occurred throughout the Contract duration. This report shall be submitted by the Contractor to the Agency, before or with its request for the final Progress Payment for said Contract.

Failure of the Contractor to submit the Recycling Summary within the time specified will result in damages being sustained by the Agency. Such damages are, and will continue to be, impracticable and extremely difficult to determine. For failure to submit the Recycling Summary, as required, the Contractor shall pay to the Agency, or have withheld from monies due it, the sum of \$10,000 for a contract of \$500,000 or more. The Contractor shall pay to the Agency, or have withheld from monies due it, 2% of the total contract amount for a contract of \$499,999 or less.

Execution of the Contract shall constitute agreement by the Agency and Contractor that \$10,000 (2% for contracts \$499,999 or less) is the minimum value of the costs and actual damage caused by the failure of the Contractor to submit the Recycling Summary within the time specified. Such sum is liquidated damages and shall not be construed as a penalty, and may be deducted from payments due the Contractor.

## **PAYMENT.**

The cost of construction and demolition debris recycling and completing the Recycling Summary report shall be considered as included in the Contract Unit Price for the various Bid items. The quantities reported will be used for information gathering purposes and not for purposes of payment to the Contractor.

### **300-1.4 Payment.** Replace the entire subsection with the following:

When the Contract does not include a pay item for clearing and grubbing, payment under this section shall be by the following:

- a) **Bituminous Pavement.** Payment for the removal and disposal of bituminous pavement for construction of local depression, alley intersection and cross gutters/spandrels shall be considered as included in the Contract Unit Price for the appurtenant items of work, and shall include sawcutting, removal of underlying subgrade and base, disposal, subgrade preparation and compaction, labor and equipment.
- b) **Concrete Pavement, Cross-Gutters and Alley Intersections.** Payment for removal and disposal of concrete pavement, cross-gutters, alley intersection and local depression shall be included in the Contract Unit Price for the appurtenant items of work and shall include sawcutting, complete removal of underlying subgrade and base, disposal, and all labor and equipment necessary to complete the required removal.
- c) **Concrete Curb, Walk, Gutters and Driveways.** Payment for removal and disposal of concrete curb, curb and gutter, walk, and driveways shall be included in the Contract Unit Price for the appurtenant items of work. Removals shall include sawcutting, root pruning, complete removal of underlying subgrade and base, subgrade preparation and compaction, disposal, and all labor and equipment necessary to complete the required removal.

- d) **Trees.** Payment for tree removals and disposal shall be per the Contract Unit Price and shall include all work involved in tagging, cutting and complete removal of trunks, branches, stumps and roots; hauling, disposal, restoration and replanting of removal areas; and other appurtenant work.
- e) **Miscellaneous Removal and Relocations.** Payment for miscellaneous removals and relocations shall be per the Contract Unit Price, and shall include full compensation for excavation, backfilling, grading, trimming plants, import if required, placing of top soil, disposing of surplus material and appurtenant work.
- f) **Painted Curb.** There is no separate payment for removal of paint on concrete curb. Full compensation for furnishing all labor materials, tools, equipment and incidentals as shown on the plans and specified in these Special Provisions shall be included in the contract unit price for traffic striping, markings and pavement markers.

### **300-2 UNCLASSIFIED EXCAVATION.**

#### **300-2.2 Unsuitable Material.**

##### **300-2.2.1 General.** Replace the first paragraph with the following:

If unsuitable material is found, the Contractor shall remove said material to the limits to be determined by the Engineer and shall replace said material with select fill or base material, as to be determined by the Engineer. Payment for removal and replacement shall be made as Extra Work or Force Account Work.

### **300-3 STRUCTURE EXCAVATION AND BACKFILL.**

#### **300-3.1 General.** Replace the entire subsection with the following:

The work covered by this section includes the excavation and placement of fill for the reinforced compacted fill as shown on the plans.

Foundation soil shall be excavated to the lines and grades shown on the plans and as required for placement of the reinforcement or drains. Stockpiles may be placed at the Contractor's convenience within the limits of the approved right-of-way; however, all stockpiles should be at a sufficient distance from the banks of the proposed excavation or existing, undisturbed slopes to avoid overloading and to prevent slides or caving as recommended by the Engineer. Material for backfilling shall be stockpiled in a neat and orderly manner.

Excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

**300-3.5 Structure Backfill.** Replace the entire subsection with the following:

Placement of reinforced compacted fill shall conform to the recommendations of the geotechnical report (Geo-Environmental, 2009) and as referenced in Appendix VI and these Special Provisions unless otherwise authorized by the Engineer.

**300-3.5.1 Requirements.** Reinforced compacted fill shall conform to the following requirements:

Criteria	Reinforced Backfill
Maximum particle size	4 in.
Maximum liquid limit	30%
Maximum plasticity index	15
Maximum percentage passing the #200 sieve	35%
Internal friction angle	34 deg.

All material placed as fill shall consist of material classified by ASTM D 2487 as GW, GP, GC, GM, SP, SM, SC, CL, ML, or SW. The material shall be free of ice, snow frozen earth, trash, debris, sod, roots or other organic matter; contamination from hazardous, toxic, or radiological substances, or stones larger than 4 inches in any dimension. All import material shall be obtained entirely from one borrow source, unless the Engineer determines that quality control is adequate and the alternate source produces material that is similar in gradation, texture, and interaction with the reinforcement.

All materials shall be of a character and quality satisfactory for the purpose intended. Representative samples of all fill material, whether imported or obtained on-site, should be submitted to the Engineer for approval at least 72 hours before it is to be used on-site. Where imported fill is required, the Contractor should provide suitable environmental documentation that the proposed fill material is free of hazardous materials at least 72 hours before use.

Stockpiles of all material to be incorporated into the work shall be kept in a neat and well-drained condition, giving due consideration to drainage at all times. If rain is forecast, the stockpiles shall be covered to prevent saturation and/or transportation of fine material into the storm drain system. The ground surface at stockpile locations shall be cleared, grubbed, and sealed. Topsoil shall be stockpiled separately from suitable backfill material. Stockpiles of aggregates and granular soils shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. Stockpiles shall be protected from erosion and be kept in compliance with CalTrans Standard Specifications Section 10, Dust Control (latest edition). If the Contractor fails to protect the stockpiles, and any material becomes frozen, saturated, intermixed with other materials, or otherwise out of specification or unsatisfactory for the use intended, such material shall be removed and replaced with new material from approved sources at no additional cost to the City.

**300-3.5.2 Pervious Backfill.** Permeable material for use in backdrains and around

subdrains shall consist of hard, durable, clean sand, gravel or crushed stone (CalTrans Class 2 permeable material), and shall be free from organic material, clay balls or other deleterious substances.

Pervious backfill shall be placed where indicated on the Plans and as referenced in the geotechnical report (Geo-Environmental, 2009) and shall conform to the requirements for CalTrans Class 2 Permeable Material per Section 68-1.025 of the CalTrans Standard Specifications (latest edition) and have the following gradation:

Sieve Sizes	Percentage Passing
1"	100
¾"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

The permeable material shall have a Durability Index of not less than 40 and have a Sand Equivalent Value of not less than 75 per Section 6-3, Testing, of the CalTrans Standard Specifications (latest edition).

**300-3.6 Payment.** The contract price paid for reinforced compacted fill and pervious backfill shall include full compensation for all grading, shaping, compacting or consolidating, or other work that is required under this subsection. The quantities used in determining payment for reinforced compacted fill shall be those of the completed fills within the limits shown on the Plans or as directed by the Engineer.

**300-4 UNCLASSIFIED FILL.** Replace entire subsection (with the exception of 300-4.4 Benching) with the following:

**300-4.1 General.** Rocks or other solid material which are larger than 4 inches in greatest dimension shall not be placed in reinforced compacted fill. Broken concrete shall not be placed in reinforced compacted fill.

Clods or hard lumps of earth larger than 6 inches in greatest dimension shall be broken up before compacting the material in fill. Clods and hard lumps greater than 4 inches in greatest dimension may not be used within the reinforced compacted fill zone.

**300-4.2 Preparation of Fill Areas.** The reinforced compacted fill zone shall bear on undisturbed native soils, or acceptably placed and compacted fill. In the event that it is necessary to remove material or place fill below the excavation lines shown on the Plans, or not otherwise provided for in the Contract, the Engineer shall be notified prior to work and an adjustment in the Contract Price will be considered in accordance with the Contract. Additional work not authorized by

the Engineer shall be at the Contractor's expense.

Material shall not be placed on surfaces that are muddy, frozen, contain frost, or where unsatisfactory material remains in or under the fill. For cohesionless soils, the subgrade surface shall be compacted with the same compactor and rolling pattern to be used for compaction of the fill. For cohesive soils, the subgrade shall be proof-rolled with rubber-tired equipment and any soft areas shall be brought to the Engineer's attention.

**300-4.3 Other Fill Materials.** Brick rubble, broken asphalt pavement, broken segmental blocks, former geogrid reinforcement, or broken concrete originating from the project may not be incorporated into the reinforced compacted fill zone.

**300-4.4 Benching.** No exceptions.

**300-4.5 Placing Materials for Fills.** Prior to fill placement, the soil surface shall be keyed and benched sufficiently to strip at least five (5) feet of the native soils, and be scarified to a depth of 8 inches, moisture conditioned, and recompacted. Where rock is exposed at the foundation subgrade, the Engineer shall evaluate the need for scarification and if the requirement can be waived. Fill placed for compaction shall be placed in loose layers less than 8 inches thick. Reinforced compacted fill shall be placed from the slope face back toward the fill area to ensure that the geogrid reinforcement remains taut. Fill shall be placed, spread, and compacted in such manner that minimizes the development of wrinkles in or movement of the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of vehicles over the reinforcement. Sudden braking and sharp turning shall be avoided. Tracked equipment shall not turn within the reinforced compacted fill zone to prevent tracks from displacing the fill and damaging the reinforcement. Construction equipment shall not be operated directly upon the reinforcement as part of the planned construction sequence. Rubber-tired equipment may operate directly on the reinforcement if the travel is infrequent, equipment travels slowly, and turning is minimized, provided such activities cause no damage or displacement to the reinforcement. At the end of each day, the Contractor shall slope the last lift of fill away from drains in a manner that will allow drainage and direct runoff away from the aggregate.

Broken Portland cement concrete and bituminous type pavement obtained from the project excavation shall not be permitted within the reinforced compacted fill zone.

**300-4.6 Application of Water.** Backfill shall be moisture-conditioned to above optimum moisture content. Control of moisture in the fill shall be maintained to provide acceptable compaction. Disking and plowing shall not be allowed in the reinforced compacted fill zone. Adding water directly to the reinforced compacted fill zone shall only be conducted under conditions where the soil has sufficient porosity and capillarity to provide uniform moisture throughout the fill during compaction.

**300-4.7 Compaction.** Compaction shall be performed in accordance with the recommendations of the geotechnical reports and these Special Provisions unless otherwise authorized by the Engineer.

**300-4.7.1 General.** All soils testing shall be performed by an authorized representative of the Engineer. The Contractor shall make allowances for testing at the recommendation of the Engineer. The Engineer shall recommend the locations and materials for sample collection, and where and when moisture-density tests shall be performed. Nuclear density testing equipment shall be performed in general accordance with ASTM D 2922.

**300-4.7.2 Transmittal.** The Engineer shall be informed of test results daily. Draft copies of field testing results shall be furnished to the Engineer on a frequent and regular basis, and as additionally recommended.

**300-4.7.3 Corrective Action.** Tests of materials which do not meet the contract requirements (test failure) will not be counted as part of the required testing per Section 700-6.1.4 Backfill Testing. Each such test failure must be retaken (verified) at the same location as the original failed test was taken. If testing indicates material does not meet the requirements of the Standard Specifications or these Special Provisions, the material represented by the failed test shall not be placed or shall be recompacted or removed. The quantity of material represented by the failing test shall be determined by the Engineer. The Contractor may request additional tests in the vicinity of a failing test in order to reduce removal requirements, as approved by the Engineer. Such additional tests shall be at the Contractor's expense and at no additional cost to the City.

**300-4.8 Slopes.** No exceptions.

**300-4.9 Measurement and Payment.** Payment for furnishing, placing, and compacting of unclassified fill shall be considered as included in the various bid items and no additional compensation will be made therefore.

## **SECTION 302 – ROADWAY SURFACING**

### **302-4 EMULSION-AGGREGATE SLURRY**

**302-4.1 Materials.** Replace the entire subsection with the following:

Materials for emulsion-aggregate slurry shall conform to 203-5 of these Special Provisions.

#### **302-4.3 Application**

**302-4.3.1 General.** Replace the second sentence of the first paragraph with the following:

Type II slurry shall be applied at the application rate shown in Table 302-4.3.1(A).

**302-4.3.2 Spreading.** Add the following to the first paragraph:

If rippled or chatter marks appear in the surface of the finished slurry, a slower rate of spread shall be required to prevent these surface blemishes that will negatively affect ride quality.

**302-4.4 Public Convenience and Traffic Control.** Modify the third sentence of the first paragraph to read:

Based upon the spreading schedule, the Contractor shall notify residents and businesses of the work and post temporary "No Parking" signs at least 48 hours in advance of sealing operations in accordance with 7-10.1 of these Special Provisions.

**302-4.5 Measurement and Payment.** Replace the first sentence with the following:

Payment for emulsion-aggregate slurry shall be per the Contract Unit Price per square foot.

## **SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION**

### **303-4 MASONRY CONSTRUCTION.**

**303-4.1.2 Construction.** Replace entire subsection with the following:

Construction of the hybrid segmental retaining block walls shall be in accordance with the geotechnical report (Geo-Environmental, 2009) and in accordance with the manufacturer's recommendations as referenced in Appendix V.

### **303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.**

**303-5.7 Repairs and Replacements.** Add the following:

The Contractor shall be responsible to protect all new concrete work from being etched, scratched or otherwise marked following replacement thereof. If new concrete work is marked, the Contractor shall replace it at its expense and no extra costs will be allowed.

## **SECTION 306 – UNDERGROUND CONDUIT CONSTRUCTION**

**306-7 CURB DRAINS.** Add the following:

The Contract Unit Price for curb drain shall include full compensation for constructing the curb drain complete in place, as shown on the Plans. Said Contract

Unit Price shall include, but not be limited to, construction of the inlet and pipes or culvert, connections to existing pipes, and assurance that said outlet has positive drainage flow.

## **SECTION 308 – LANDSCAPE AND IRRIGATION INSTALLATION**

### **308-2 EARTHWORK AND TOPSOIL PLACEMENT.**

**308-2.1 General.** Add the following:

The landscape work shall not begin until all other trades have repaired all areas of settlement, erosion, rutting, etc., and the soils have been re-established, recompacted and refinished to final grades. The Engineer shall be notified of all areas where the landscape work is prevented from being executed.

Surface drainage shall be provided by modeling the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with topsoil and graded to drain properly.

#### **308-2.2 Trench Excavation and Backfill.**

Subparagraph 3) is amended as follows:

- 3) Lateral sprinkler lines – 12 inches (30 inches under roadways).

#### **308-2.3 Topsoil Preparation and Conditioning**

**308-2.3.1 General.** Substitute Class A with Class C in the first sentence of the first paragraph.

Add the following:

Before soil preparation operations are started in any area, the Contractor shall remove and dispose of all trash and any other debris on the surface of the ground.

Mowing and spraying operations shall be performed in all areas throughout the limits of the landscape portion of the Work. The sequence of operations shall be determined by the Engineer. Before applying any chemical spray material, the Contractor shall obtain from the Engineer written approval of the material to be used, the rate, and method of application.

Stolon-type grasses and weeds shall be killed by spraying with an approved weed control chemical. Other weeds shall be mowed as close to the ground as possible. Such weeds or grasses shall be removed by grubbing prior to cultivating.

Any weed growth which subsequently appears shall be killed by additional spraying before the weeds exceed two (2) inches in height. At the time of planting, each area to be planted shall be free of living weeds of any height.

The Contractor immediately shall remove and dispose of mowed weed growth and all other debris generated by clearing and grubbing when so directed by the Engineer.

**308-2.3.2 Fertilizing and Conditioning Procedures.** Add the following:

The conditioning material per 1000 square feet shall be:

- a) Four (4) cubic yards nitrogen stabilized organic amendment derived from redwood, fir or cedar sawdust.
- b) Fifteen (15) lbs. 12-12-12 commercial fertilizer.
- c) Fifteen (15) lbs. soil sulfur.

The Contractor shall apply post-plant fertilizer at the rate of twenty pounds (20 lbs.) per 1,000 sq. ft., thirty (30) days after planting and once again at the end of the post-construction maintenance period.

**308-2.4 Finish Grading.** Replace the second paragraph with the following:

The finish grade below adjacent paving, curbs or headers shall be one inch in lawn areas and three inches in shrub or groundcover areas.

**308-4 PLANTING**

**308-4.1. General.** Add the following:

Planting work shall not begin until the area's irrigation system has been installed, operational and passed inspection.

Inspection and approval of specimens shall be required before delivery to site; all others on delivery. Any plants rendered unsuitable for planting because of this inspection shall be considered as samples and shall not be paid for. In case the sample plants inspected are found to be defective, the Engineer reserves the right to reject the entire lot or lots of plants represented by the defective samples. Rejected plants shall be removed from the site immediately. Random samples will be inspected for root condition.

All plants shall be true to name, and one of each bundle or lot shall be tagged with the name and size of plants, in accordance with the standards of practice recommended by the American Association of Nurserymen. The root condition of plants furnished in containers shall be determined by removal of earth from the roots of not less than two (2) plants, nor more than 2 percent (2%) of the total number of plants of each species or variety, except when container-grown plants are from several different sources; in which

case, the roots of not less than two (2) plants of each species or variety from each source shall be inspected by the Engineer at his option. The selection of plants to be inspected will be made by the Engineer.

All plants of the same species and container size (i.e., the same specification) shall be uniform in size and shape and at the same stage of growth to the satisfaction of the Engineer.

All plants shall be fully acclimated and in an active growing state.

The Contractor shall remove all lateral growth that is not acceptable and/or shape all plants to the satisfaction of the Engineer.

All plants shall be full-sized and shall have root systems at a fully developed state within the container.

Hair roots should extend to the edge of the container. No plant shall be root-bound. Root balls may require scarification to the satisfaction of the Engineer.

No boxed, balled or canned plants shall be planted if the ball is broken or cracked, whether before or during the process of planting. Any plant transplanted by the Contractor that dies or has bark, branch or die-back injury shall be replaced at the Contractor's expense with an equal plant to the satisfaction of the Engineer.

Before plants are transported to the planting area, they shall be properly pruned or cut back to reduce damage by wind and to force lateral growth.

No plants shall be transported to the planting area that are not thoroughly wet throughout the ball of earth surrounding the roots. Plants should not be allowed to dry out, nor shall any roots be exposed to the air except during the act of placement. Any plant that, in the opinion of the Engineer, is dry or in a wilted condition when delivered or thereafter, whether in place or not, will not be accepted and shall be replaced at the Contractor's expense.

All inspections herein specified shall be made by the Engineer. The Contractor shall request inspection at least 48 hours in advance of the time inspection is required. Inspection shall be required on the following stages of the work:

- a) During preliminary grading, soil preparation, and initial weeding.
- b) When plants are spotted for planting, but before planting holes have been excavated.
- c) When finish grading has been completed.
- d) When all specified work, except the maintenance period has been completed.
- e) Final inspection at the completion of the maintenance period.

The Contractor's failure to obtain inspection will extend the start and/or finish of the maintenance period as applicable, unless otherwise agreed to in writing by the Engineer.

**308-4.5 Tree and Shrub Planting.** Replace the fourth paragraph with the following:

All planting holes shall be backfilled with a prepared soil mix conforming to the following requirements:

- 4 parts by volume nitrogen-stabilized organic amendment
- 6 parts by volume on-site soil\*
- 1 lb. 12-12-12 commercial fertilizer per cubic yard of mix
- 2 lbs. iron sulfate per cubic yard of mix

\*from area(s) approved by Engineer

The materials shall be thoroughly mixed to the bottom of the pit so that they are evenly distributed and without clods or lumps. Backfill shall be so placed in the pits that the plant will be at its natural growing height and the backfill material will be level one inch below surrounding soil after settlement.

Fertilizer planting tablets (twenty-one (21) gram size and shall be placed with each plant at the following rates:

- One (1) tablet per one (1) gallon container;
- Two (2) tablets per five (5) gallon container;
- Four (4) tablets per fifteen (15) gallon container;
- Eight (8) tablets per 24" box container
- One (1) tablet per each three inches (3") of box size greater than 24".

Center plant in pit or trench on slight pedestal. Face plants with fullest growth into prevailing wind. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots. Position the plant in the hole and backfill no higher than halfway up the root ball. If required, place the recommended number of tablets evenly around the perimeter of, and immediately adjacent to, the root ball at a depth which is between the middle and the bottom of the root ball. Complete the backfilling, tamp (eliminating all air voids) and water. Do not pack.

Except for street trees, construct a berm 4" above finish grade, extending 4" to 6" beyond edge of root ball, forming a watering basin with a level bottom around each plant. After a minimum of 2 days soaking and the regular irrigation system is operating, the berm area shall be smoothed to finish grade.

**308-4.9.3 Seeding and Mulching.** Add the following:

The method of seeding shall be Method B described in 308-4.8.2. The Seed mix, mulch and tackifier shall be S&S Seeds, (805) 684-0436, "Ornamental, Low Growing Native Mix", wood fiber mulch, and M-Binder or equal described in 212-1.3 and 212-1.3.1.

### **308-4.8 Lawn Planting**

#### **308-4.8.2 Seed.** Add the following to Method B.

Prior to the application of hydro-mulch, the fine grading of all lawn areas shall be inspected and approved by the Engineer. Seedbeds shall be treated with 5% Dieldrin in granular form at the rate of 3 1/2 pounds per 1000 square feet and lightly watered. After 24 hours (minimum) have elapsed, the seedbeds shall be prewetted prior to hydroseeding and shall be kept continually moist after hydroseeding.

All equipment used to apply hydromulch shall be subject to the approval of the Engineer. The equipment shall have a built-in agitation system and operating capacity sufficient to agitate, suspend and homogeneously mix a slurry containing not less than 40 lbs. of fiber mulch plus a combined total of 7 lbs. fertilizer solids for each 100 gallons of water.

Hydraulic spray nozzles shall provide a continuous non-fluctuating discharge. The slurry tank shall have a minimum capacity of 1,500 gallons and shall be mounted on a traveling unit, either self-propelled or drawn by a separate unit, which will place the slurry tank and spray nozzle within sufficient proximity to the areas to be seeded.

The slurry preparation shall take place at the site of Work and shall begin by adding water to the tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, good re-circulation shall be established and at this time the seed shall be added. Fertilizer shall then be added to the mixture after the seed and when the tank is at least one-third filled with water.

The engine throttle shall be opened to full speed when the tank is half filled with water. All the wood pulp mulch shall be added by the time the tank is two-thirds to three-fourths full. Spraying shall commence immediately when the tank is full.

Spray the area with a uniform visible coat using the dark color of the cellulose fiber or organic amendment as a visual guide. The slurry shall be applied in a downward drilling motion via a fan stream nozzle. It is important to ensure that all of the components enter and mix with the soil.

All slurry mixture which has not been applied within four (4) hours after mixing shall be rejected and removed from the Work at the Contractor's expense.

Special care shall be exercised by the Contractor to prevent any of the slurry from being spilled or sprayed anywhere except onto areas to be hydroseeded. Any spillage or overspray immediately shall be removed by and at the expense of the Contractor to the satisfaction of the Engineer.

Seed shall be applied at a minimum rate of five (5) pounds per 1000 square feet.

If complete and full germination is not obtained within 14 days, the Contractor shall hand seed with the same seed mixture and top dress with nitrohumous and redwood soil amendment all areas designated by the Engineer.

Add the following subsections:

**308-4.9.3 Seeding and Mulching.** Add the following:

The method of seeding shall be Method B described in 308-4.8.2. The Seed mix, mulch and tackifier shall be S&S Seeds, (805) 684-0436, "Ornamental, Low Growing Native Mix", wood fiber mulch, and M-Binder or equal described in 212-1.3 and 212-1.3.1.

**308-4.11 Erosion Control Material**

Erosion control material shall be Landlok C2 or approved equal.

**308-4.11.1 General.** The CITY maintains a tree conservation policy. The Contractor is required to assist the CITY in its efforts to conserve trees.

The Contractor shall be required to provide a Consulting Arborist (CA) to review and guide its operations that may impact trees to remain. The CA shall be required to be a member of the American Society of Consulting Arborists (310-947-0483) and have Certification as an Arborist by the International Society of Arboriculture (217-355-9411), unless otherwise approved by the Engineer.

The CA shall inspect all work locations and assess the impact of construction on existing trees to remain. If the CA determines that destructive impact is likely, Contractor is required to modify its operations to reduce the likelihood of damage to the fullest extent feasible. Contractor shall be responsible to schedule its operations in a manner that will permit the CA to view areas after removals and prior to construction, as necessary.

The CA shall spot-check representative operations and modifications employed to protect existing trees. A preliminary identification of trees that may potentially be impacted has been made by the Engineer. The CA shall check these and other locations to assure adequate protective measures are taken.

There shall be no separate payment for the services of the CA. All costs for the CA shall be included in the prices bid for appurtenant work.

**308-4.11.2 Conservation Methods.** Manual operations shall be employed for the removal of sod and soil to establish a finished grade within 4 feet of existing trees to remain.

Tree root systems must remain adequate to withstand heavy windstorms.

Construction equipment, materials, sand, soil, gravel, or other material shall not be placed, parked or stored on the surface of any unpaved areas within the driplines (outermost reach of branches) of street trees. No chemicals, rinstates, or petroleum products shall be deposited within the driplines of street trees.

**308-4.11.3 Root Barrier and Pruning.** Roots shall be pruned immediately adjacent to the edge of the sidewalk and the back of curb. Cuts shall be 4-inches wide and 14-inches and 18-inches deep adjacent to sidewalk and curb and gutter respectively. The cuts shall extend 6 feet in each direction along the curb from the center of the tree trunk for a total length of 12 feet or as directed by the Engineer.

Root pruning equipment shall be specifically designed for this purpose, sharpened adequately to sever roots in a clean manner, and equipped with padded tracks or rubber tires to prevent scraping or marking of the roadway or curbs.

Areas root pruned shall be backfilled with Class "C" topsoil either immediately upon completion of root pruning or upon completion of the adjacent work provided that adequate safety and warning devices are placed and maintained at each location.

The Contractor shall repair or replace all utility service connections and sprinkler systems within the right-of-way which are damaged or removed as a result of the root pruning operation. Repairs shall be initiated immediately upon the occurrence of damage or removal and completed by the end of each working day. Repairs and replacements shall be the equivalent of, or better than, the existing improvements in material, dimension, and function. All repairs shall be at the Contractor's expense and to the satisfaction of the Engineer.

Root sealer shall be approved by the Engineer a minimum of two (2) working days prior to the start of root pruning operations and shall be applied to all cut root areas which are larger than 50mm (2 inches) in diameter. The approved sealer shall be applied as soon as practical after the cuts have been made.

When constructing or replacing driveway approaches, roots shall not be cut by means of mechanical root cutting machines. If root removal is essential to driveway construction, roots shall be manually cut using hand implements with guidance from the CA.

Exposed tree roots shall be covered with mulch and watered from a period immediately following curb and gutter removal, until the area is backfilled following construction.

The root barrier shown in City of Torrance Standard Plan No. T402 is hereby deleted from this project.

**308-4.12. Payment.** Payment for providing prepared topsoil, furnishing and planting trees, shrubs, and plants shall be included in the lump sum Contract Unit Price for Planting, Tree Replacement, and Other Landscaping Work.

The Contract Price for Planting, Tree Replacement, and Other Landscaping Work shall include full compensation to install the specified 24" box trees complete in place, as shown on the Plans and in accordance with these Special Provisions, including installation of the tree well, providing prepared topsoil, backfill, restoration of adjacent grass and parkway, and all appurtenant work.

**308-6 MAINTENANCE AND PLANT ESTABLISHMENT.** Replace the entire subsection with the following:

The Establishment and Maintenance Period shall begin on the first day after all planting in this Work is completed and accepted, and shall continue thereafter until 90 calendar days have passed. Notify the Engineer at least seven (7) days in advance of completion. Failure by the Contractor to notify the Engineer will delay the start of the Establishment and Maintenance Period.

Should the Establishment and Maintenance Period be extended beyond the prescribed 60 calendar days because of rejection by the Engineer for whatever reason, the entire installation shall remain the responsibility of the Contractor unless otherwise determined by the Engineer. Any rejected material shall be replaced and the 60 calendar day Establishment and Maintenance Period shall be restarted from that time for the replaced material only.

All areas landscaped or restored under this Contract shall be maintained by the Contractor. The Contractor, without any expense to the CITY, shall weed the planted areas as needed and shall remove all accumulated debris from the landscaped areas as needed and/or as called for by the Engineer.

One month after planting, fertilize plants with 12-12-12 (N-P-K) commercial fertilizer at the rate of 3 level tablespoons per 5-gallon plant basin. The Engineer may require additional fertilization at each monthly interval.

Apply Iron Sequestrene as specified by the manufacturer immediately at the onset of any symptom of iron chlorosis. Repeat fertilization monthly for duration of maintenance period.

The above fertilization schedule may be revised by the Engineer if, in his/her opinion, optimal plant health and growth is not being obtained. The Contractor shall comply with all changes as directed.

The Contractor shall be responsible to provide adequate water to all plants without overwatering. Water conservation is mandated. The Contractor shall obtain approval from the Engineer for its proposed irrigation schedule and any changes thereto.

**308-6.1. Payment.** Payment for Plant Establishment and Maintenance Period shall be on a lump sum basis per the Contract Unit Price. The Contract Unit Price shall include full compensation for all tools, materials, labor, equipment, water and incidentals to complete this work in accordance with the Plans and Special Provisions.

**308-7 GUARANTEE.** Add the following:

The Contractor, without expense to the CITY, shall adjust all irrigation heads to their appropriate operational heights, shall adjust and clean or replace, if necessary, all irrigation heads so that the planting areas are properly covered and they shall be adjusted so as to prevent excessive overflow into the adjacent street right-of-way.

The CITY reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the CITY shall not relieve the Contractor of its responsibility under the terms of the Contract as herein specified.

Maintenance shall be done by qualified and experienced irrigation pipefitters.

All fifteen (15) gallon and larger trees installed under the contract shall be guaranteed to live and grow for one (1) year from the date of final acceptance of the contract work unless decline of the tree is specifically attributable to causes unrelated to installation, plant material quality, and the Contractor's maintenance practices.

All other plant material shall be guaranteed to live and grow for a period of ninety (90) calendar days from the date of final acceptance of the contract work unless decline of the plant material is specifically attributable to causes unrelated to installation, plant material quality, and the Contractor's maintenance practices.

Any plant material found to be dead, missing, or in poor condition during the post-construction maintenance period, shall be replaced immediately at the Contractor's expense. The Engineer shall be the sole judge as to the condition of the material. Replacement shall be made to the same specifications required for the original plantings.

During the guarantee period, should the Contractor fail to expeditiously replace dead plant material upon written notification by the Engineer, the City shall cause the work to be corrected and bill the actual costs incurred to the Contractor.

**308-8. PAYMENT.** Replace the entire subsection with the following:

The Contract Unit Prices for hydroseeding, irrigation, and planting shall include full compensation to complete the hydroseeding, install the landscaping and irrigation systems (as detailed in this Section, including prepared topsoil) complete in place, as shown on the Plans and per these Specifications, excluding plant establishment and maintenance.

**SECTION F  
SUPPLEMENTAL SPECIAL PROVISIONS FOR  
SOIL NAILED WALLS**

**Supplemental Special Provisions for Soil Nailed Walls supersede Standard Specifications and these general Special Provisions. Supplemental Special Provision for Soil Nailed Walls include:**

- Section F-01 Procedural Specifications for Soil Nail Walls**
- Section F-02 Shotcrete Specifications for Soil Nail Walls**

**These specifications refer to Standard Specifications and Special Provisions and other sources including AASHTO (1996), and FHWA (2002) and ACI references on shotcrete [e.g., ACI (JL 994), ACI (1995a)]. For testing of materials, AASHTO (1992) and ASTIVI (2002) are referred.**

**SECTION F-01**  
**PROCEDURAL SPECIFICATION FOR SOIL NAILED WALL**

**PART 1 – GENERAL**

**1.01 SCOPE OF WORK**

- A. This work consists of constructing a permanent soil nailed wall as specified herein and as shown on the plans. The Contractor shall furnish all labor, materials, and equipment required to complete the work. The Contractor shall select the excavation, drilling, and grouting methods to meet the performance requirements specified herein or shown on the plans.
  
- B. The work shall include excavating in stages in accordance with the approved Contractor's plan; detailing the drilling of the soil nail drillholes to the diameter and length required to develop the specified capacity; grouting the nails; providing and installing the specified drainage features; providing and installing bearing plates, washers, nuts, and other required miscellaneous materials; and constructing the required temporary shotcrete face and constructing the final structural facing.

**1.02 RELATED SPECIFICATIONS AND SECTIONS**

Standard Specifications and Special Provisions

Section F-01 Shotcrete Specifications

**1.03 MATERIAL**

- A. Material shall conform to the following sections and subsection (*use as required*).
  - 1. Reinforcing Steel [*see AASHTO (1996), Section 9 "Reinforcing Steel"*].
  - 2. Permanent Shotcrete (*see Section 02 of this appendix*).
  - 3. Forms and Falsework (use agency-standard specifications).
  - 4. Architectural Finish (use agency-standard specifications).
  
- B. Soil Nails
  - 1. *Nail Solid Bar.* AASHTO M31/ASTM A615, 75 (520). Deformed bar, continuous without splices or welds, new, straight, undamaged, bare, encapsulated as shown on the

Plans. Threaded, a minimum of 6 in. on the wall anchorage end, to allow proper attachment of bearing plate and nut. Threading may be continuous spiral deformed ribbing provided by the bar deformations (continuous thread bars) or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, provide the next-larger bar number designation from that is shown on the Plans, at no additional cost.

2. *Bar Coupler.* Bar couplers shall develop the full ultimate tensile strength of the bar as certified by the manufacturer.
3. *Encapsulation.* Minimum 0.04-in. (1-mm) thick, corrugated, HDPE tube conforming to AASHTO M252 or corrugated PVC tube conforming to ASTM D1784, Class 13464-B.

C. Soil Nail Appurtenances

1. *Centralizer.* Manufactured from Schedule 40 PVC pipe or tube, steel, or other material not detrimental to the nail steel (wood shall not be used); securely attached to the nail bar; sized to position the nail bar within 1 in. (25 mm) of the center of the drillhole; sized to allow tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drillhole.
2. *Nail Grout.* Neat cement or sand/cement mixture with a minimum 3-day compressive strength of 1,500 psi (10.5 MPa) and a minimum 28-day compressive strength of 3,000 psi (21 MPa), per AASHTO T106/ASTM C109.
3. *Fine Aggregate.* AASHTO M6/ASTM C33.
4. *Portland Cement.* AASHTO M85/ASTM C150, Type I or II.
5. *Admixtures.* AASHTO M194/ASTM C494. Admixtures that control bleed, improve flowability, reduce water content, and retard set may be used in the grout subject to review and acceptance by the Engineer. Accelerators are not permitted. Expansive admixtures may only be used in grout used for filling sealed encapsulations. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations.
6. *Film Protection.* Polyethylene film per AASHTO M171.

- D. Bearing plates, Nuts, and Welded Stud Shear Connectors.
  - 1. *Bearing Plates*. AASHTO M183/ASTM A36.
  - 2. *Nuts*. AASHTO M291, grade B, hexagonal, fitted with beveled washer or spherical seat to provide uniform bearing.
  - 3. *Shear Connectors*. AASHTO Construction Specifications, Section 11.3.3.1.
- E. Welded Wire Fabric. AASHTO M55/ASTM A185 or A497.
- F. Reinforcing Steel. AASHTO M31/ASTM A615, Grade 75 (520), deformed.
- G. Geocomposite Sheet Drain. Manufactured with a drainage core (e.g., geonet) and a drainage geotextile attached to or encapsulating the core. Drainage core to be manufactured from long chain synthetic polymers composed of at least 85 percent by mass of polypropylenes, polyester, polyamine, polyvinyl chloride, polyoleofin, or polystyrene and having a minimum compressive strength of 40 psi (275 kPa) when tested in accordance with ASTM D 1621 Procedure A. The drainage core with the geotextile fully encapsulating the core shall have a minimum flow rate of 1 liter per second per meter of width tested in accordance with ASTM D 4716. The test conditions shall be under an applied load of 10 psi (69 kPa) at a gradient of 1.0 after a 100-hour seating period.
- H. Underdrain and Perforated Pipe
  - 1. *Pipe*. ASTM 1785 Schedule 40 PVC solid and perforated wall; cell classification 12454-B or 12354-C, wall thickness SDR 35, with solvent weld or elastomeric joints.
  - 2. *Fittings*. ASTM D3034, Cell classification 12454-B or C, wall thickness SDR 35, with solvent or elastomeric joints.
- I. Shotcrete. See Section F-02.

#### **1.04 CONTRACTOR QUALIFICATIONS**

- A. The soil nailing contractor shall have completed at least 3 permanent soil nail retaining wall projects during the past 3 years totaling at least 10,000 ft<sup>2</sup> (1,000 m<sup>2</sup>) of wall face area and at least 500 permanent soil nails.
- B. Provide a Registered Professional Engineer with experience in the construction of permanent soil nail retaining walls on at least 3 completed projects over the past 3 years. The Contractor may not

use consultants or manufacturer's representatives to meet the requirements of this section. Provide on-site supervisors and drill operators with experience installing permanent soil nails on at least three projects over the past 3 years.

#### **1.05 SUBMITTALS**

- A. The Contractor shall submit a brief description of at least 3 projects, including the owning agency's name, address, and current phone number; location of project; project contract value; and scheduled completion date and actual completion date for the project.
- B. At least 60 calendar days before starting soil nail work, identify the Engineer, on-site supervisors, and drill operators assigned to the project, and submit a summary of each individual's experience. Only those individuals designated as meeting the qualifications requirements shall be used for the project. The Contractor cannot substitute for any of these individuals without written approval of the Owner or the Owner's Engineer. The Owner's Engineer shall approve or reject the Contractor qualifications and staff within 15 working days after receipt of the submission. Work shall not be started on any soil nail wall nor materials ordered until the Contractor's qualifications have been approved by the Owner's Engineer. The Engineer may suspend the work if the Contractor substitutes unqualified personnel for approved personnel during construction. If work is suspended due to the substitution of unqualified personnel, the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting from the suspension of the work will be allowed.
- C. The Contractor is responsible for providing the necessary survey and alignment control during the excavation, locating drillholes and verifying limits of wall installation. At least 30 days before starting soil nail work, submit a Construction Plan to the Engineer that includes the following.
  - 1. The start date and proposed detailed wall construction sequence.
  - 2. Drilling and grouting methods and equipment, and any variation of these along the wall alignment.
  - 3. Nail grout mix design, including compressive strength test results (per AASHTO T106/ASTM C109) supplied by a qualified independent testing lab verifying the specified minimum 3-day and 28-day grout compressive strengths.

Previous test results for the same grout mix completed within one year of the start of grouting may be submitted for verification of the required compressive strengths.

4. Nail grout placement procedures and equipment.
  5. Shotcrete materials and methods.
  6. Soil nail testing methods and equipment setup.
  7. Identification number and certified calibration records for each test jack and pressure gauge and load cell to be used. Jack and pressure gauge shall be calibrated as a unit. Calibration records shall include the date tested, the device identification number, and the calibration test results and shall be certified for an accuracy of at least 2 percent of the applied certification loads by a qualified independent testing laboratory within 90 days prior to submittal.
  8. Manufacturer Certificates of Compliance for the soil nail ultimate strength, nail bar steel, Portland cement, centralizers, bearing plates, and encapsulation.
- D. The Engineer shall approve or reject the Contractor's Construction Plan within 30 working days after the submission. Approval of the Construction Plan does not relieve the Contractor of his responsibility for the successful completion of the work.

#### **1.06 STORAGE AND HANDLING**

- A. Store and handle soil nail bars in a manner to avoid damage or corrosion. Replace bars exhibiting abrasions, cuts, welds, weld splatter, corrosion, or pitting. Repair or replace any bars exhibiting damage to encapsulation.

#### **1.07 EXCAVATION**

- A. Complete excavation to the final wall excavation line and apply shotcrete in the same work shift, unless otherwise approved by the Engineer. Application of the shotcrete may be delayed up to 24 hours if the contractor can demonstrate that the delay will not adversely affect the excavation face stability.
- ~~B.~~ Excavation of the next-lower lift shall not proceed until nail installation, reinforced shotcrete placement, attachment of bearing plates and nuts, and nail testing have been completed and accepted in the current lift. Nail grout and shotcrete shall have

cured for at least 72 hours or attained at least their specified 3-day compressive strength before excavating the next stage.

## **1.08 NAIL INSTALLATION**

- A. Provide nail length and drillhole diameter necessary to develop the load capacity to satisfy the acceptance criteria for the design load required, but not less than the lengths or diameters shown in the plans. Drill holes for the soil nails at the locations, elevations, orientations, and lengths shown on the Plans. Select drilling equipment and methods suitable for the ground conditions and in accordance with the accepted installation methods submitted by the Contractor. The use of drilling muds or other fluids to remove cuttings will not be allowed. If caving ground is encountered, use cased drilling methods to support the sides of the drillholes. [The use of self-drilling nail bars (also known as hollow, self-grouting or pressure-grouted nail bars) will not be allowed.]. Provide nail bars as shown in the Plans. Provide centralizers sized to position the bar within 1 in. (25 mm) of the center of the drillhole. Position centralizers as shown on the Plans so that their maximum center-to-center spacing does not exceed 10 ft (3 m). Also locate centralizers within 1.5 ft (0.5 m) from the top and bottom of the drillhole.

## **1.09 GROUTING**

- A. Grout the drillhole after installation of the nail bar and within 2 hours of completion of drilling. Inject the grout at the lowest point of each drillhole through a grout tube, casing, hollow-stem auger, or drill rods. Keep the outlet end of the conduit delivering grout below the surface of the grout as the conduit is withdrawn to prevent the creation of voids. Completely fill the drillhole in one continuous operation. Cold joints in the grout column are not allowed except at the top of the test bond length of proof tested production nails.
- B. Test nail grout according to AASHTO T106/ASTM C109 at a frequency of one test per mix design and a minimum of one test for every 50 cy (38 m<sup>3</sup>) of grout placed. Provide grout cube test results to the Engineer within 24 hours of testing.

## 1.10 NAIL TESTING

- A. Perform both verification and proof testing of designated test nails. Perform verification tests on sacrificial test nails at locations shown on the Plans. Perform proof tests on production nails at locations selected by the Engineer. Testing of any nail shall not be performed until the nail grout and shotcrete facing have cured for at least 72 hours or attained at least their specified 3-day compressive strength.
- B. Testing equipment shall include 2 dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and a reaction frame. The pressure gauge shall be graduated in 75 psi (500 kPa) increments or less. Measure the nail head movement with a minimum of 2 dial gauges capable of measuring to 0.001 in. (0.025 mm).

## 1.11 VERIFICATION TESTING OF SACRIFICIAL NAILS

- A. Perform verification testing prior to installation of production nails to confirm the appropriateness of the Contractor's drilling and installation methods, and verify the required nail pullout resistance.
- B. Verification test nails shall have both bonded and unbonded lengths. Along the unbonded length, the nail bar is not grouted. The unbonded length of the test nails shall be at least 3 ft (1 m). The bonded length of the soil nail during verification tests, LBVT, shall be 10 ft (3 m).
- C. The Design Test Load (DTL) shall be 18 kips for nail bonded length of 10 feet. Perform verification tests by incrementally loading the verification test nails to failure or a maximum test load of 300 percent of the DTL in accordance with the following loading schedule. Record the soil nail movements at each load increment.

**Verification Test Loading Schedule.**

<b>Load</b>	<b>Hold Time</b>
0.05 DTL max.(AL)	1 minute
0.25 DTL	10 minutes
0.50 DTL	10 minutes
0.75 DTL	10 minutes
1.00 DTL	10 minutes
1.25 DTL	10 minutes
1.50 DTL (Creep Test)	60 minutes
1.75 DTL	10 minutes
2.00 DTL	10 minutes

2.50 DTL	10 minutes max.
3.0 DTL or Failure	10 minutes max.
0.05 DTL max. (AL)	1 minute (record permanent set)

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the DTL. Dial gauges should be set to “zero” after the alignment load has been applied. Following application of the maximum load (3.0 DTL) reduce the load to the alignment load (0.05 DTL maximum) and record the permanent set.

- D. Hold each load increment for at least 10 minutes. Monitor the verification test nail for creep at the 1.50 DTL load increment. Measure and record nail movements during the creep portion of the test in increments of 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. Maintain the load during the creep test within 2 percent of the intended load by use of the load cell.

### 1.12 PROOF TESTING OF PRODUCTION NAILS

- A. Perform successful proof testing on 5 percent of the production soil nails in each nail row or a minimum of 1 per row. The Engineer shall determine the locations and number of proof tests prior to nail installation in each row. Production proof test nails shall have both bonded and temporary unbonded lengths. The temporary unbonded length of the test nail shall be at least 3 ft (1 m). The bonded length of the soil nail during proof production tests, LBPT, shall be 10 ft (3 m).
- B. The Design Test Load (DTL) shall be 18 kips for nail bonded length of 10 feet. Perform proof tests by incrementally loading the proof test nail to 150 percent of the DTL in accordance with the following loading schedule. Record the soil nail movements at each load increment.

#### Proof Test Loading Schedule.

Load	Hold Time
0.05 DTL max. (AL)	Until Movement Stabilizes
0.25 DTL	Until Movement Stabilizes
0.50 DTL	Until Movement Stabilizes
0.75 DTL	Until Movement Stabilizes
1.00 DTL	Until Movement Stabilizes
1.25 DTL	Until Movement Stabilizes

1.50 DTL (Max. Test Load)
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Creep Test (see below)
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The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the DTL. Dial gauges should be set to “zero” after the alignment load has been applied.

- C. The creep period shall start as soon as the maximum test load (1.50 DTL) is applied and the nail movement shall be measured and recorded at 1 minute, 2, 3, 5, 6, and 10 minutes. Where the nail movement between 1 minute and 10 minutes exceeds 0.04 in. (1 mm), maintain the maximum test load for an additional 50 minutes and record movements at 20 minutes, 30, 50, and 60 minutes. Maintain all load increments within 5 percent of the intended load.

### **1.13 TEST NAIL ACCEPTANCE CRITERIA**

- A. A test nail shall be considered acceptable when all of the following criteria are met:
  - 1. For verification tests, the total creep movement is less than 0.08 in. (2 mm) between the 6- and 60-minute readings and the creep rate is linear or decreasing throughout the creep test load hold period.
  - 2. For proof tests, the total creep movement is less than 0.04 in. (1 mm) during the 10-minute readings or the total creep movement is less than 0.08 in. (2 mm) during the 60-minute readings and the creep rate is linear or decreasing throughout the creep test load hold period.
  - 3. For verification and proof tests, the total measured movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test nail unbonded length.
  - 4. A pullout failure does not occur at 3.0 DTL under verification testing and 1.5 DTL test load under proof testing. Pullout failure is defined as the inability to further increase the test load while there is continued pullout movement of the test nail. Record the pullout failure load as part of the test data.
- B. Maintaining stability of the temporary unbonded test length for subsequent grouting is the Contractor’s responsibility. If the unbonded test length of production proof test nails cannot be satisfactorily grouted subsequent to testing; the proof test nail shall

become sacrificial and shall be replaced with an additional production nail installed at no additional cost to the owner.

#### **1.14 TEST NAIL REJECTION**

- A. If a test nail does not satisfy the acceptance criterion:
1. For verification test nails, the Engineer will evaluate the results of each verification test. Installation methods that do not satisfy the nail testing requirements shall be rejected. The Contractor shall propose alternative methods and install replacement verification test nails. Replacement test nails shall be installed and tested at no additional cost.
  2. For proof test nails, the Engineer may require the Contractor to replace some or all of the installed production nails between a failed proof test nail and the adjacent passing proof test nail. Alternatively, the Engineer may require the installation and testing of additional proof test nails to verify that adjacent previously installed production nails have sufficient load carrying capacity. Installation and testing of additional proof test nails or installation of additional or modified nails as a result of proof test nail failure(s) will be at no additional cost.

#### **1.15 WALL DRAINAGE NETWORK**

- A. Install and secure all elements of the wall drainage network as shown on the Plans. The drainage network shall consist of installing geocomposite drain strips, PVC connection pipes, and weepholes as shown on the Plans.

Exclusive of the wall footing drains, all elements of the drainage network shall be installed prior to shotcreting.

1. *Geocomposite Drain Strips.* Install geocomposite drain strips centered between the columns of nails as shown on the Plans. The drain strips shall be at least 300 mm (12 in.) wide and placed with the geotextile side against the ground. Secure the strips to the excavation face and prevent shotcrete from contaminating the geotextile. Drain strips will be vertically continuous. Make splices with a 300 mm (12 in.) minimum overlap such that the flow of water is not impeded. Install drain plate and connector pipe at base of each strip. Repair damage to the geocomposite drain strip, which may interrupt the flow of water.

## 1.16 SHOTCRETE FACING

A. Provide construction shotcrete facing and permanent shotcrete facing (if required) in accordance with Section F-02. Where shotcrete is used to complete the top ungrouted zone of the nail drill hole near the face, position the nozzle into the mouth of the drill hole to completely fill the void.

1. *Final Face Finish.* Shotcrete finish shall be either an undisturbed gun finish as applied from the nozzle or a rod, broom, wood float, rubber float, steel trowel or rough screeded finish as shown on the Plans.
2. *Attachment of Nail Head Bearing Plate and Nut.* Attach a bearing plate, washers, and nut to each nail head as shown on the Plans. While the shotcrete construction facing is still plastic and before its initial set, uniformly seat the plate on the shotcrete by hand-wrench tightening the nut. Where uniform contact between the plate and the shotcrete cannot be provided, set the plate in a bed of grout. After grout has set for 24 hours, hand-wrench tighten the nut. Ensure bearing plates with headed studs are located within the tolerances shown on the Plans.
3. *Shotcrete Facing Tolerances.* Construction tolerances for the shotcrete facing from plan location and plan dimensions are as follows:

Horizontal location of welded wire mesh; reinforcing bars, and headed studs:	10 mm (0.4 in.)
Location of headed studs on bearing plate:	6 mm (1/4 in.)
Spacing between reinforcing bars:	25 mm (1 in.)
Reinforcing lap, from specified dimension:	25 mm (1 in.)
Complete thickness of shotcrete:	
If troweled or screeded:	15 mm (0.6 in.)
If left as shot:	30 mm (1.2 in.)
Planeness of finish face surface-gap under 3-m (10-ft) straightedge:	
If troweled or screeded:	15 mm (0.6 in.)
If left as shot:	30 mm (1.2 in.)
Nail head bearing plate deviation from parallel to wall face:	10 degrees

### **1.17 FORMS AND FALSEWORK**

- A. Prepare and submit forms and falsework drawings, if any, according to Standard Specifications.

### **1.18 REINFORCING STEEL**

- A. Submit all order lists and bending diagrams, fabricate reinforcing steel, ship and protect material, place, fasten, and splice reinforcing steel according to Standard Specifications 201-2.

### **1.19 STRUCTURAL CONCRETE**

- A. Design concrete mixture, store, handle, batch, and mix material and deliver concrete, provide quality control, and construct any concrete elements according to Standard Specifications .

### **1.20 ARCHITECTURAL SURFACE FINISHES**

- A. Sculpt final facing texture and color according to approved test panel.

### **1.21 ACCEPTANCE**

- A. Material for the soil nail retaining wall will be accepted based on the manufacturer production certification or from production records. Construction of the soil nail retaining wall will be accepted based on visual inspection and the relevant production testing records.

## **PART 2 – MEASUREMENT AND PAYMENT**

### **2.01 SOIL NAILS**

- A. Measure production of soil nails by the linear foot. The length to be paid will be the length measured along the nail bar centerline from the back face of shotcrete to the bottom tip end of nail bar as shown on the Plans. No separate measurement will be made for proof test nails, which shall be considered incidental to production nail installation. Measure verification test nails by the each. Failed verification test nails or additional verification test nails installed to verify alternative nail installation methods proposed by the Contractor will not be measured.

### **2.02 STRUCTURE EXCAVATION**

- A. Measure excavation for the soil nail wall as the theoretical plan volume in cubic yards within the structure excavation limits shown on the plans. Additional excavation beyond the Plan wall final excavation line resulting from irregularities in the cut face,

excavation overbreak or inadvertent excavation, will not be measured. No measurement will be made for using temporary stabilizing berms.

**2.03 WALL FACE**

- A. Measure soil nail retaining walls by the square foot of wall face. Measurement will be made on the angled plane of front face accepted in the final work. No measurement or payment will be made for additional shotcrete needed to fill voids created by irregularities in the cut face, excavation overbreak or inadvertent excavation beyond the Plan final wall face excavation line, or failure to construct the facing to the specified line and grade and tolerances. The final pay quantity shall include all structural shotcrete, admixtures, reinforcement, welded wire mesh, wire holding devices, wall drainage materials, bearing plates and nuts, test panels and all sampling, testing and reporting required by the Plans and this Specification. The final pay quantity shall be the design quantity increased or decreased by any changes authorized by the Engineer.

**2.04 PAYMENT**

- A. The accepted quantities, measured as provided above, will be paid for at the contract unit price per unit of measurement for the pay items listed below that are shown on the bid schedule. Payment will be full compensation for the work prescribed in this section. Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
Permanent Soil Nails No. 8 Bar (Grade 75)	Linear foot
Verification Test Nails	Each
Structure Excavation-Soil Nail Wall	Cubic yard

**SECTION F-02  
SOIL NAIL WALL  
SHOTCRETE SPECIFICATIONS**

**PART 3 – GENERAL**

**3.01 SCOPE OF WORK**

- A. This work consists of constructing multiple courses of shotcrete on a prepared surface.

**3.02 RELATED SPECIFICATIONS AND SECTIONS**

Standard Specifications and Special Provisions

Section F-01 Procedural Specifications for Soil Nailed Wall

**3.03 MATERIALS**

- A. Provide shotcrete mix capable of attaining 2,000 psi compressive strength in 3 days and 4,000 psi compressive strength in 28 days, and conform to ACI 506.2 “Specifications for Proportioning Application of Shotcrete”.
  - 1. Cementations material shall be ASTM C150 Type I or II
  - 2. Nominal maximum size of aggregate shall be  $\frac{3}{4}$  inch.
  - 3. Total air content measured in accordance with AASHTO T 152 shall be between 6 and 7 percent.
- B. All reinforcing steel shall conform to Standard Specifications.
- C. Shotcrete Stain

The stain for the final shotcrete surface shall be of the Acid Base Lithochrome Type. The stain shall be formulated and applied so that the colors of the stained shotcrete closely match site bedrock mass of Malaga formation. The final colors of the stained shotcrete shall be selected based on test panel.

**3.04 REINFORCING FIBERS**

- A. Contractor may elect to use reinforcing deformed steel or fibrillated polypropylene fibers conforming to ASTM C 1116. The use of reinforcing fibers shall be pre-approved by the Engineer.

## **PART 4 – CONSTRUCTION**

### **4.01 GENERAL**

- A. Conform to the following:
1. ACI 506R Guide to Shotcrete.
  2. ACI 506.1 State of the Art Report on Fiber Reinforced Shotcrete.
  3. ACI 506.2 Specifications for Proportioning Application of Shotcrete.
  4. AASHTO C 311 Method for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Concrete.
  5. ASTM C 1077 Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

### **4.02 PRECONSTRUCTION SUBMISSIONS**

- A. Shotcrete material, equipment, preparation, and application. Submit the following to the Engineer for acceptance at least 30 days before placing shotcrete:
1. Description of proposed equipment for mixing and applying shotcrete conforming to Subsection 2.03. Include the manufacturer instructions, recommendations, literature, performance, and test data.
  2. Proposed shotcrete mix design conforming to Subsection 2.04 with mix proportions.
  3. Representative samples of shotcrete material, if requested by the Engineer.
  4. Results of all shotcrete preconstruction testing conforming to Subsection 2.04.
  5. Proposed method for applying and curing shotcrete conforming to Subsections 2.05, 2.06, and 2.07.
  6. Other information necessary to verify compliance with ACI 506.2.
  7. Certification that shotcrete conforms to the standards specified herein.

8. *Fiber samples, if used, with supplier or manufacturer recommendations for use.*
- B. Submit the following to the Engineer for acceptance at least 30 days before placing shotcrete:
1. *Project references.* Include project name, owner's name, and phone numbers from at least 3 projects of comparable nature completed in the last 2 years.
  2. *Nozzle operator's experience and training.* For each nozzle operator, include shotcrete application experience on at least two projects of comparable nature.
  3. *Shotcrete supervisor experience.* Include direct shotcrete application experience on comparable projects.
  4. *Testing laboratory certification.* Include documentation that the strength-testing laboratory complies with ASTM C 1077 and has the experience to perform the tests specified in this Section. The testing laboratory shall be AASHTO-accredited for ASTM C 1077 or demonstrate the ability to perform the requisite tests.

#### **4.03 EQUIPMENT**

- A. *Water Supply System.* For dry mix, provide a water storage tank at the job site. Provide a positive displacement pump with a regulating valve that is accurately controlled to provide water in the pressures and volumes recommended by the delivery machine manufacturer.
- B. *Mixing.* Use equipment capable of handling and applying shotcrete containing the specified maximum size aggregate and admixtures. Provide an air hose and blowpipe to clear dust and rebound during shotcrete application.
- C. *Air Supply System.* Use an air supply system capable of supplying the delivery machine and hose with air at the pressures and volumes recommended by the machine manufacturer. Do not use air supply systems that deliver oil-contaminated air or are incapable of maintaining constant pressure.
- D. *Delivery Machine.* Use a delivery machine capable of supplying material to the delivery hose at a uniform rate. The ejection from the nozzle must adhere to the treated surface with minimum rebound and maximum density when the nozzle is held in the range of 1 to 2 m (3 to 6 ft) from the target surface.

#### **4.04 PRECONSTRUCTION TESTING**

- A. Conduct preconstruction shotcrete field trials before starting shotcrete production. Allow the Engineer the opportunity to witness all phases of the preconstruction testing.
  - 1. Field Trials: Construct wood forms at least 150-mm (6-in.) thick by 1.0 m by 1.0 m (3 ft by 3 ft) in size. Have each proposed nozzle operator make test panels on two vertical wood forms. Cure the test panels according to AASHTO T 23, without immersing the panels.
  - 2. Coring: Drill six 75-mm (3-in.) diameter cores from each test panel according to AASHTO T 24. Trim the ends of the cores according to AASHTO T 24 to make cylinders at least 75-mm (3-in.) long.
  - 3. Compressive Strength Testing: Soak the cylinders in water for 40 hours immediately before testing. Test three cylinders from each test panel four days after field trial and test the remaining three cylinders 28 days after the field trial. Perform tests according to AASHTO T 23. All specified strength requirements shall be satisfied before the shotcrete mix design will be considered for acceptance.
  - 4. Mix Design Acceptance: The Engineer will accept or reject the shotcrete mix design based on the results of the preconstruction field trials and testing. Before approving any changes to a previously accepted mix design, the Engineer may require additional preconstruction testing at no additional cost to the agency.

#### **4.05 SURFACE PREPARATION AND APPLICATION OF SHOTCRETE**

- A. Surface Preparation - Clean loose material, mud, rebound, and other foreign matter from all surfaces to receive shotcrete. Remove curing compound on previously placed shotcrete surfaces by sandblasting. Install approved depth gages to indicate the thickness of the shotcrete layers. Install depth gages on 2-m (6-ft) centers longitudinally and transversely with no less than two gauges per increment of surface area to receive the shotcrete. Moisten all surfaces.
- B. Weather Limitations - Place shotcrete when the ambient temperature is 5°C or higher. Do not perform shotcrete operations during high winds and heavy rains.
- C. Shotcrete Application

1. Do not apply shotcrete to frozen surfaces.
  2. Use acceptable nozzle operators who have fabricated acceptable test panels according to Subsection 2.02.
  3. Apply shotcrete within 45 minutes of adding cement to the mixture. Apply shotcrete at a temperature between 10°C and 30°C.
  4. Direct the shotcrete at right angles to the receiving surface except when shooting ground reinforcing bars. Apply shotcrete in a circular fashion to build up the required layer thickness. Apply shotcrete in a steady uninterrupted flow. If the flow becomes intermittent, direct the flow away from the work area until it becomes steady.
  5. Make the surface of each shotcrete layer uniform and free of sags, drips, or runs.
  6. Limit the layer thickness of each shotcrete application to 50 mm (2 in.). Thicker applications may be approved if the contractor can demonstrate that no sloughing or sagging is occurring. If additional thickness is required, broom or scarify the applied surface and allow the layer to harden. Dampen the surface before applying an additional layer.
  7. Remove laitance, loose material, and rebound. Promptly remove rebound from the work area.
  8. Taper construction joints to a thin edge over a distance of at least 0.3 m (1 ft). Wet the joint surface before placing additional shotcrete on the joint. Do not use square construction joint.
- D. Production Summary - Prepare and submit a summary of shotcrete production application for each shift. Furnish the summary to the Engineer within 24 hours. Include the following information in the report:
1. Quantity and location of shotcrete applied including sketches.
  2. Observations of success or problems of equipment operation, application, final product conditions, and any other relevant issues during production and application.
  3. Description of placement equipment.
  4. Batch number(s) if applicable.

#### **4.06 QUALITY CONTROL RECORDS**

- A. Submit field quality control test reports within two working days of performing the tests. Include the following information in the reports:
1. Sample identification including mix design and test panel number and orientation.
  2. Date and time of sample preparation including curing conditions and sample dimensions.
  3. Date, time, and type of test.
  4. Complete test results including load and deformation data during testing, sketch of sample before and after testing, and any unusual occurrences observed.
  5. Names and signature of person performing the test.
  6. Location of steel reinforcement, if used, covered by shotcrete.
  7. Name of nozzle operator.

#### **4.07 PROTECTION AND CURING**

- A. Protect and cure the surfaces according to Standard Specifications 303-1.10. Protect and maintain shotcrete at a temperature above 5°C until shotcrete has achieved a minimum strength of 5.2 mPa (750 psi).

#### **4.08 ACCEPTANCE**

- A. Material for concrete will be evaluated by visual inspection of the work, conformance testing and by certification for materials manufactured off site. Compressive strength will be evaluated by conformance testing by using Table 2 for specification limits. See Table 3 for minimum sampling and testing requirements and acceptance quality category.

**Table 3: Sampling and Testing of Shotcrete.**

Material or Product	Property or Characteristic	Category	Test Methods or Specifications	Frequency	Sampling Point
Shotcrete	Air Content	–	AASHTO T 152 or AASHTO T 196	1 per load <sup>(1)</sup>	Truck, mixer or agitator <sup>(2)</sup>
	Unit Mass	–	AASHTO T 121	1 per load <sup>(1)</sup>	Truck, mixer or agitator <sup>(2)</sup>
	Compressive Strength	–	AASHTO T 23	1 set per 25 m <sup>3</sup> (33 cy), but not less than 1' set each day <sup>(3)</sup>	Production test panels <sup>(3)</sup>

Notes: (1) When continuous mixing is used, sample every 7.5 m<sup>3</sup> (10 cy).

(2) Sample according to AASHTO T 141.

(3) Prepare production test panels according to Subsection 2.05. Obtain two 75-mm (3-in.) diameter core specimens from each panel according to AASHTO T 24. A single compressive strength test result is the average result from two 75-mm (3-in.) diameter core specimens for the same test panel tested according to AASHTO T 23 at 28 days.

#### **4.09 MEASUREMENT**

A. Measurement for payment for shotcrete shall be measured by the square foot.

#### **4.10 PAYMENT**

A. The accepted quantities, measured as provided above, will be paid at the contract price per unit of measurement for the pay item listed below that is shown in the bid schedule. Payment will be full compensation for the work prescribed in this Section.

Payment will be made under:

**Pay Item**

**Pay Unit**

Temporary Shotcrete Facing  
Final Shotcrete Facing

Square foot  
Square foot

## **APPENDICES**

**APPENDIX I**

**CITY OF TORRANCE STANDARD PLANS**

# PROJECTS UNDER CONSTRUCTION

## URBAN RUNOFF REQUIREMENTS

ALL PROJECTS UNDER CONSTRUCTION IN THE CITY OF TORRANCE MUST FOLLOW SPECIFIC BEST MANAGEMENT PRACTICES, OR BMPS. BMPS INSURE THAT HAZARDOUS MATERIALS, POLLUTANTS AND OTHER ITEMS ARE CONTAINED ON SITE AND DO NOT GET WASHED OR DUMPED INTO THE STORM DRAIN SYSTEM. THE BMPS IN THE LIST BELOW ARE REQUIRED BY CITY CODE SECTION 411.1. BMPS MUST BE PUT INTO PRACTICE AT THE START OF ANY CONSTRUCTION ON PRIVATE PROPERTY OR IN THE PUBLIC RIGHT OF WAY THAT MAY IMPACT THE DRAINAGE SYSTEM. BMPS MUST BE FULLY IMPLEMENTED UNTIL ALL WORK THAT MAY IMPACT THE DRAINAGE SYSTEM HAS BEEN COMPLETED.

THE CONTRACTOR IS SOLELY RESPONSIBLE, AT ITS EXPENSE, TO PROVIDE ALL LABOR, TOOLS, MATERIALS, EQUIPMENT AND DEVICES NECESSARY TO IMPLEMENT ALL BMPS TO THE SATISFACTION OF THE COMMUNITY DEVELOPMENT AND PUBLIC WORKS DIRECTORS, AND IS NOT PERMITTED TO BEGIN CONSTRUCTION UNTIL SUCH ITEMS ARE IN PLACE.

## BEST MANAGEMENT PRACTICES

(BMPS)

1. RUNOFF CONTAINING SEDIMENT, OIL, GREASE AND CONSTRUCTION WASTE FROM CONSTRUCTION SITES AND PARKING AREAS MUST NOT LEAVE THE SITE OR ENTER ANY ON-SITE STORM DRAIN.
2. ANY SEDIMENT OR OTHER MATERIALS WHICH ARE TRACKED OFF THE SITE MUST BE CLEANED AND REMOVED THE SAME DAY. WHERE DETERMINED TO BE NECESSARY BY THE DESIGNATED CITY REPRESENTATIVE, A TEMPORARY SEDIMENT BARRIER MUST BE INSTALLED.
3. DURING EMERGENCIES, A PLASTIC COVERING MAY BE USED TO PREVENT EROSION OF AN UNPROTECTED AREA, ALONG WITH DEVICES DESIGNED TO INTERCEPT AND SAFELY DIVERT RUNOFF.
4. EXCAVATED SOIL MUST BE PLACED ON-SITE IN A WAY THAT INSURES THAT THE SOIL WON'T BE WASHED INTO THE STREET OR ADJOINING PROPERTIES.
5. DURING THE RAINY SEASON OR IF CHANCE OF PRECIPITATION EXIST, SOIL PILES MUST BE COVERED UNTIL THE SOIL IS EITHER USED OR REMOVED.
6. WASHING OF CONSTRUCTION OR OTHER INDUSTRIAL VEHICLES IS NOT ALLOWED ADJACENT TO THE CONSTRUCTION SITE. RUNOFF FROM THE WASHING OF VEHICLES ON A CONSTRUCTION SITE IS NOT ALLOWED TO LEAVE THE SITE OR ENTER THE STORM DRAIN.
7. DRAINAGE CONTROLS MUST BE USED AS NEEDED, DEPENDING ON THE EXTENT OF PROPOSED GRADING AND TOPOGRAPHY OF THE SITE.

## PENALTIES FOR NON-COMPLIANCE

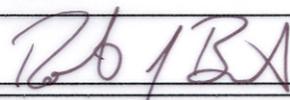
FAILURE TO IMPLEMENT BEST MANAGEMENT PRACTICES AT CONSTRUCTION SITES SHALL CONSTITUTE A MISDEMEANOR PUNISHABLE BY A FINE AS PER CITY ORDINANCE NO. 3452. EACH DAY THAT A VIOLATION OCCURS SHALL CONSTITUTE A SEPARATE OFFENSE. THE CITY IS ALSO AUTHORIZED TO ABATE VIOLATIONS BY MEANS OF A CIVIL ACTION. CONSTRUCTION SITES ARE SUBJECT TO STOPPAGE OF WORK FOR VIOLATION OF THESE REQUIREMENTS.

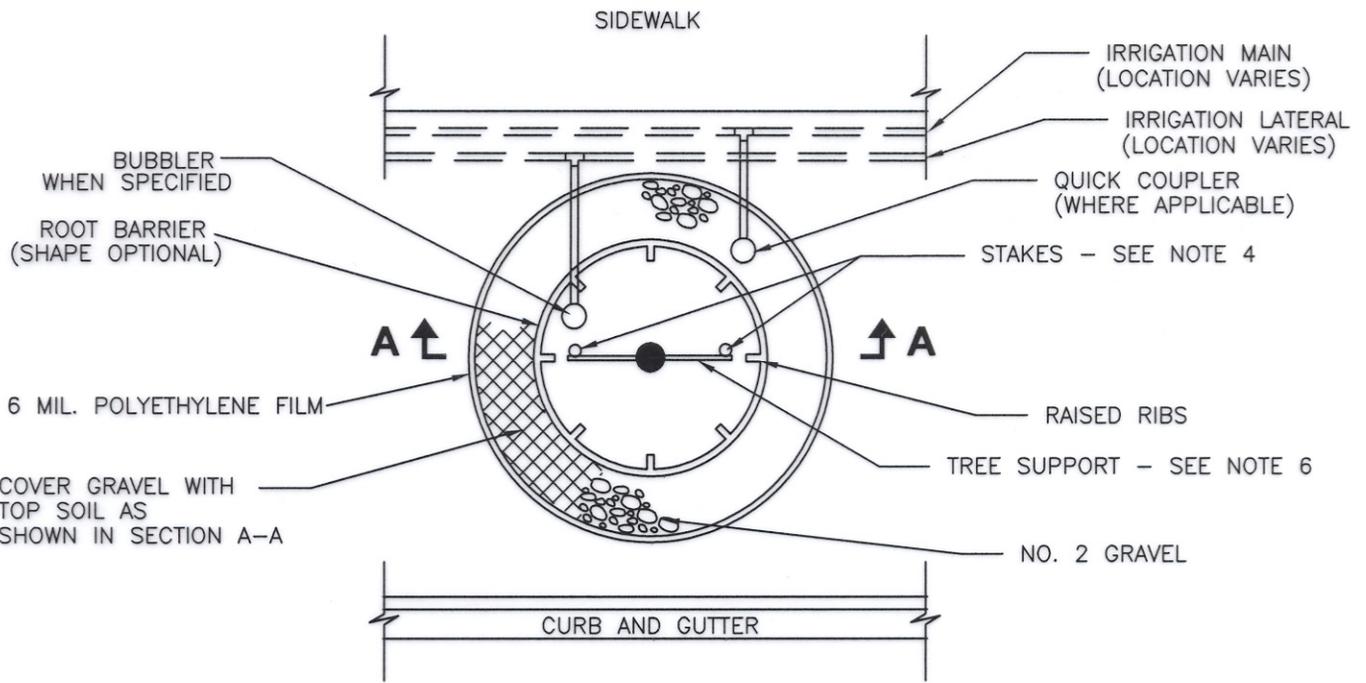
VIOLATION OF THESE PROVISIONS ALSO VIOLATE THE REGULATION OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES), CLEAN WATER SECTION 402 AND DIVISION 7 OF THE CALIFORNIA WATER CODE. THE VIOLATOR MAY BE SUBJECTED TO FINES AND/OR IMPRISONMENT AS PER STATE AND/OR FEDERAL STATUTES.

### CITY OF TORRANCE

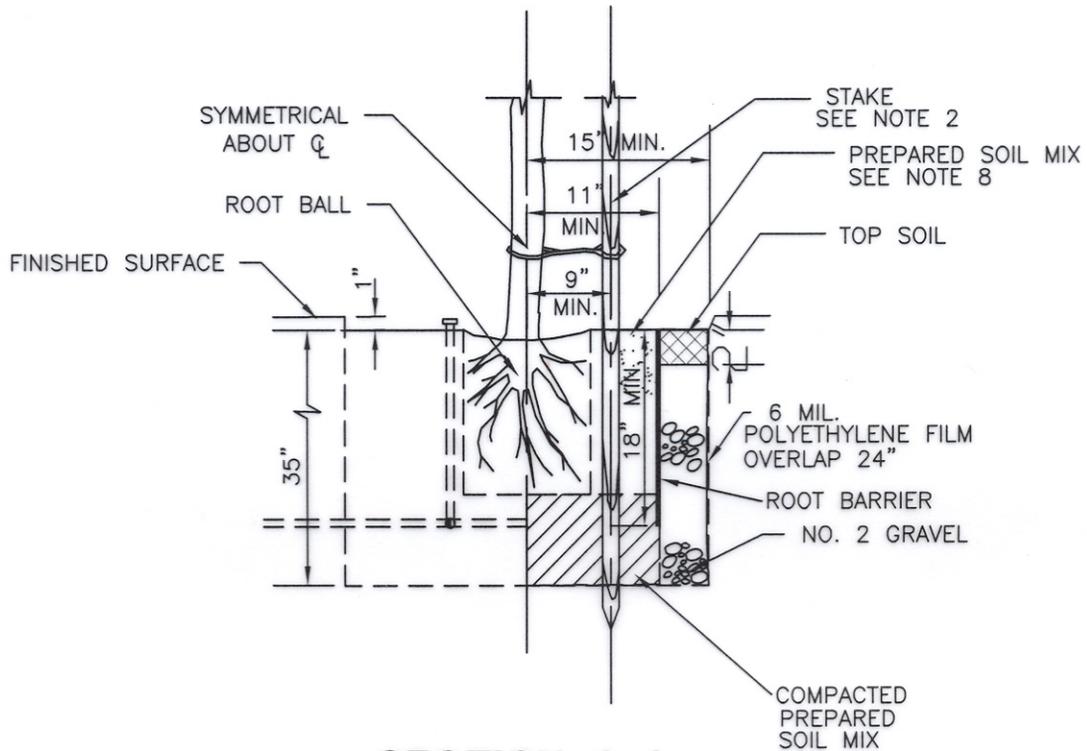
DATE ISSUED	<b>NPDES - BEST MANAGEMENT PRACTICES</b>	STANDARD NO.
23 SEP 2009		<b>T303</b>
	ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737	SHEET 1 OF 1

TT/T303





### TREE - DIRT PARKWAY



### SECTION A-A

CITY OF TORRANCE

DATE ISSUED

23 SEP 2009

TREE PLANTING

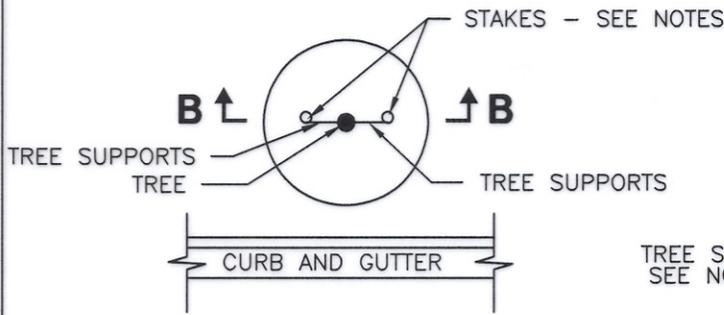
ROBERT J. BESTE  
PUBLIC WORKS DIRECTOR  
R.C.E. NO. 50737

STANDARD NO.

**T401**

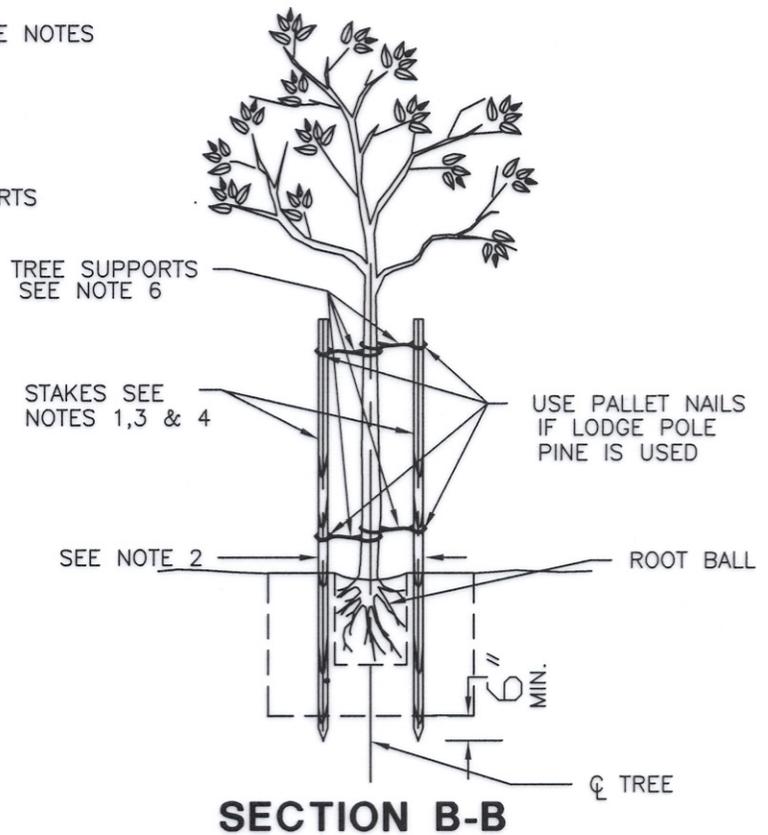
SHEET 1 OF 2

TT/T401



**PLAN**

LENGTH OF STAKES	
TREE SIZE	LENGTH
15 GAL.	10'
24" BOX	12'
30" BOX	12'
36"-48" BOX	SEE NOTE 5



**SECTION B-B**

NOTES:

1. STAKES SHALL BE EITHER 2" DIAMETER LODGE POLE PINE, TREATED WITH COPPER NANTHANATE OR PRESSURE TREATED WITH CHROMATED COPPER ARSENATE, OR GALVANIZED STEEL PIPE, PER SUBSECTION 308-4.6.1 (METHOD A) OF THE STD. SPEC'S
2. PLACE STAKES 18" APART FOR 15 GAL. TREE. PLACE STAKES AT OUTER EDGE OF ROOT BALL FOR LARGER SIZE (BOX) TREES.
3. HEIGHT OF STAKES SHALL NOT BE HIGHER THAN THE TOP OF THE TREE.
4. ALL STAKES SHALL BE ALIGNED IN THE EAST-WEST DIRECTION REGARDLESS OF CURB ORIENTATION.
5. FOR 36" OR LARGER BOX TREES - STAKE OR GUY AT THE DIRECTION OF THE STREETScape ADMINISTRATOR.
6. TREE TIES SHALL BE PER SUBSECTION 308-4.6.2 OF THE STANDARD SPECIFICATIONS.
7. THE STREETScape ADMINISTRATOR WILL DESIGNATE THE GROUND LOCATION OF ALL TREES BY PLACING OF STAKES OR OTHER SUITABLE MARKERS.
8. UNLESS OTHERWISE APPROVED BY STREETScape ADMINISTRATOR PREPARED SOIL MIX SHALL BE:
  - 4 PARTS BY VOLUME NITROGEN-STABILIZED ORGANIC AMENDMENT.
  - 6 PARTS BY VOLUME ON-SITE SOIL FROM AN AREA APPROVED BY THE STREETScape ADMINISTRATOR.
  - 2 LBS. IRON SULFATE PER CUBIC YARD OF MIX.
9. ROOT BARRIERS WHEN SPECIFIED ON PROJECT DRAWINGS OR IN PROJECT SPECIFICATIONS, SHALL BE FABRICATED FROM A HIGH DENSITY AND HIGH IMPACT PLASTIC SUCH AS POLYVINYL CHLORIDE, ABS OR POLYETHYLENE AND HAVE A MINIMUM THICKNESS OF 0.06". THE PLASTIC SHALL HAVE 1/2" TO 3/4" HIGH RAISED VERTICAL RIBS ON THE INNER SURFACE SPACED AT LEAST 6" BUT NOT MORE THAN 8" APART.

**CITY OF TORRANCE**

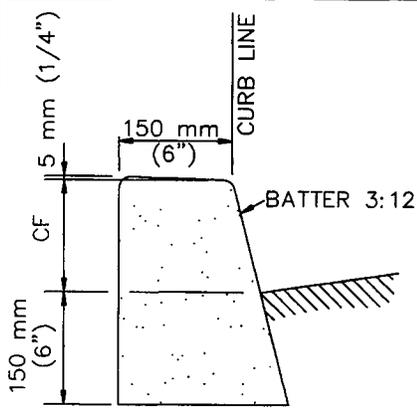
DATE ISSUED	<b>TREE PLANTING</b>	STANDARD NO.
23 SEP 2009		<b>T401</b>
	ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737	SHEET 2 OF 2

TT/T401

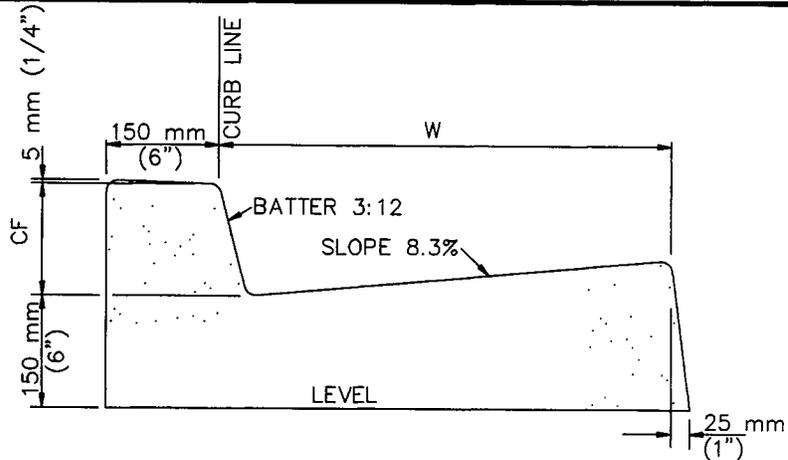


**APPENDIX II**

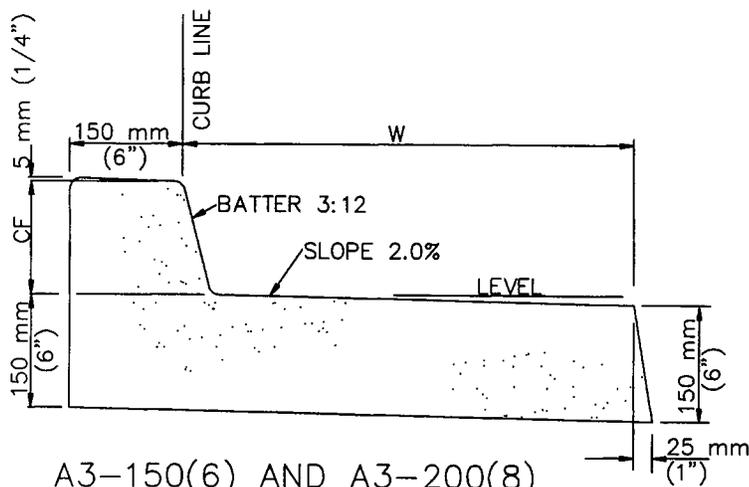
**SPPWC STANDARD PLANS**



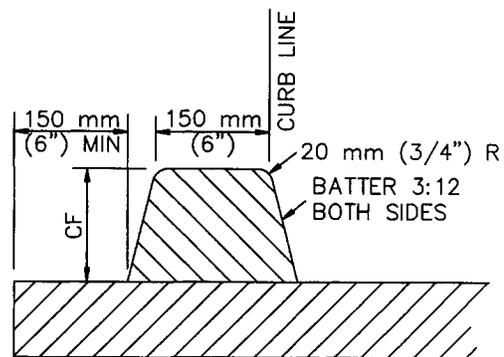
A1-150(6) AND  
A1-200(8)



A2-150(6) AND A2-200(8)



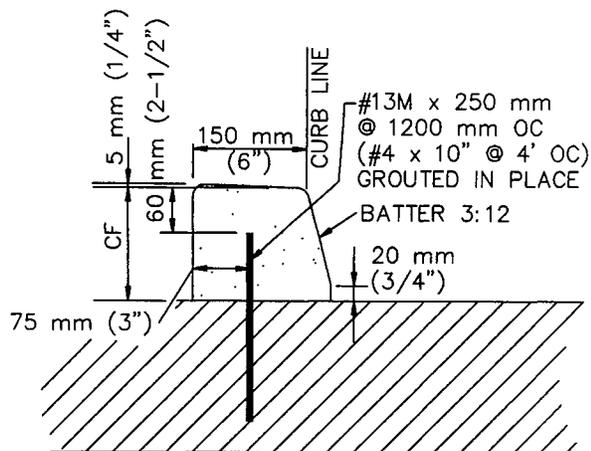
A3-150(6) AND A3-200(8)



D1-150(6) AND  
D1-200(8)

NOTES:

1. THE LAST NUMBER IN THE DESIGNATION IS THE CURB FACE (CF) HEIGHT, mm (INCHES).
2. GUTTER WIDTH, W, IS 600 mm (24") UNLESS OTHERWISE SPECIFIED.
3. TYPES A1, A2, A3 AND C1 SHALL BE CONSTRUCTED FROM PCC.
4. TYPE D1 CURB SHALL BE CONSTRUCTED FROM ASPHALT CONCRETE.
5. TYPE C1 CURB SHALL BE ANCHORED WITH STEEL DOWELS AS SHOWN OR WITH AN EPOXY APPROVED BY THE ENGINEER.
6. ALL EXPOSED CORNERS ON PCC CURBS AND GUTTERS SHALL BE ROUNDED WITH A 15 mm (1/2") RADIUS.



C1-150(6) AND C1-200(8)

STANDARD PLAN FOR PUBLIC WORKS CONSTRUCTION

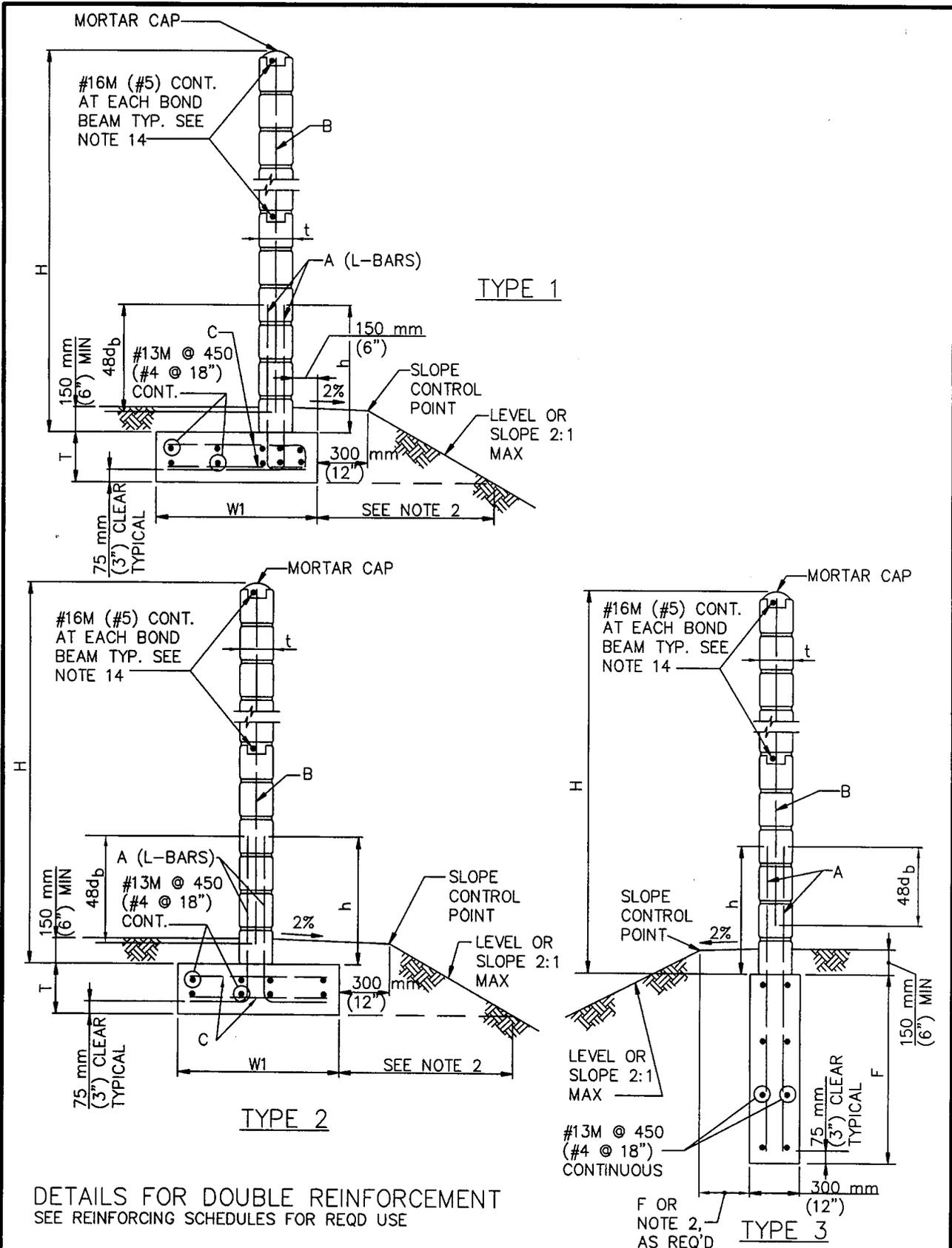
PROMULGATED BY THE  
PUBLIC WORKS STANDARDS INC.  
GREENBOOK COMMITTEE  
1984  
REV. 1998

**CURB AND GUTTER - BARRIER**

STANDARD PLAN  
METRIC  
**120-1**

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 1



DETAILS FOR DOUBLE REINFORCEMENT  
SEE REINFORCING SCHEDULES FOR REQD USE

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE  
PUBLIC WORKS STANDARDS INC.  
GREENBOOK COMMITTEE  
1993  
REV. 1996, 2005

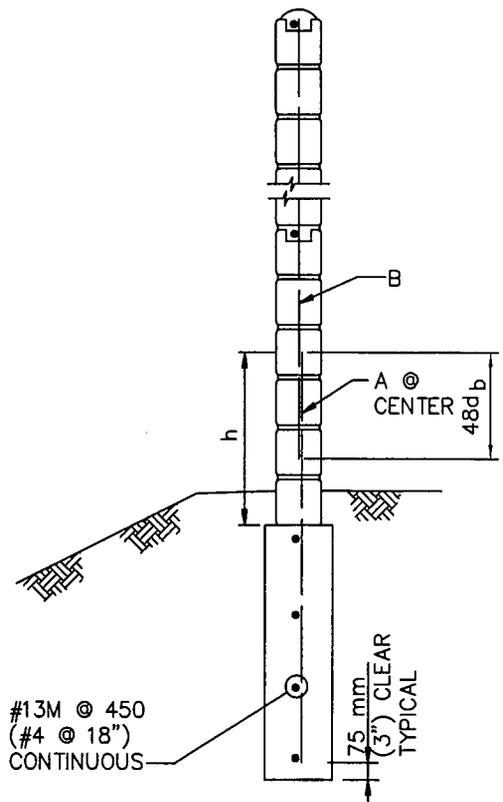
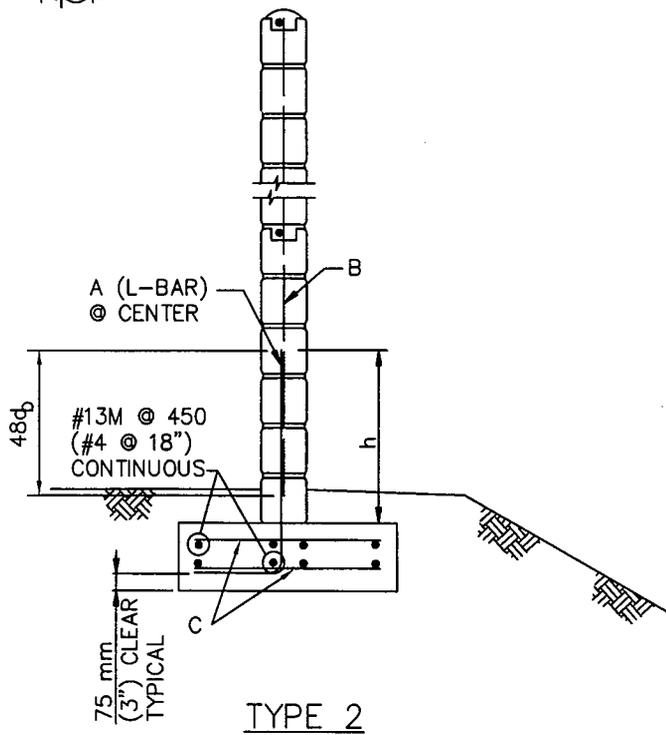
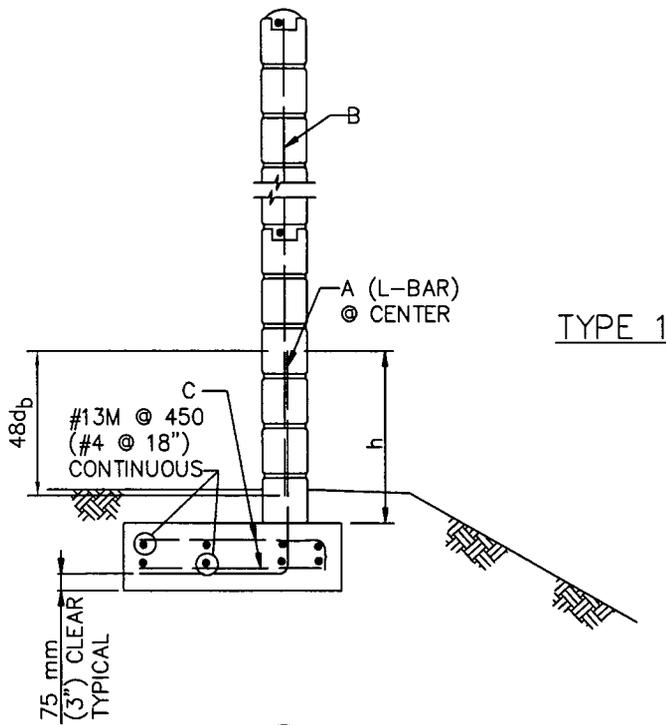
**REINFORCED CONCRETE BLOCK WALL**

STANDARD PLAN  
METRIC

**601-2**

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 6



DETAILS FOR SINGLE REINFORCEMENT  
SEE REINFORCING SCHEDULES FOR ALLOWED USE  
SEE SHEET 1 FOR OTHER DIMENSIONS AND DETAILS

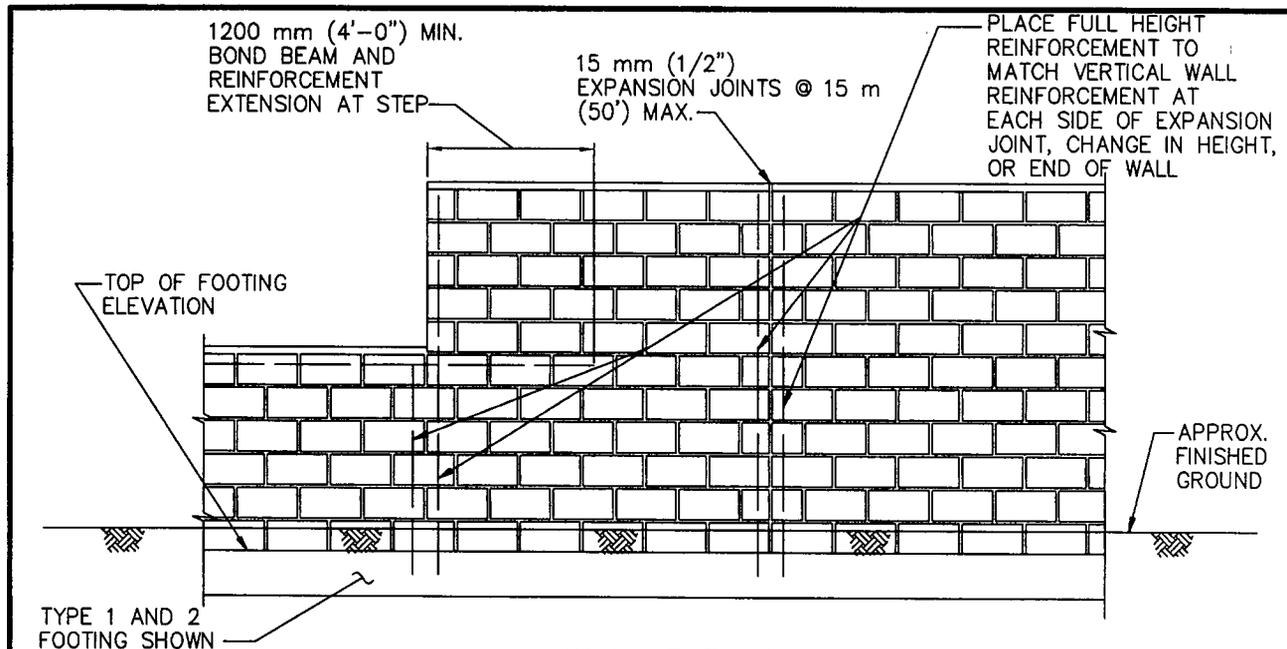
STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

REINFORCED CONCRETE BLOCK WALL

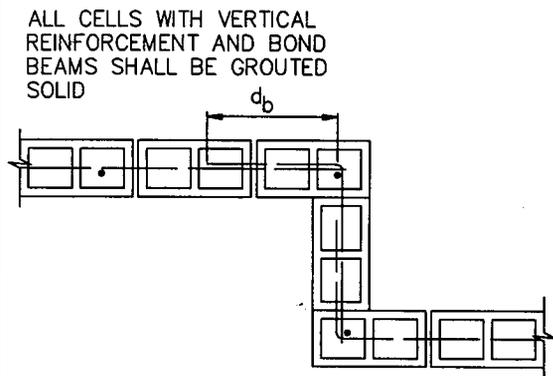
STANDARD PLAN  
METRIC

601-2

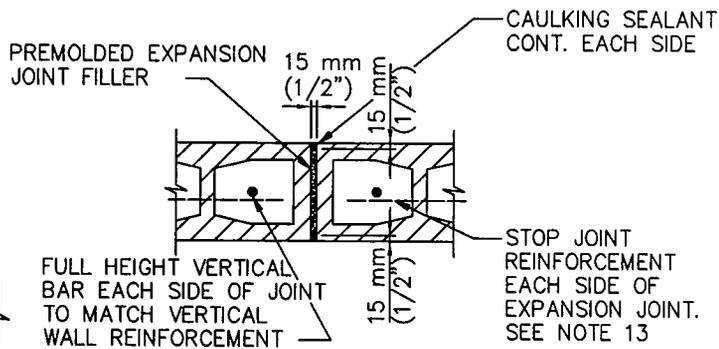
SHEET 2 OF 6



WALL ELEVATION

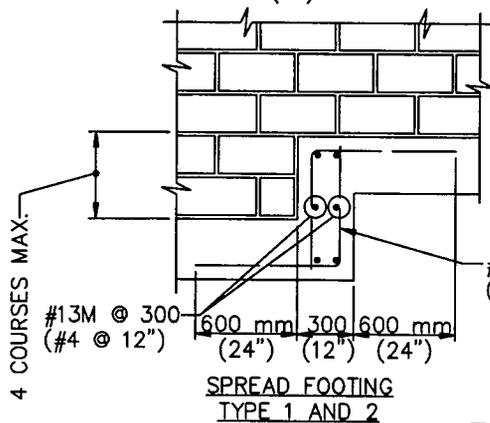


CORNER DETAIL

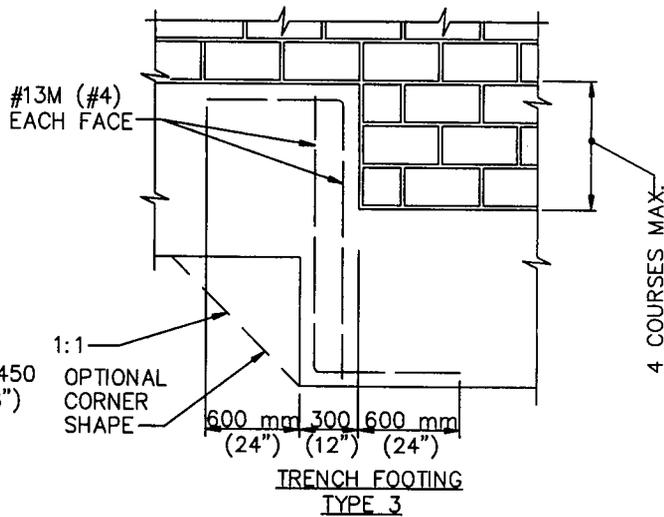


EXPANSION JOINT DETAIL

NOTE:  
SINGLE VERTICAL REINFORCING BARS SHALL BE CENTERED IN CELLS. DOUBLE ROWS OF VERTICAL REINFORCING BARS SHALL HAVE THE REINFORCEMENT PLACED IN EACH FACE (EF).



FOOTING STEP DETAILS



LATERAL LOAD = 720 Pa (15 PSF)									
STEM		FOOTING				REINFORCING BARS			
						CUTOFF	SPACING, O.C.		
H	t	T	W1 (TYPE 1)	W2 (TYPE 2)	F (TYPE 3)	h	A	B	C
1.8 m (6'-0")	150 mm (6")	300 mm (12")	675 mm (2'-3")	675 mm (2'-3")	825 mm (2'-9")	750 mm (30")	#13M@1200* (#4 @ 48")	#13M@1200 (#4 @ 48")	#13M@1200* (#4 @ 48")
2.4 m (8'-0")	200 mm (8")	300 mm (12")	2'-9" (2'-9")	750 mm (2'-6")	975 mm (3'-3")	750 mm (30")	#13M@800* (#4 @ 32")	#13M@800 (#4 @ 32")	#13M@800* (#4 @ 32")
3.0 m (10'-0")	200 mm (8")	300 mm (12")	3'-9" (3'-9")	900 mm (3'-0")	1125 mm (3'-9")	750 mm (30")	#13M@800EF (#4 @ 32")	#13M@800 (#4 @ 32")	#13M@800 (#4 @ 32")

LATERAL LOAD = 960 Pa (20 PSF)									
STEM		FOOTING				REINFORCING BARS			
						CUTOFF	SPACING, O.C.		
H	t	T	W1 (TYPE 1)	W2 (TYPE 2)	F (TYPE 3)	h	A	B	C
1.8 m (6'-0")	150 mm (6")	300 mm (12")	825 mm (2'-9")	750 mm (2'-6")	975 mm (3'-3")	750 mm (30")	#16M@800* (#5 @ 32")	#13M@800 (#4 @ 32")	#13M@800* (#4 @ 32")
2.4 m (8'-0")	200 mm (8")	300 mm (12")	975 mm (3'-3")	900 mm (3'-0")	1125 mm (3'-9")	750 mm (30")	#13M@800EF (#4 @ 32")	#13M@800 (#4 @ 32")	#13M@800 (#4 @ 32")
3.0 m (10'-0")	200 mm (8")	300 mm (12")	1275 mm (4'-3")	1050 mm (3'-6")	1275 mm (4'-3")	1050 mm (42")	#16M@800EF (#5 @ 32")	#13M@800 (#4 @ 32")	#16M@800 (#5 @ 32")

LATERAL LOAD = 1200 Pa (25 PSF)									
STEM		FOOTING				REINFORCING BARS			
						CUTOFF	SPACING, O.C.		
H	t	T	W1 (TYPE 1)	W2 (TYPE 2)	F (TYPE 3)	h	A	B	C
1.8 m (6'-0")	150 mm (6")	300 mm (12")	900 mm (3'-0")	825 mm (2'-9")	1050 mm (3'-6")	750 mm (30")	#16M@400* (#5 @ 16")	#13M@800 (#4 @ 32")	#13M@800 (#4 @ 32")
2.4 m (8'-0")	200 mm (8")	300 mm (12")	1125 mm (3'-9")	975 mm (3'-3")	1200 mm (4'-0")	750 mm (30")	#13M@400EF (#4 @ 16")	#13M@800 (#4 @ 32")	#13M@800 (#4 @ 32")
3.0 m (10'-0")	200 mm (8")	300 mm (12")	1425 mm (4'-9")	1200 mm (4'-0")	1425 mm (4'-9")	1250 mm (50")	#16M@400EF (#5 @ 16")	#13M@800 (#4 @ 32")	#16M@800 (#5 @ 32")

**NOTE**

SINGLE VERTICAL REINFORCING BARS SHALL BE CENTERED IN CELL.

\* FOR SINGLE A-BARS IN FOUNDATION, SEE SHEET 2.

DOUBLE ROWS OF VERTICAL REINFORCING WHERE INDICATED SHALL BE PLACED AT EACH FACE (EF).



GENERAL NOTES:

1. CONSULT WITH LOCAL GOVERNING AGENCY FOR DETERMINATION OF LATERAL LOAD AND WALL TYPE LISTED IN TABLES, FOR PROJECT-SPECIFIC USE.
2. DISTANCE OF THE FOOTING FROM DESCENDING SLOPE SHALL BE PER LATEST GOVERNING BUILDING CODE OR PER AGENCY REQUIREMENTS.
3. SPECIAL INSPECTION IS NOT REQUIRED FOR WALLS.
4. GROUND LINE TO BE AT THE SAME ELEVATION ON BOTH SIDES OF THE WALL. WALL SHALL NOT BE USED TO RETAIN EARTH.
5. USE TABULAR INFORMATION FOR THE NEXT HIGHER H FOR INTERMEDIATE WALL HEIGHTS THAT ARE BETWEEN THE H'S GIVEN.
6. CONCRETE SHALL BE 295-C-17 (500-C-2500) PER SSPWC 201-1.1.2.
7. REINFORCING SHALL BE LAPPED A MINIMUM 48 BAR DIA. GRADE 60 UNLESS NOTED OTHERWISE PER SSPWC SECTION 201-2, 303-4.1.3, JOINT REINFORCING WIRE: ASTM A82.
8. ALL REINFORCED CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH SSPWC 303.
9. FOR TYPE OF BLOCKS, BOND PATTERN AND JOINT FINISH, SEE PROJECT PLANS.
10. ALL MASONRY CONSTRUCTION TO BE IN ACCORDANCE WITH SSPWC 303-4.
11. HOLLOW MASONRY UNITS...ASTM C-90. TYPE I. NORMAL WEIGHT UNITS.  
MORTAR ...1:1/2:3, PORTLAND CEMENT - LIME - SAND RATIO, 13 MPa (1800 PSI) PER SSPWC 202-2.2.1.  
GROUT .....1:3:2 PORTLAND CEMENT - SAND - PEA GRAVEL RATIO, 14 MPa (2,000 PSI) PER SSPWC 202-2.2.2.
12. PROVIDE FULL MORTAR BED AT THE BOTTOM OF THE FIRST COURSE AND OMIT MORTAR BETWEEN VERTICAL JOINTS OF LOWEST EXPOSED COURSE.
13. WHEN BLOCKS ARE LAID IN STACKED BOND, CONTINUOUS HORIZONTAL JOINT REINFORCEMENT SPACED AT 1200 mm (4'-0") OC SHALL BE PROVIDED IN ADDITION TO THE BOND BEAM REINFORCEMENT PER SSPWC 303-4.1.2, LOCATE REINFORCEMENT IN JOINTS THAT ARE APPROXIMATE MIDPOINT BETWEEN BOND BEAMS.
14. BOND BEAMS SHALL BE PLACED AT TOP OF WALL AND SUBSEQUENTLY SPACED NOT TO EXCEED 1200 mm (4'-0") O.C. BELOW.
15. ONLY CELLS WITH REINFORCING BARS SHALL BE GROUTED PER SSPWC 303-4.1.3.
16. HORIZONTAL JOINTS SHALL BE TOOLED CONCAVE OR WEATHERED. VERTICAL JOINTS SHALL BE TOOLED CONCAVE OR RAKED. WEATHERED AND RAKED JOINTS ARE NOT PERMITTED FOR SLUMPED BLOCKS.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

**REINFORCED CONCRETE BLOCK WALL**

STANDARD PLAN  
METRIC

**601-2**

SHEET 6 OF 6

**APPENDIX III**

**CONSTRUCTION AND DEMOLITION DEBRIS RECYCLING SUMMARY**

## CONSTRUCTION AND DEMOLITION DEBRIS RECYCLING SUMMARY

Project Type:     Roadway and/or Bridge/Structure                       Water/Sewer  
                           Traffic Signal/Street Lighting                                       Other \_\_\_\_\_

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

City Contract No: \_\_\_\_\_

Project Location: \_\_\_\_\_

Thomas Guide Page/Grid No(s): \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Contractor Address: \_\_\_\_\_

Contractor License #: \_\_\_\_\_

Project Duration: From: \_\_\_\_\_ To: \_\_\_\_\_

Demolition and Recycling Cost: \$ \_\_\_\_\_

Type(s) of Debris Generated	Total Quantity Generated (tons, c.y. or units)	Reuse /Recycling		Disposal	
		Total Quantity (tons, c.y. or units)	Name of Reuse/Recycling Facility/Site	Total Quantity (tons, c.y. or units)	Name of Disposal Facility
Asphalt					
Brick					
Concrete					
Green Waste					
Metal (ferrous)					
Metal (non-ferrous)					
Mixed Debris					
Rock					
Soil					
Wood Waste					
Other					
<b>Total</b>					

**Notes:**

- Other debris types may include, but are not limited to, Ash, Cardboard, Carpeting, Glass, Gravel, Land Clearing Debris, Non-friable Asbestos, Paper, Plastic, Porcelain, Roofing Material, Sand, and Tires. Attach additional sheets if necessary.
- If the debris is taken to a transfer station solely for the purpose of reuse/recycling, then list the transfer station as the reuse/recycling facility/site.
- If the debris is taken to a transfer station solely for the purpose of transfer to a disposal facility, then list the transfer station as the disposal facility.

Prepared by \_\_\_\_\_ Signature \_\_\_\_\_ Phone # \_\_\_\_\_

**APPENDIX IV**

**WALL FINISH REQUIREMENTS**

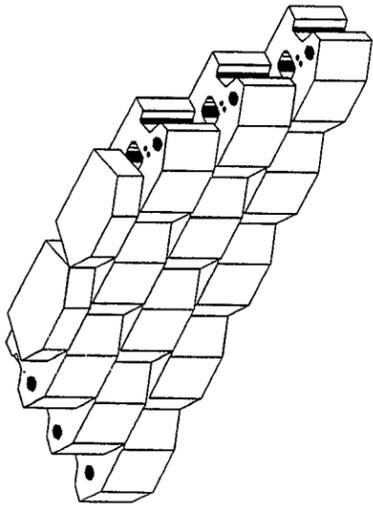
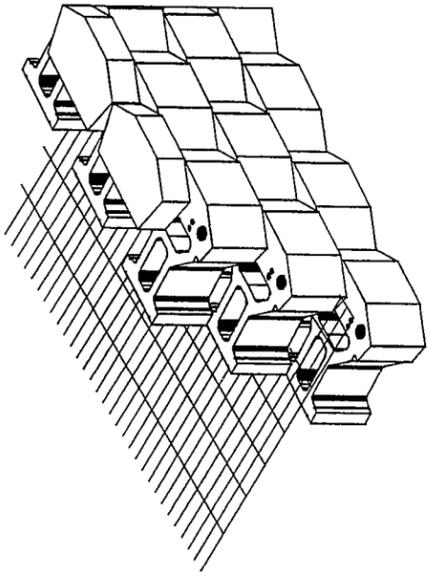


**Example of sculptured wall facing that is required for this project. The final sculptured wall facing and wall color to be approved by the City/Engineer based upon required test panel.**

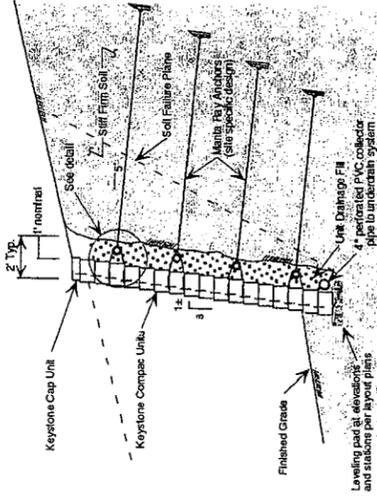
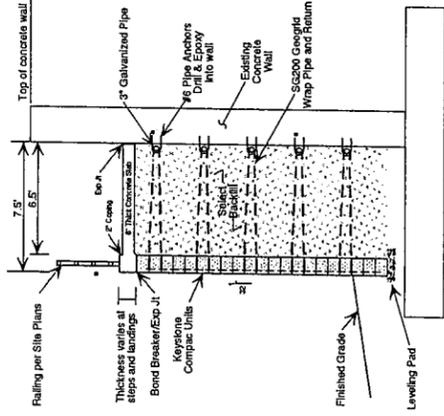
**APPENDIX V**

**SEGMENTAL RETAINING WALL SYSTEM  
SUPPLEMENTAL INFORMATION**

# Specialty Applications for Keystone Walls



SHEET INDEX	
Title Sheet	Sheet 1
Soil Nail Facing	Sheet 2
Rock/Shotcrete Facing	Sheet 3
Manta Ray Anchor Wall	Sheet 4
H-Pile Wall Facing	Sheet 5
Sheet Pile Wall Facing	Sheet 6
Concrete Wall Stairway	Sheet 7
Interlocking Gravity Wall	Sheet 8
Geofoam Wall Construction	Sheet 9
Foundation Obstruction	Sheet 10
Slip Joint Installation	Sheet 11
In-situ Slip Joint	Sheet 12



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Date: 1/10/00

Specialty Applications

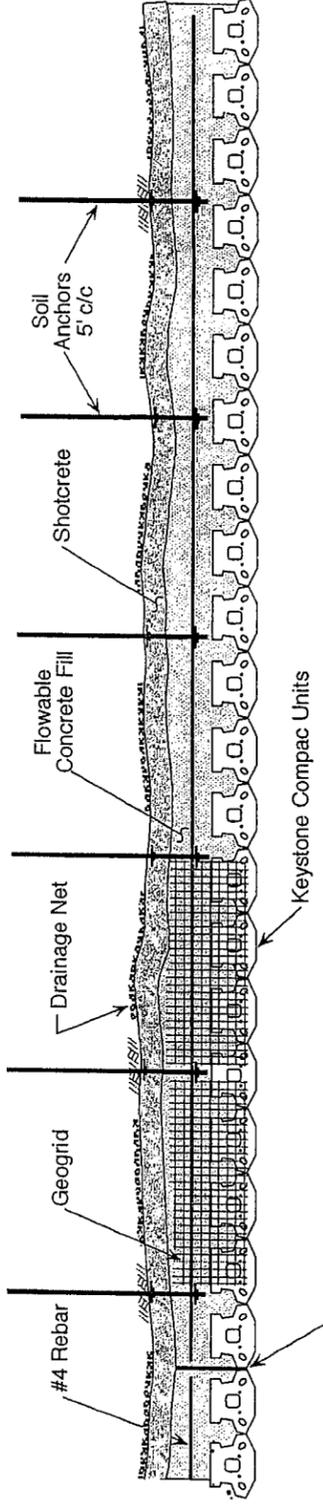
Title Sheet

Project No:

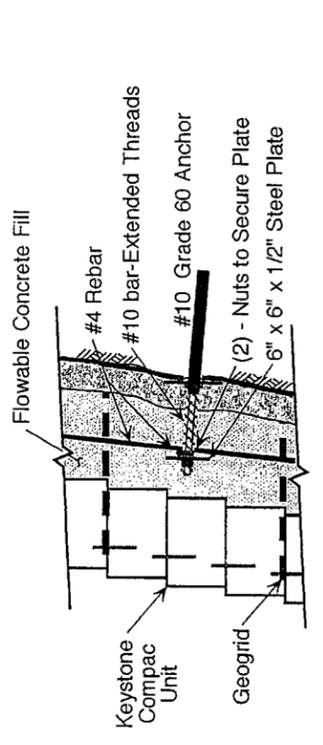
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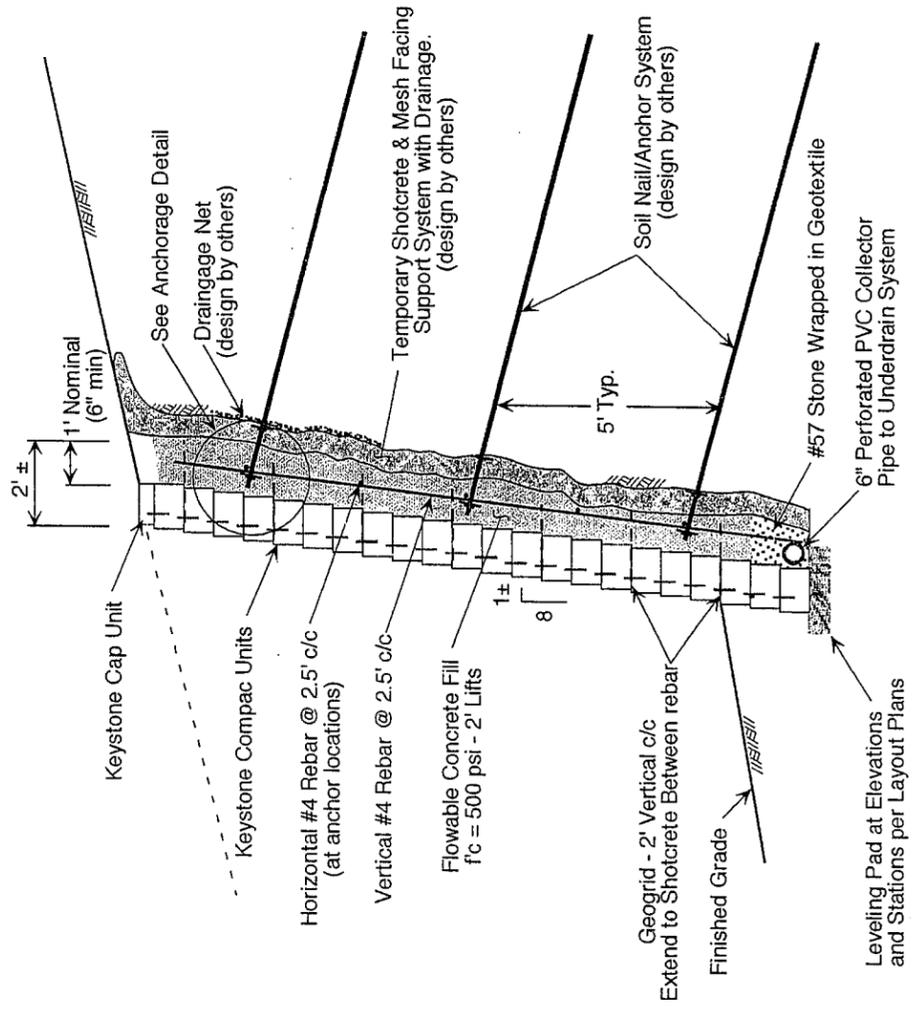
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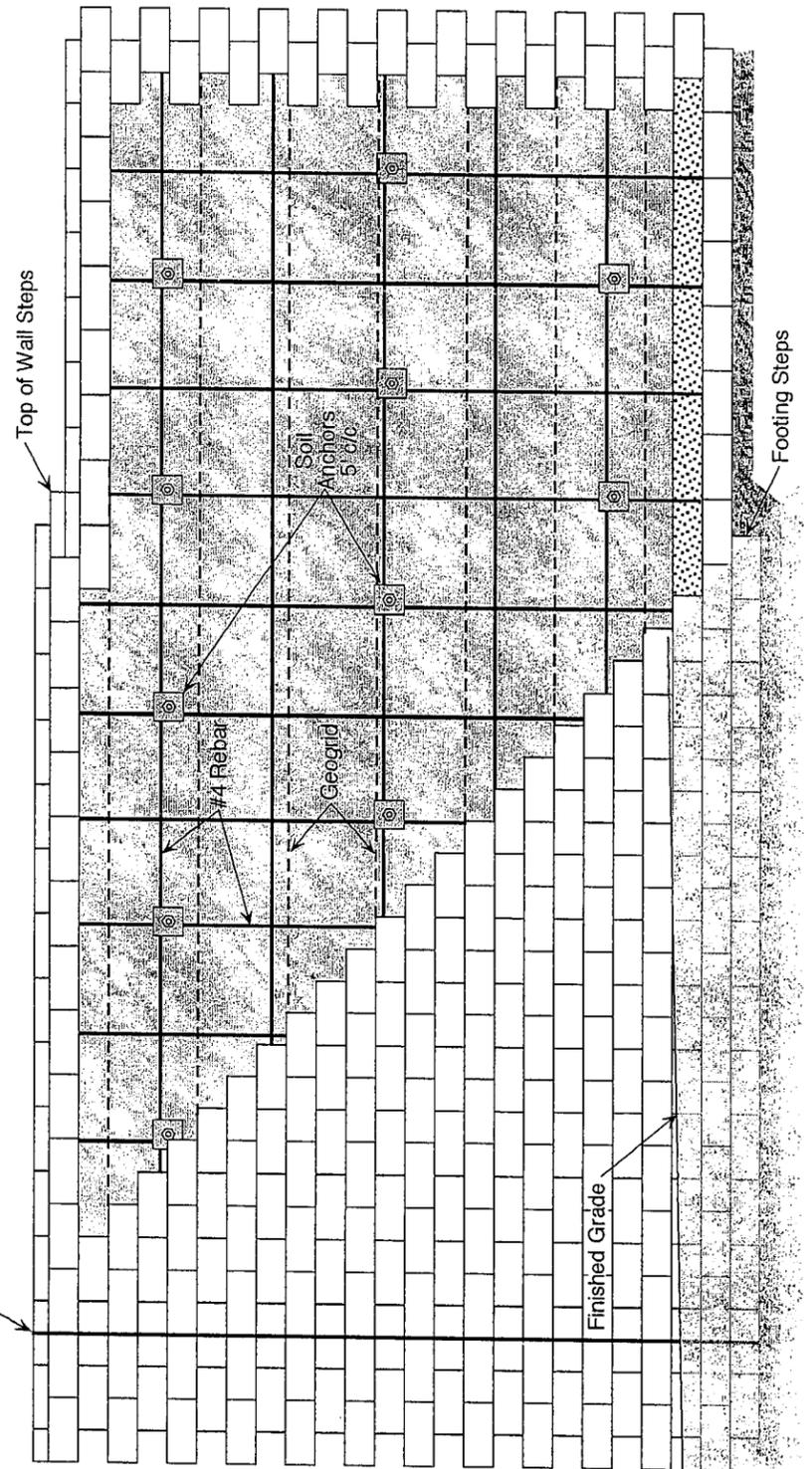
Typical Plan View



Typical Anchorage Detail



Typical Soil Nail/Anchor Section



Typical Wall Elevation

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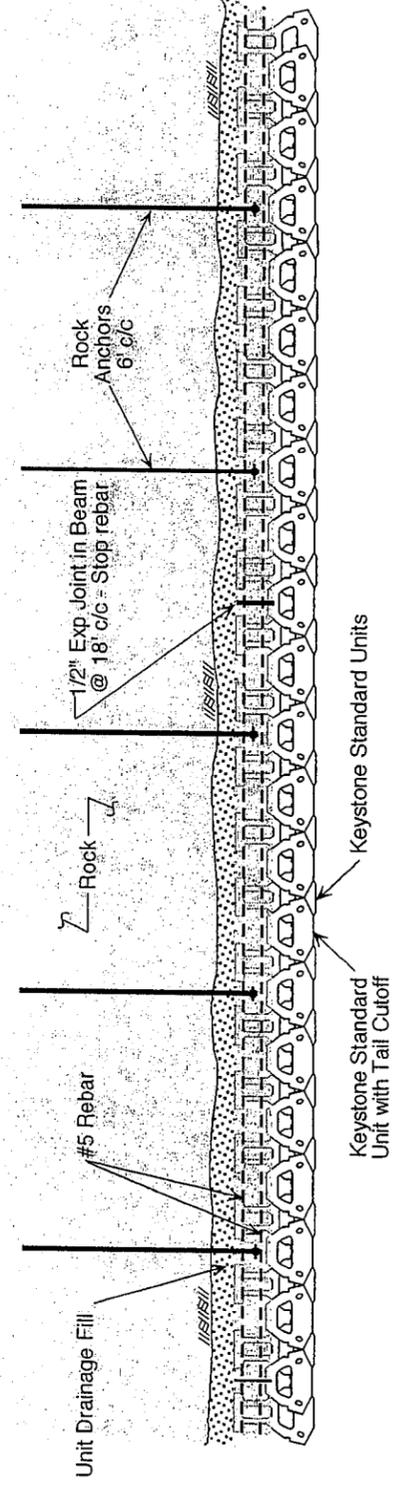
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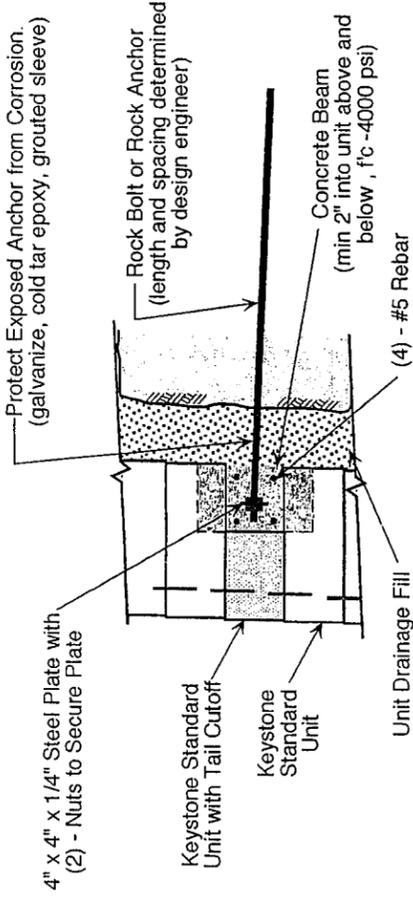
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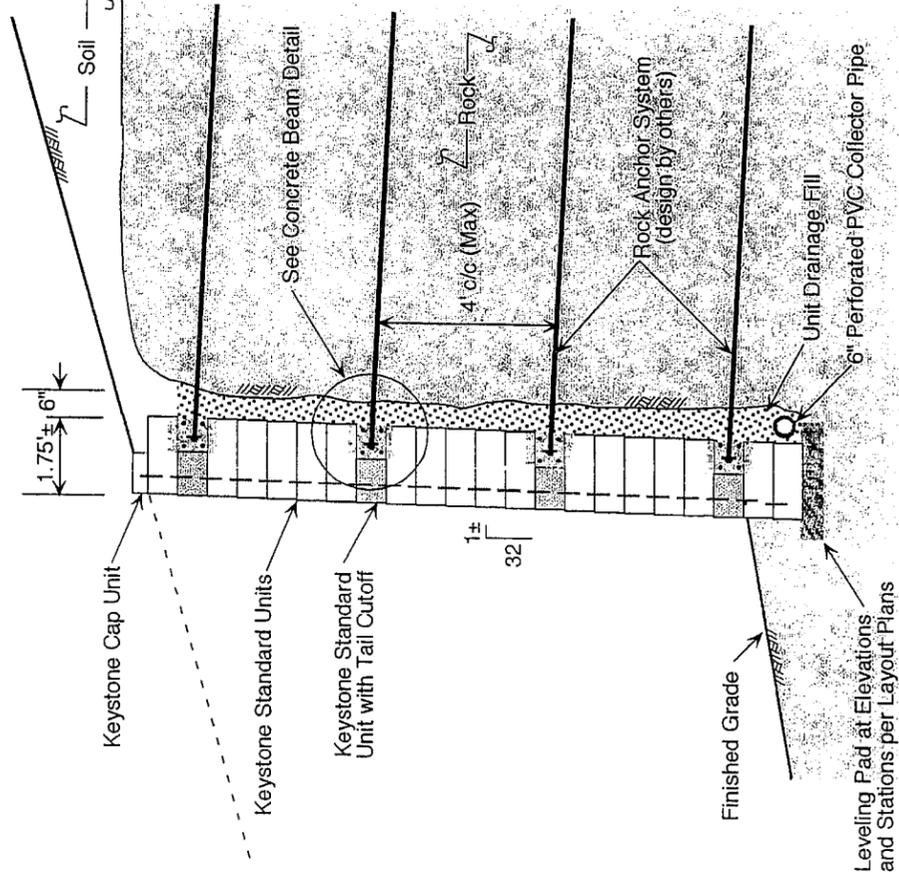
Specialty Applications  
 Soil Nail Facing  
 Drawing No. 2



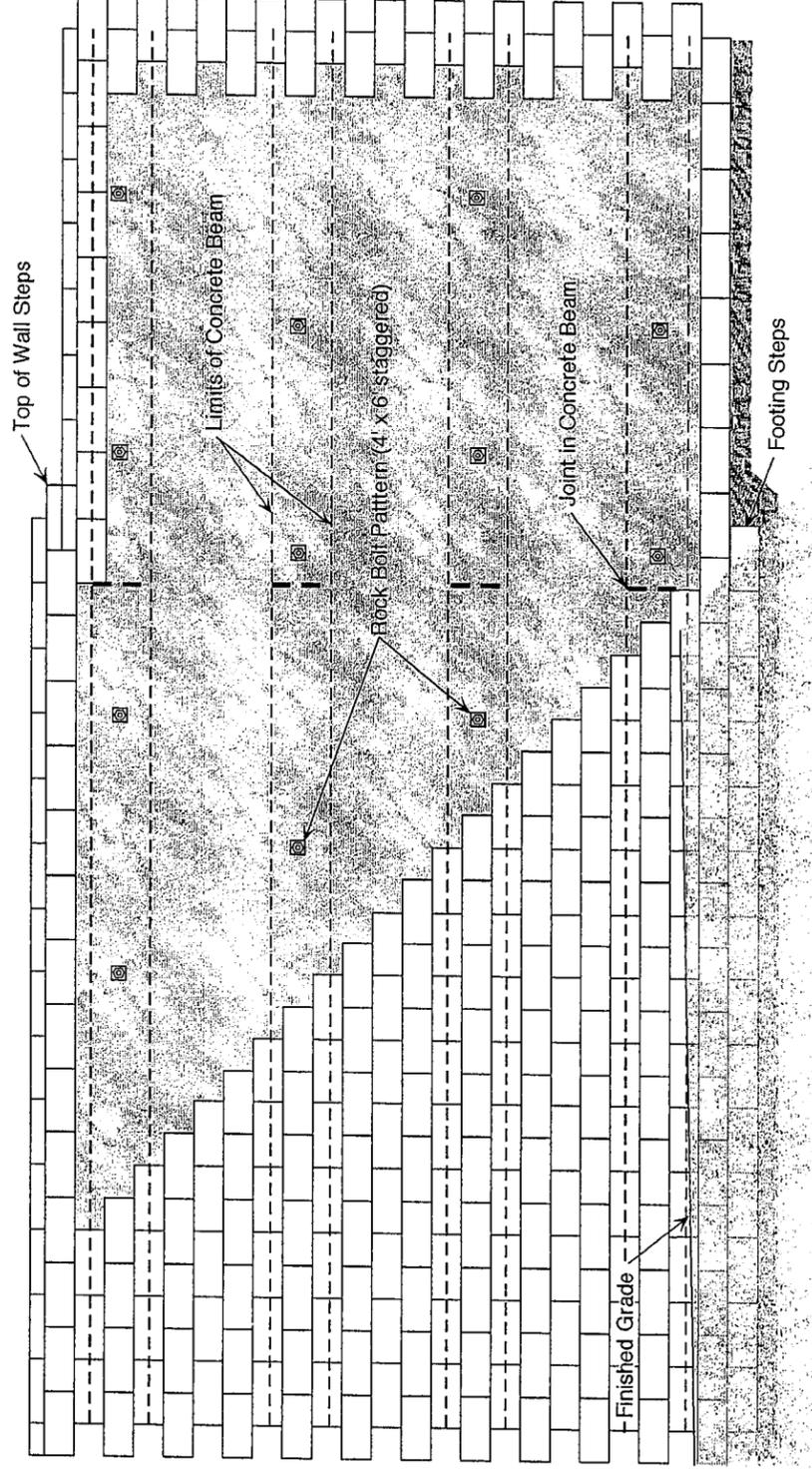
Typical Plan View



Typical Concrete Beam Detail



Typical Rock Facing Section



Typical Wall Elevation

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Specialty Applications

Rock/Shotcrete Facing

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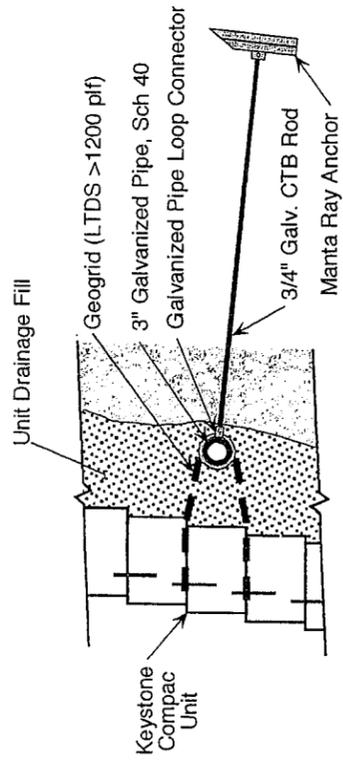
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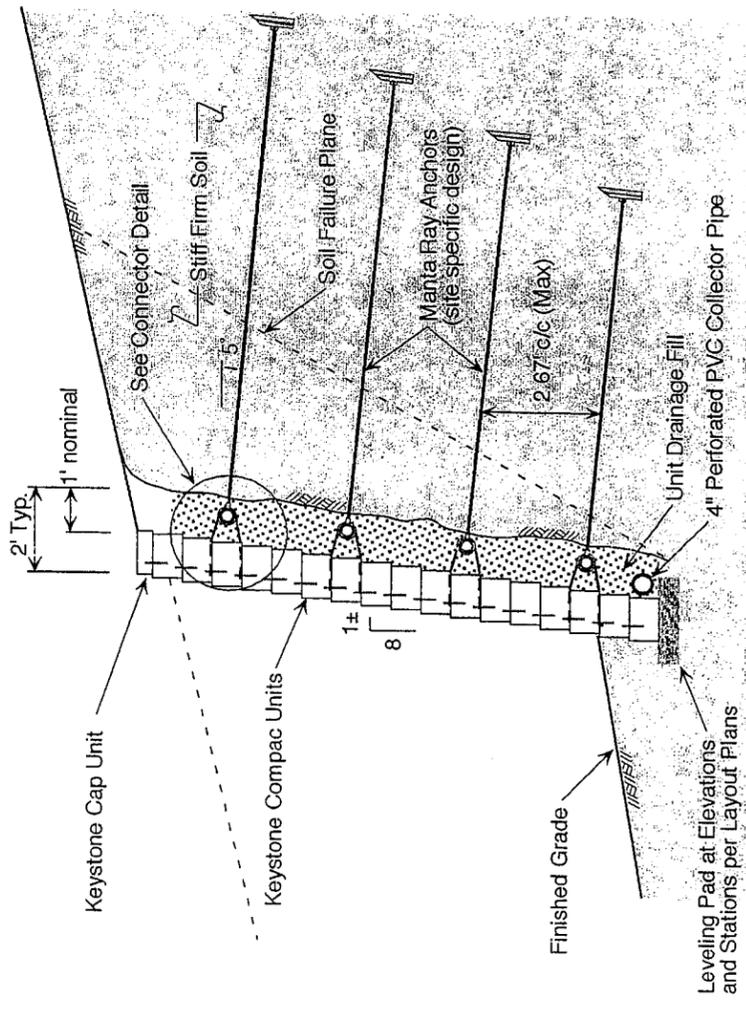
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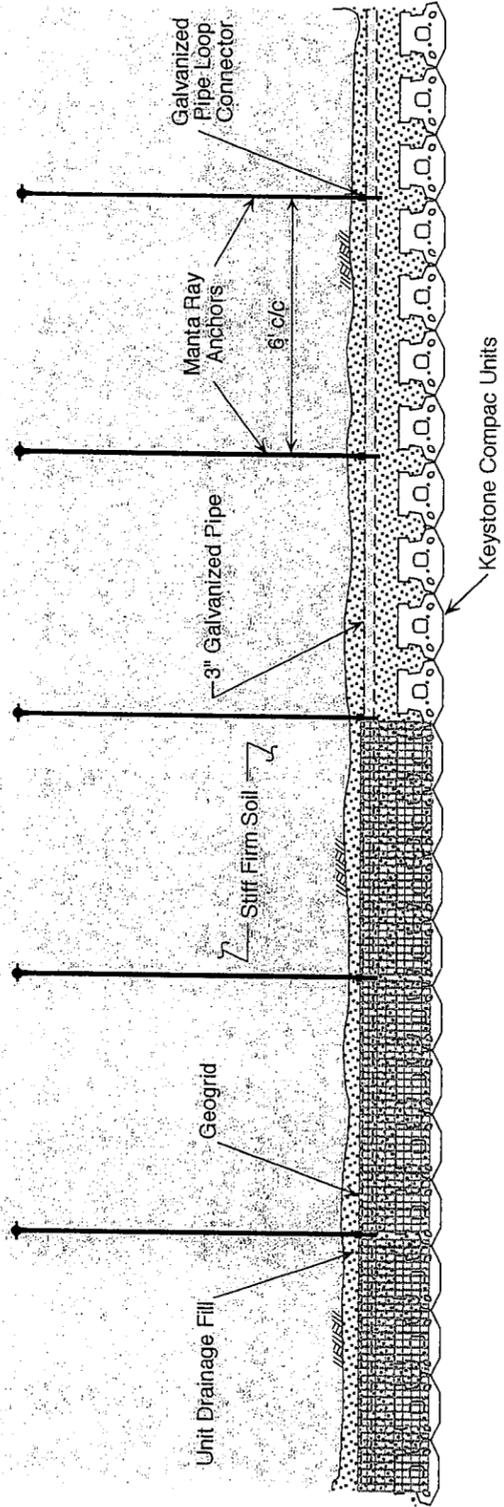
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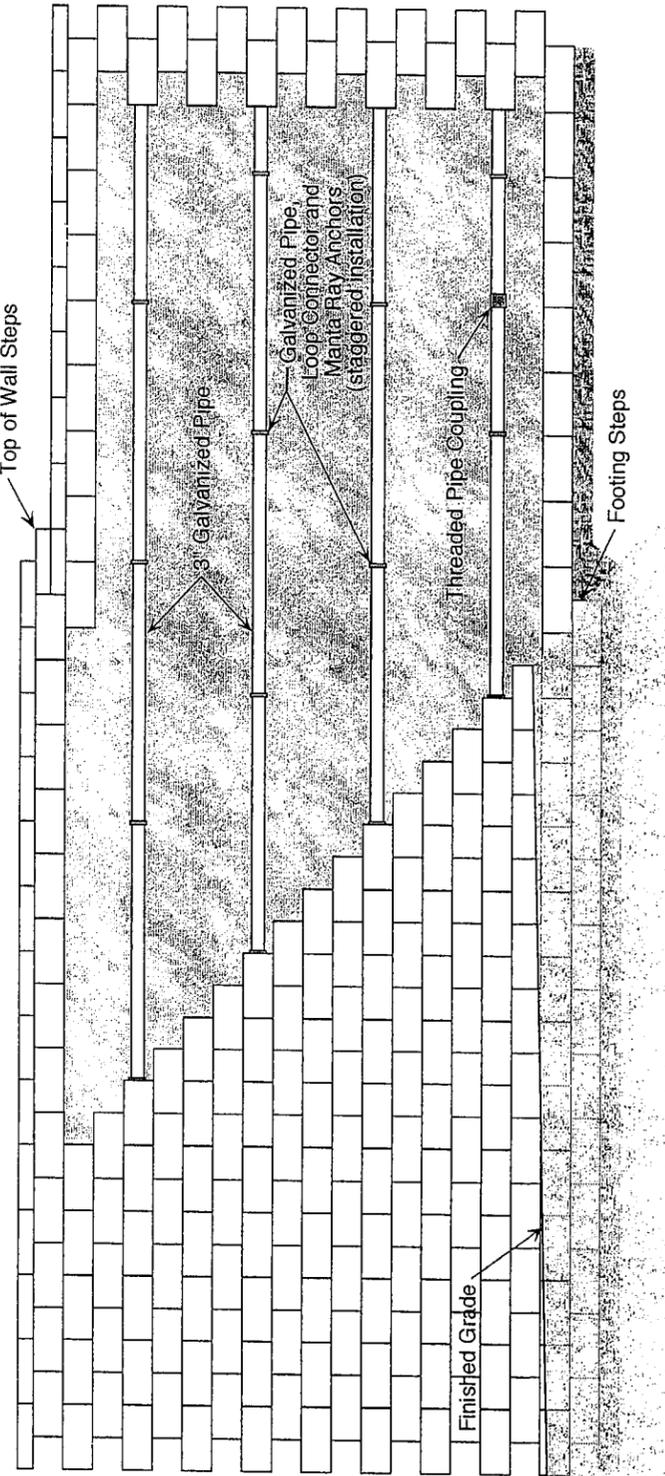
Typical Connector Detail



Typical Manta Ray Anchor Section



Typical Plan View



Typical Wall Elevation

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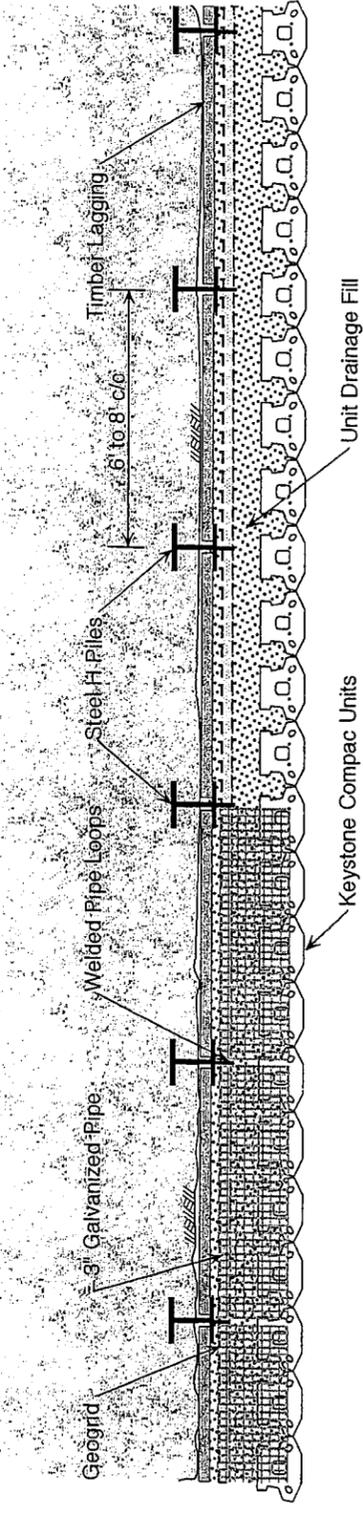
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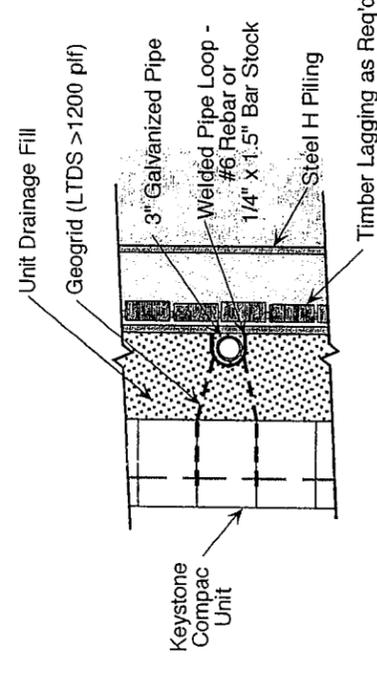
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Specialty Applications

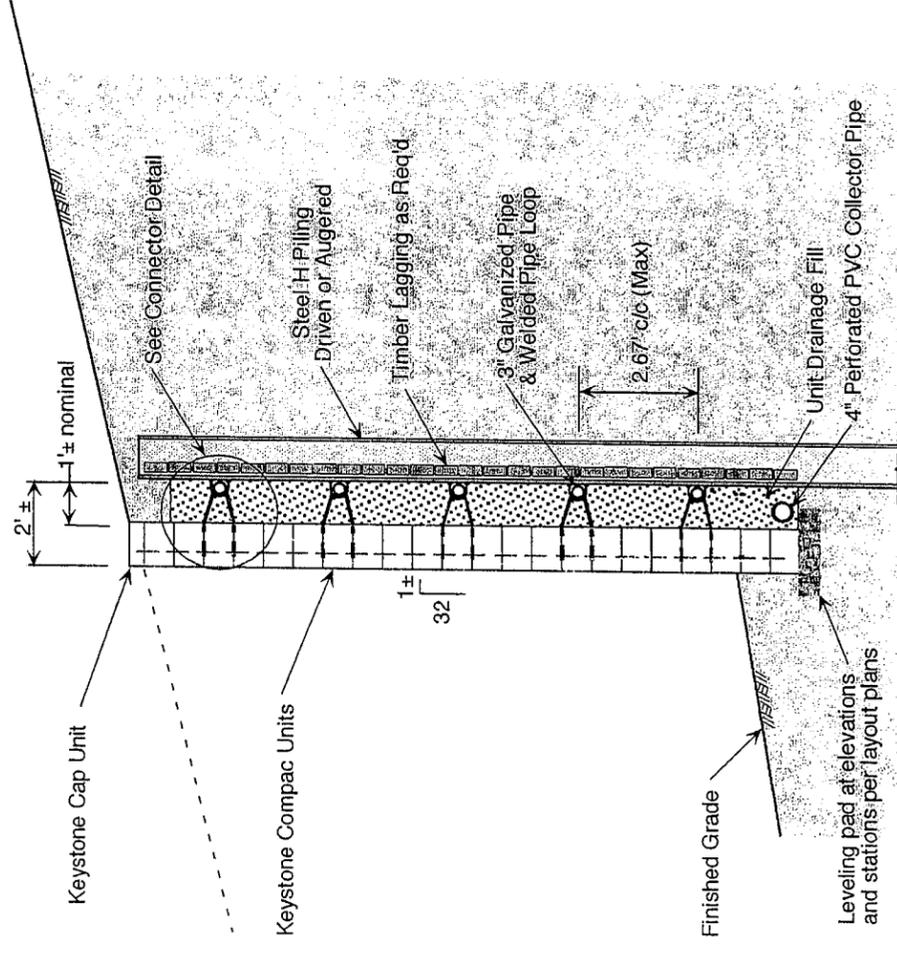
Manta Ray Anchor Facing  
Project No.:  
Drawing No. 4



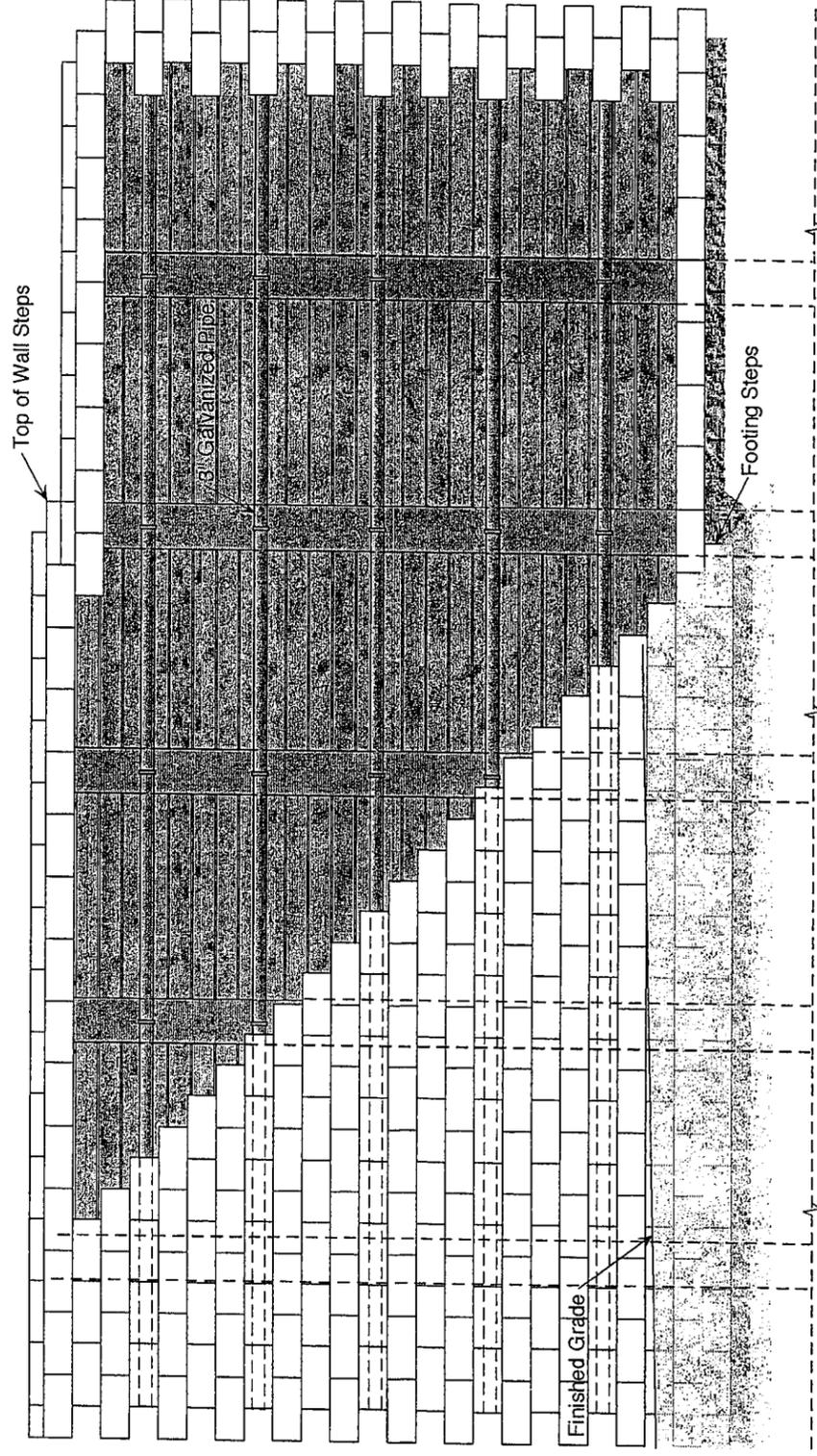
Typical Plan View



Typical Connector Detail



Typical Pile & Lagging Wall Section



Typical Wall Elevation

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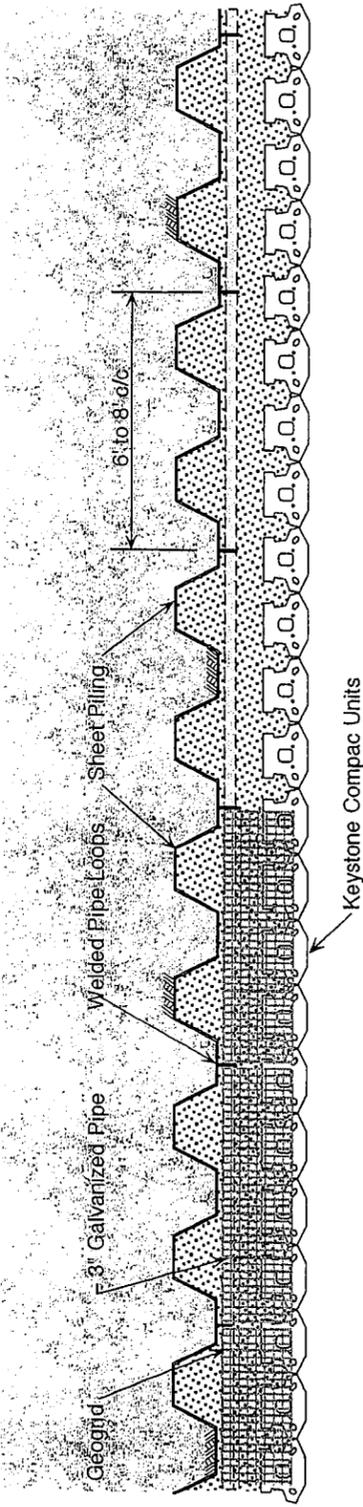
Specialty Applications

Soldier Pile Facing

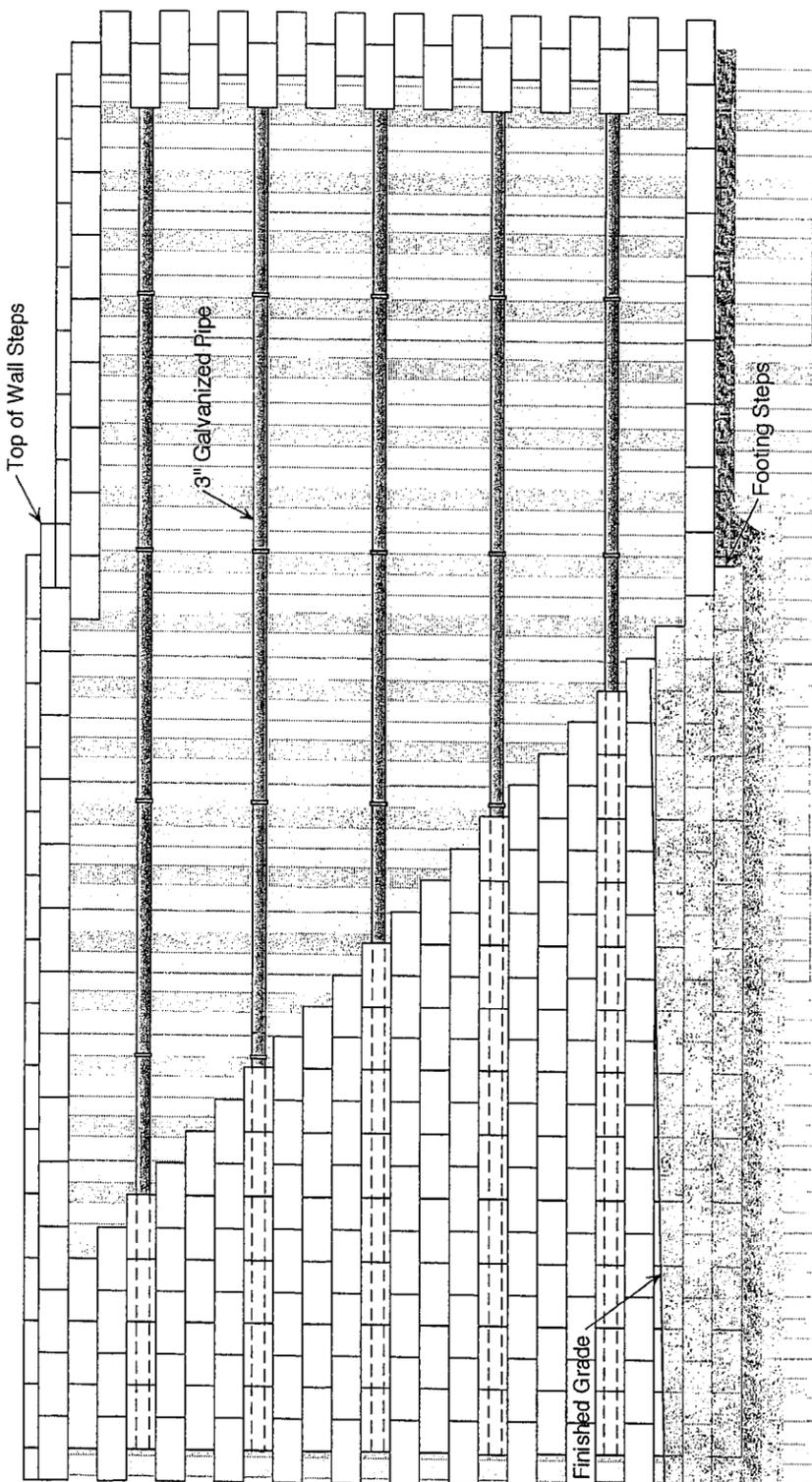
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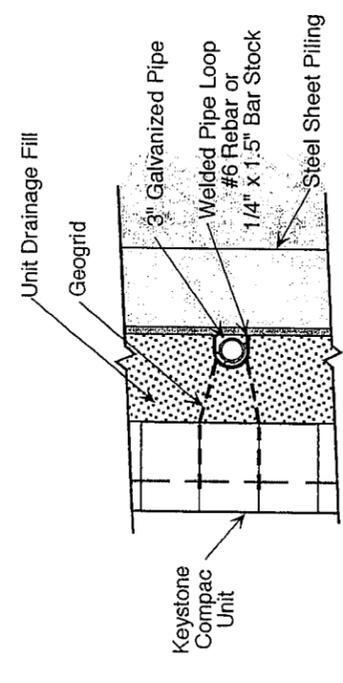
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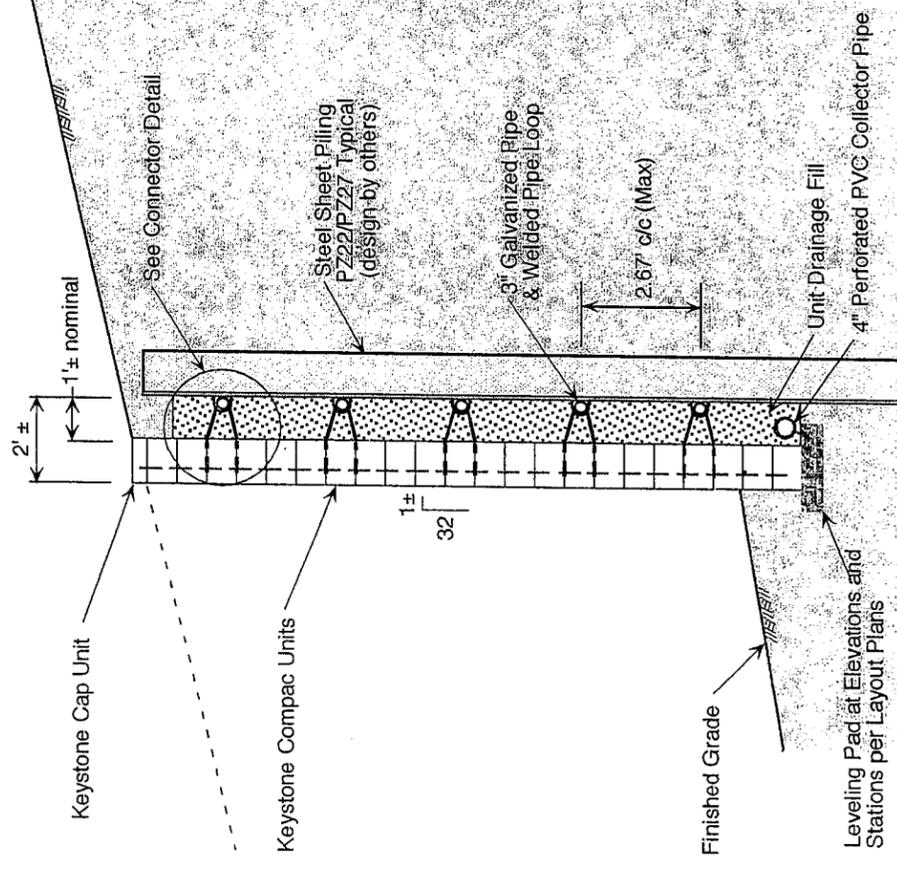
Typical Plan View



Typical Wall Elevation



Typical Connector Detail



Typical Sheet Piling Wall Section

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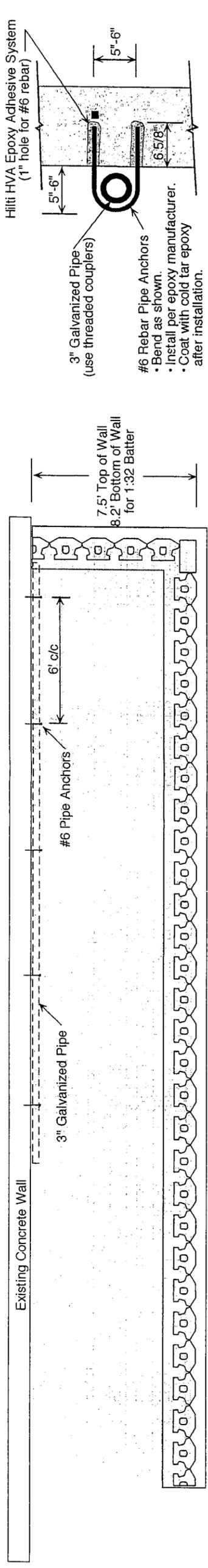
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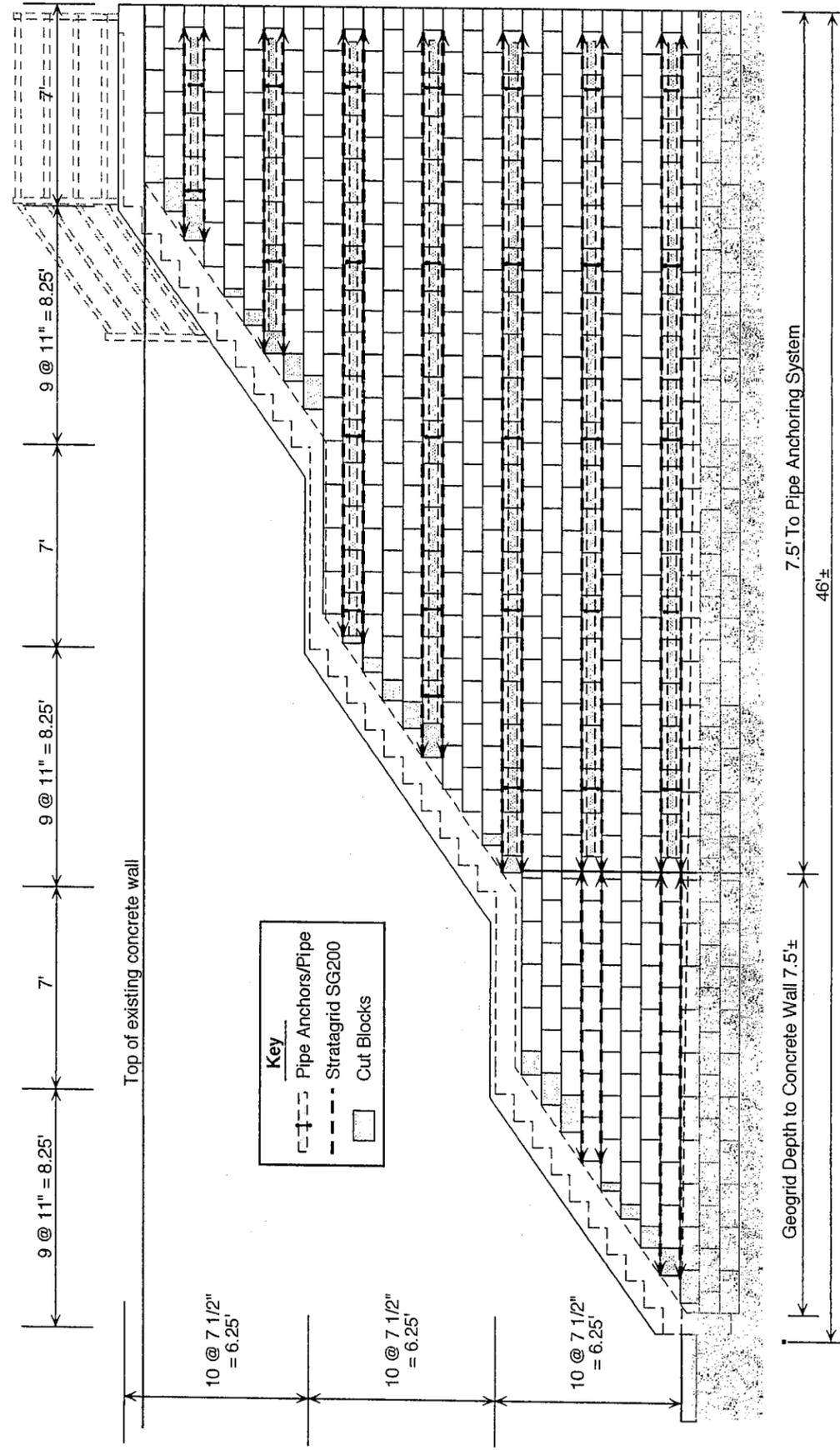
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Scale:  
 Project No:  
 Specialty Applications

Sheet Pile Facing  
 Drawing No. 6

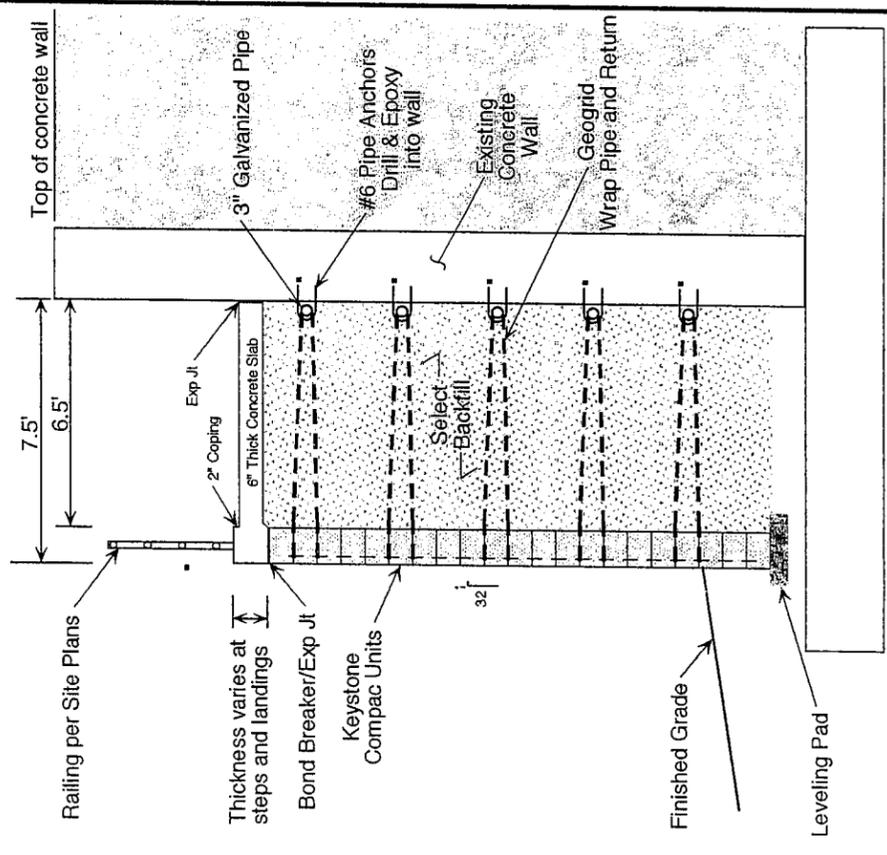


Plan View - Front Face



Elevation - Front Face

Pipe Anchor Detail



Typical Section - Second Landing

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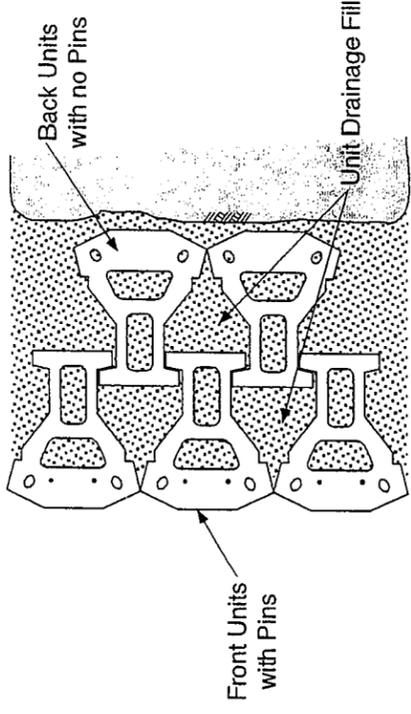
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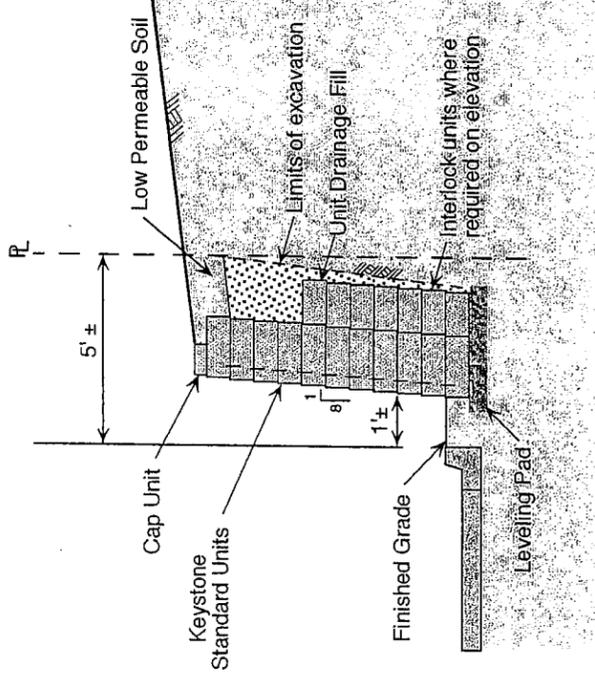
Specialty Applications

Stairway Facing/Concrete Wall

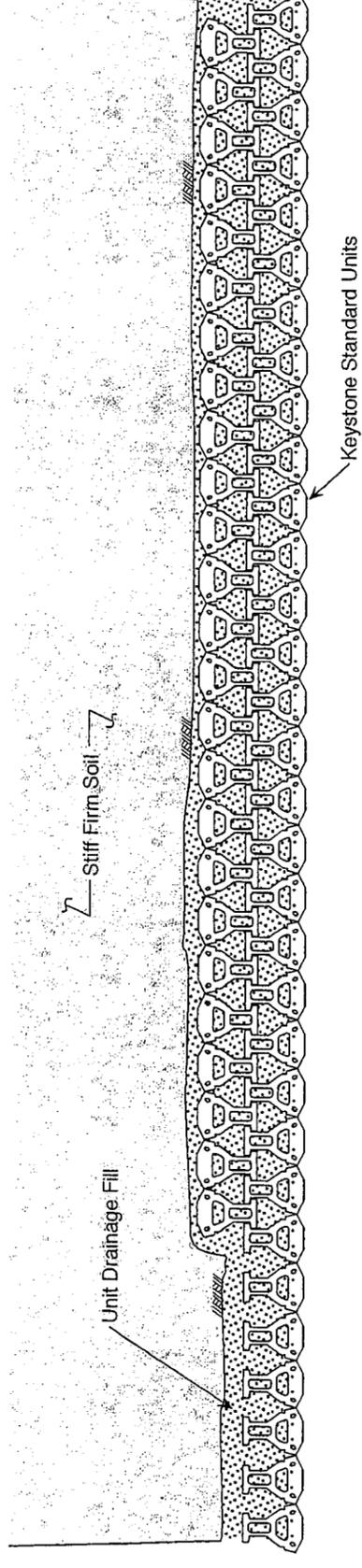
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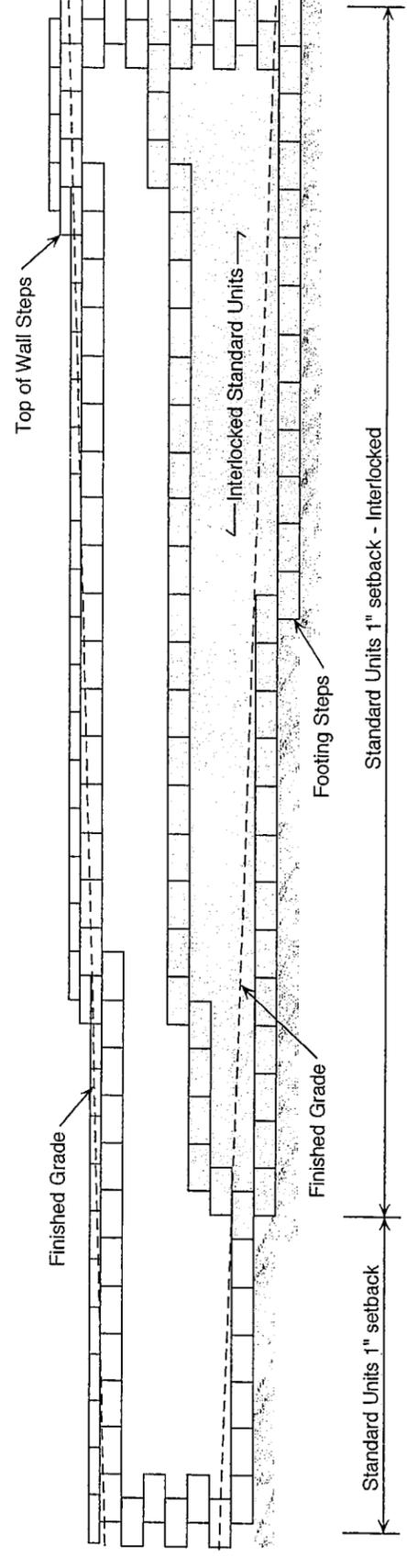
Typical Detail



Typical Interlocked Wall Section



Typical Plan View



Typical Wall Elevation

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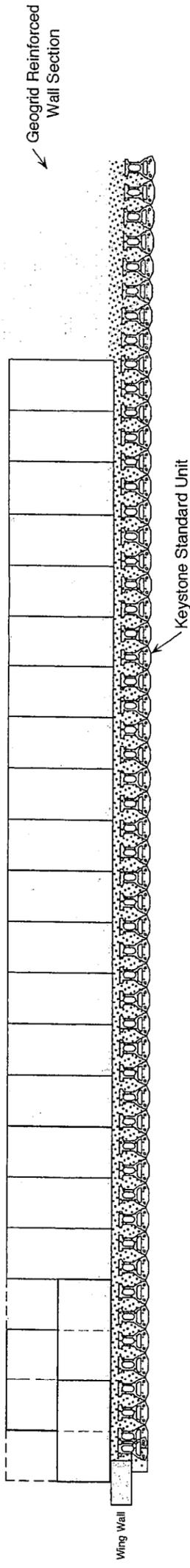
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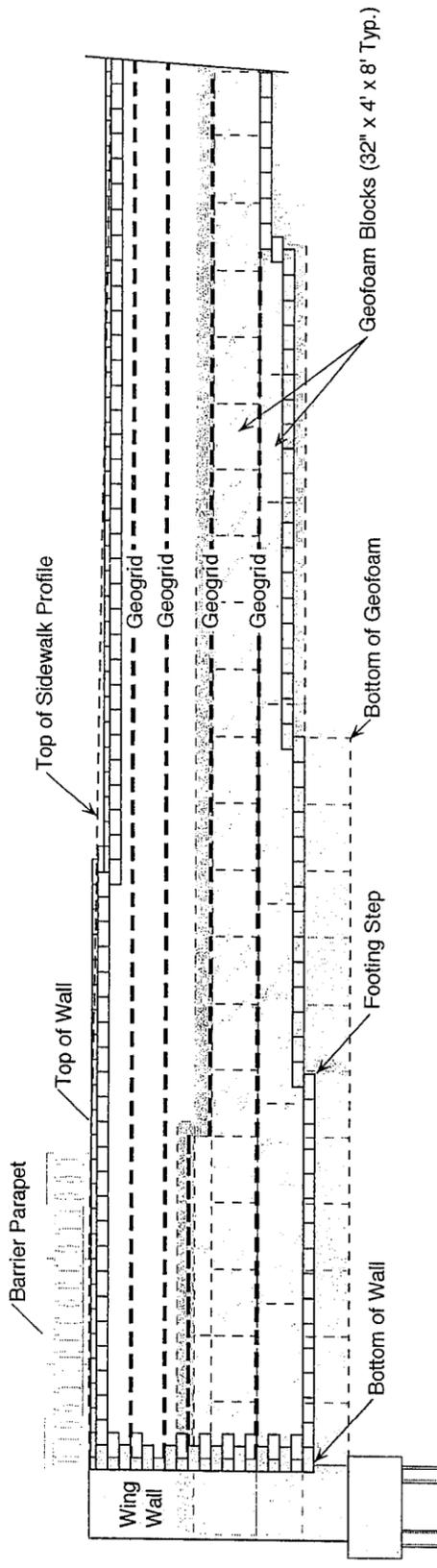
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Specialty Applications

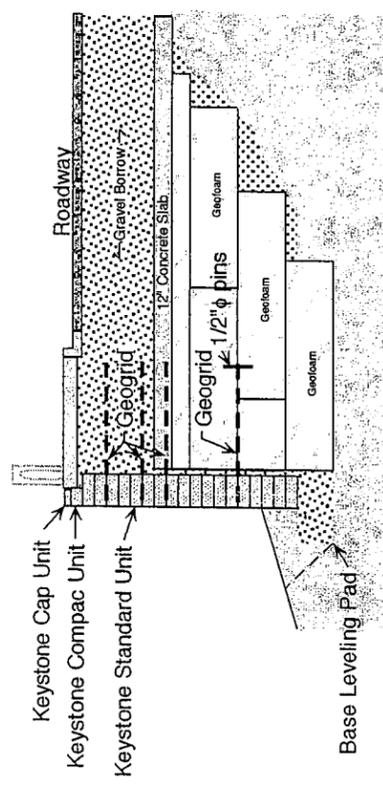
Interlocking Standard Units  
 Project No:  
 Drawing No. 8



Typical Wall Plan



Elevation - Front Face



Typical Section

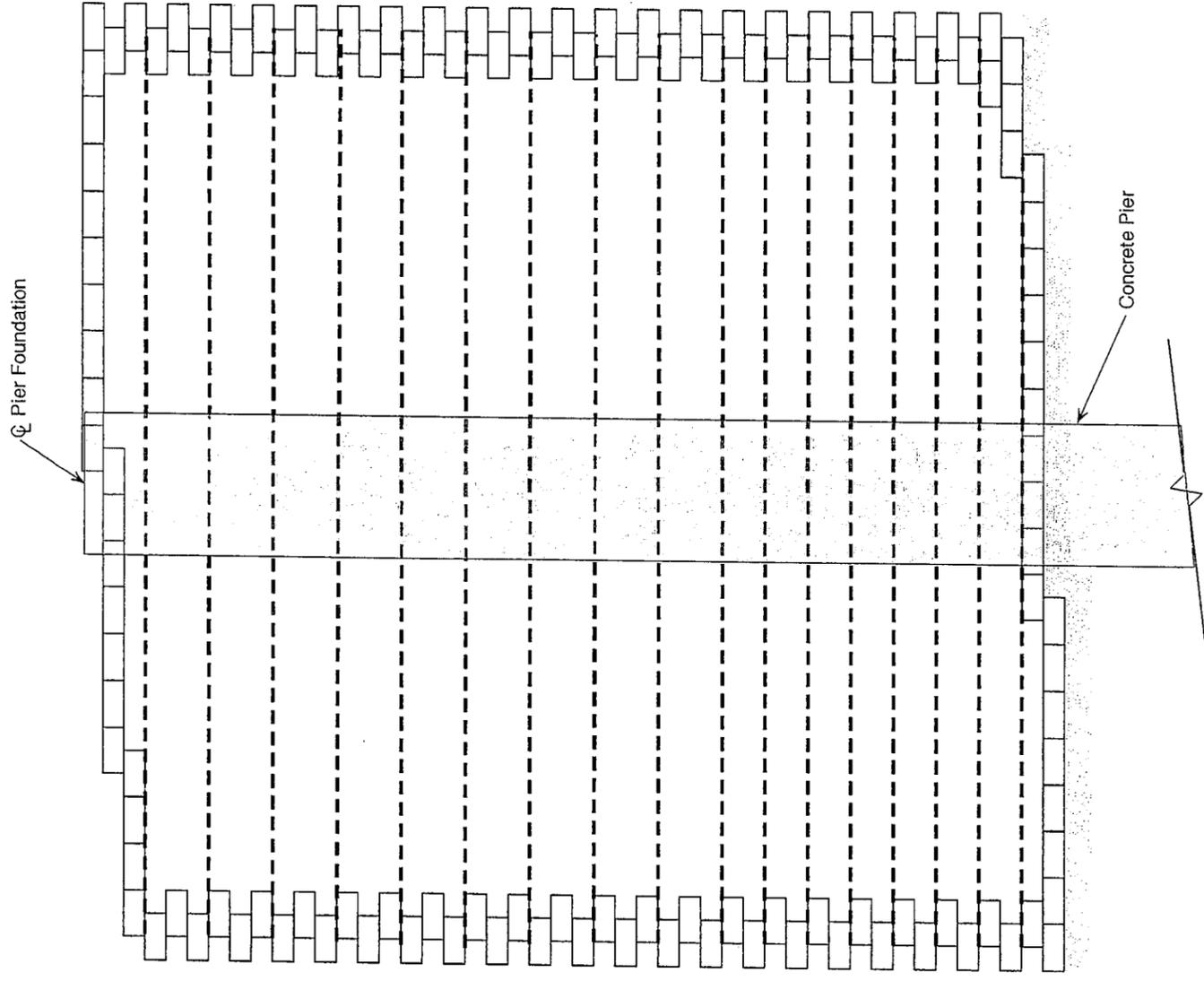
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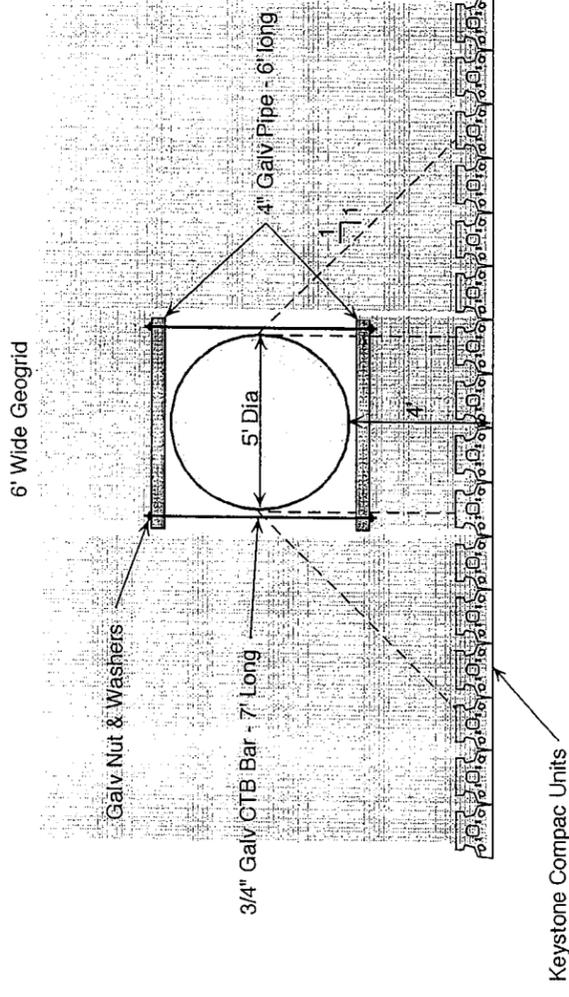


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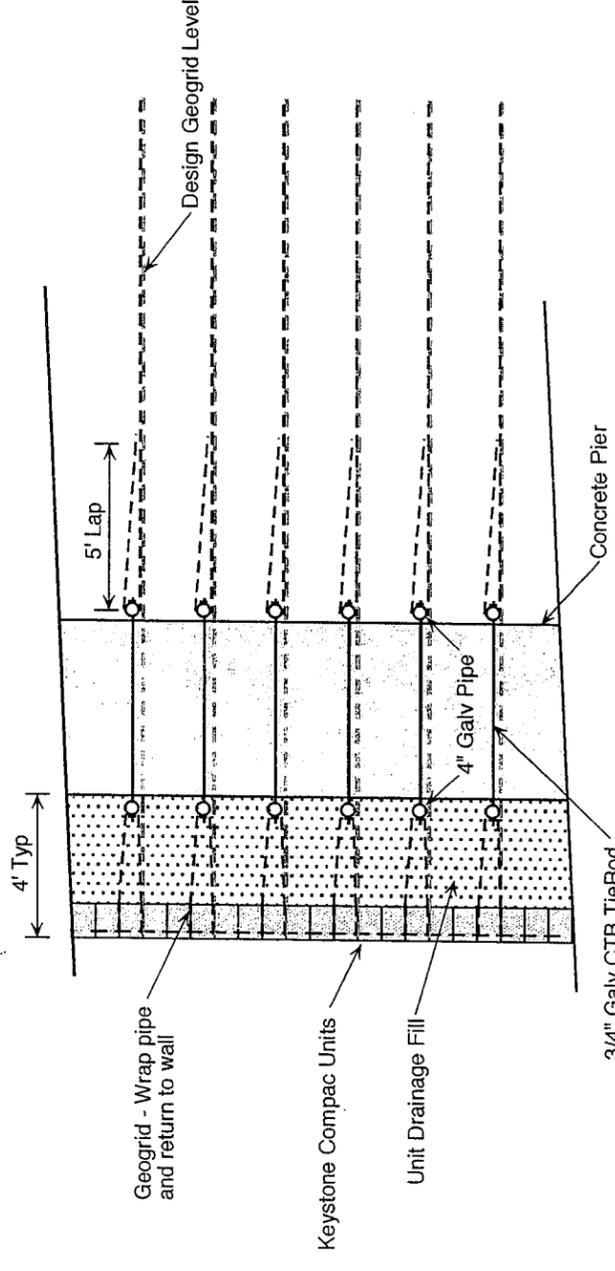
Specialty Applications  
 Keystone/Geofram Wall  
 Project No:  
 Drawing No. 9



Wall Elevation @ Pier



Wall Plan @ Pier



Wall Section @ Pier

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Specialty Applications

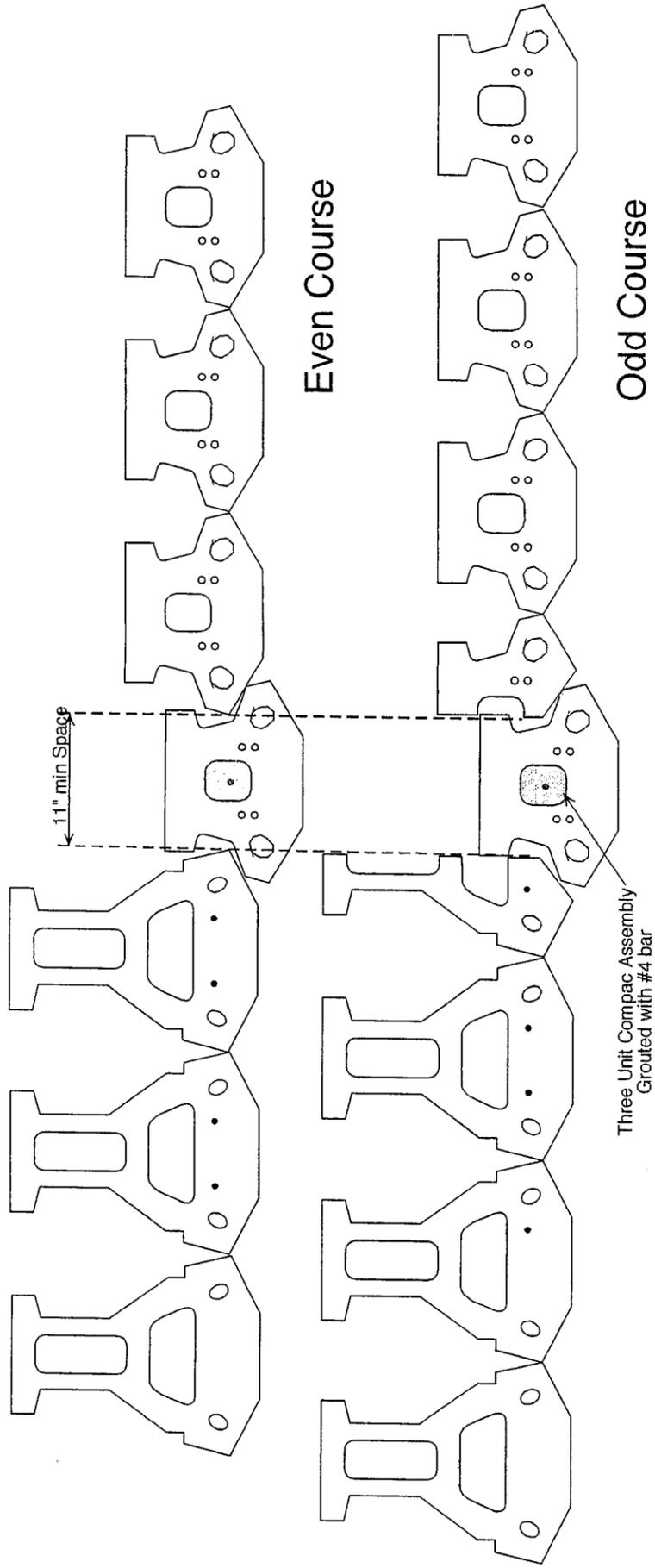
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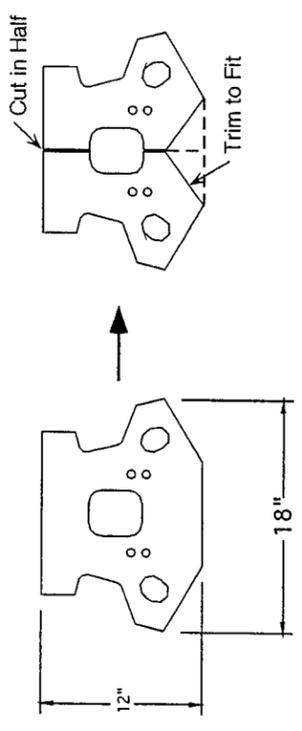
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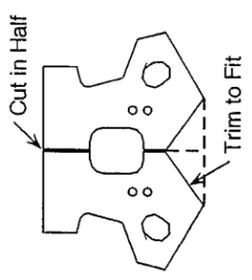
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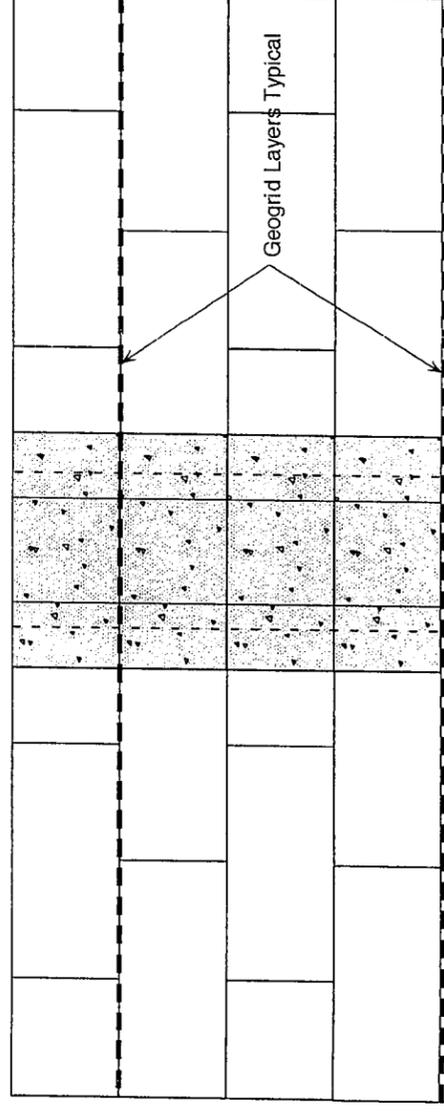
Plan View



Compac Unit



Cut Compac Unit



Front Elevation

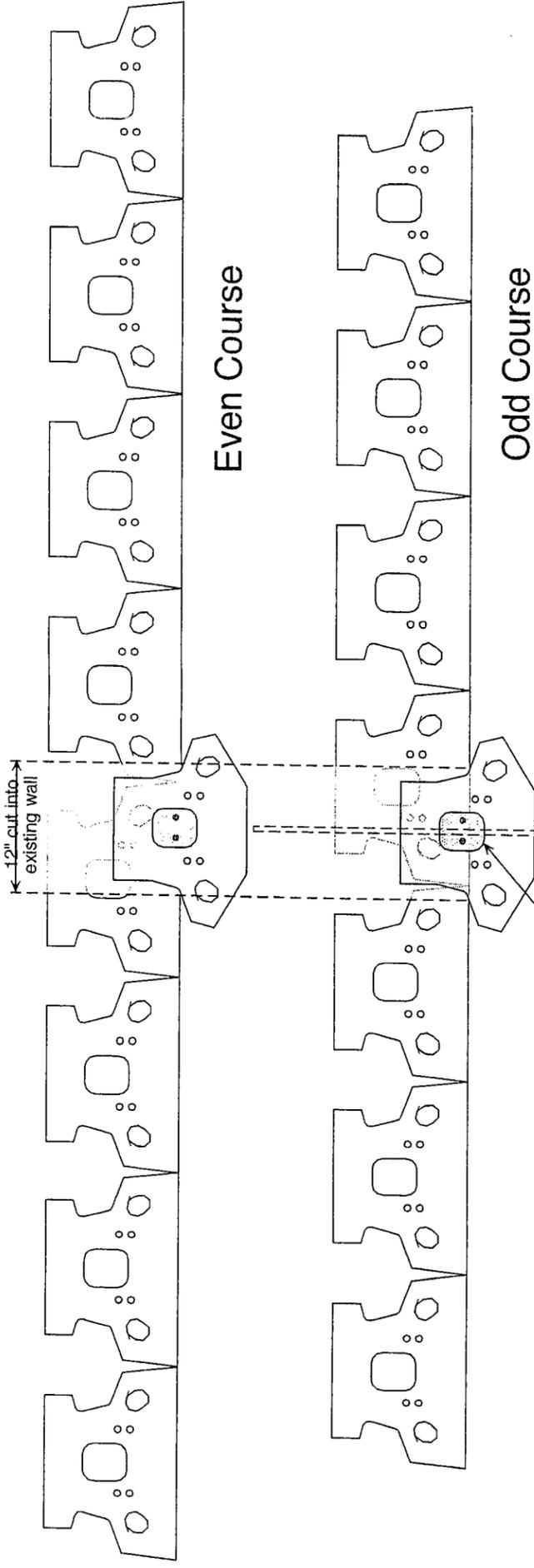
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Specialty Applications  
 Slip Joint Installation  
 Project No.  
 Drawing No. 11



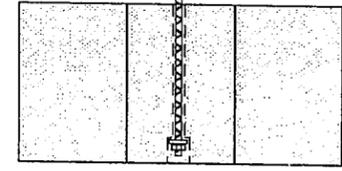
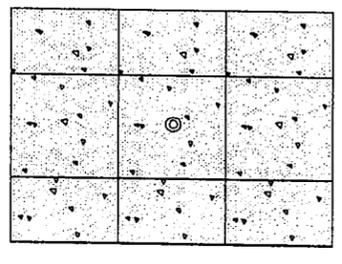
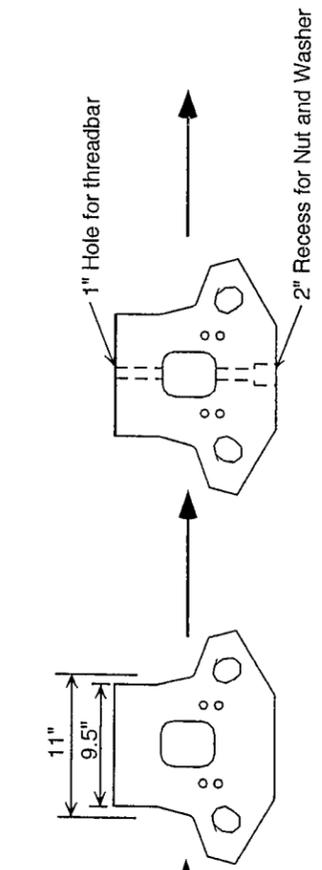
Three Unit Assembly - Grouted with #3 bars

Plan View

- Installation**
1. Cut out wall in 3-4 unit segments.
  2. Drive anchor into backfill and lock.
  3. Install three unit slip joint segment.
  4. Repeat as required.



Three Cut Units One Cut Unit with Hole



3 Unit Assembly Anchored 3 Unit Assembly

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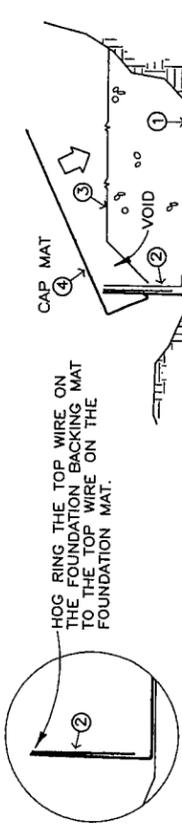
The information contained herein has been compiled by Keystone Retaining Wall Systems and to the best of our knowledge, accurately represents the Keystone product use in the applications which are illustrated. This drawing is being furnished for design guidance and estimating only. Final determination of the suitability for the use contemplated and its manner of use are the sole responsibility of the user. Structural and geotechnical design analysis shall be performed by a qualified engineer.

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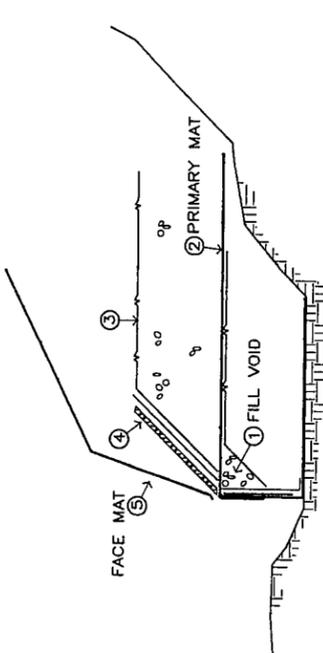
No.	Date	Revision	By



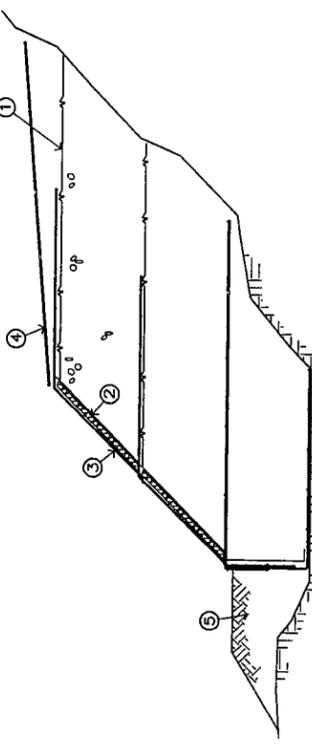
Designed By: cdm	Specialty Applications	In-Situ Slip Joint
Checked By:		
Date: 1/10/00		



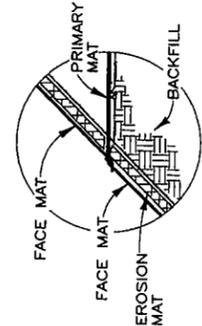
- A1. PREPARE THE FOUNDATION AND PLACE THE FOUNDATION MAT.  
 2. INSTALL THE FOUNDATION BACKING MAT AND FILTER FABRIC.  
 3. PLACE AND COMPACT BACKFILL TO 24" DEPTH AS SHOWN.  
 4. HOOK CAP MAT ON TRANSVERSE WIRE OF FOUNDATION MAT AND LAY IT DOWN ONTO THE BACKFILL.



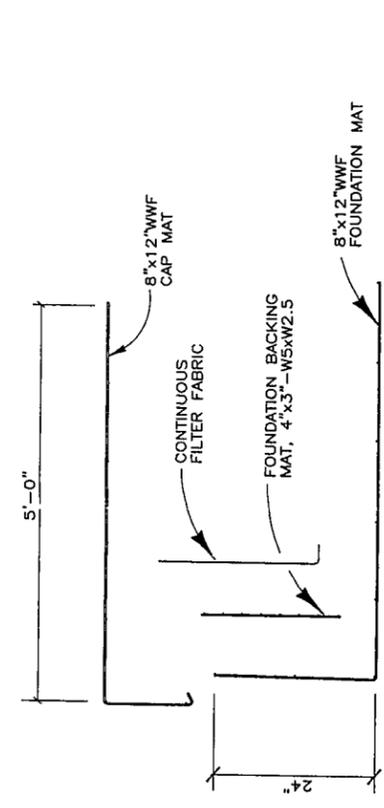
- B1. FILL THE VOID BELOW THE FRONT OF THE CAP AND ROD TO FULLY COMPACT.  
 2. PLACE FIRST PRIMARY MAT ON FOUNDATION CAP MAT.  
 3. PLACE BACKFILL AND COMPACT TO 25.75" DEPTH.  
 4. PLACE BACKING MAT AND EROSION MAT OR SOD.  
 5. HOOK FACE MAT ON TRANSVERSE WIRES OF PRIMARY MAT AND THE FOUNDATION MAT AND LAY IT DOWN ONTO THE BACKFILL.



- C1. PLACE AND COMPACT SECOND 25.75" LIFT OF BACKFILL.  
 2. PLACE BACKING MAT AND EROSION MAT OR SOD.  
 3. ROTATE AND INSTALL FACE MAT AS IN STEP 4 ABOVE.  
 4. PLACE PRIMARY MAT WITH TRANSVERSE WIRE ALIGNED WITH THE TRANSVERSE WIRE OF THE LOWER FACE MAT THAT WILL BE HOOKED WITH THE NEXT FACE MAT.  
 5. BACKFILL AND COMPACT SOIL AT TOE OF WALL.

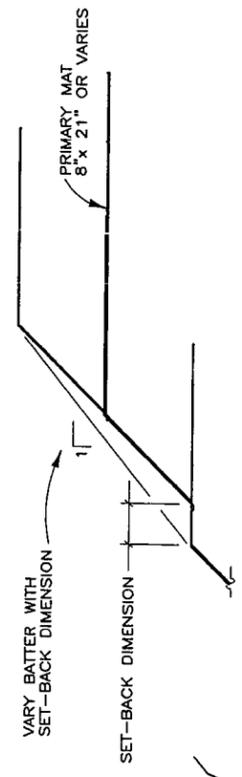


- D1. PLACE THE NEXT LIFT OF BACKFILL, BACKING MAT AND EROSION MAT OR SOD.  
 2. INSTALL THE FACE MAT SO IT ENGAGES BOTH THE PRIMARY MAT AND THE LOWER FACE MAT.  
 3. CONTINUE LIFTS TO THE TOP OF THE WALL.  
 4. AFTER PLACING THE TOP LIFT OF BACKFILL AND FACE MAT, BACKING MAT AND EROSION MAT, PLACE THE PRIMARY MAT AND HOOK IT TO THE FACE MAT WITH HOG RINGS. BACKFILL AND COMPACT THE REQUIRED COVER OVER THE PRIMARY MAT.

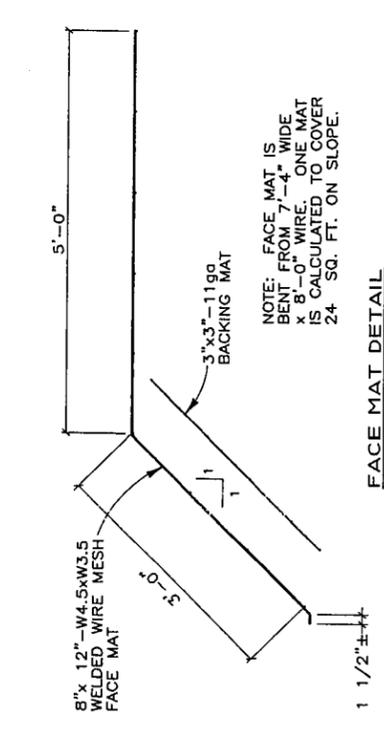


NOTE: FOUNDATION MAT IS BENT FROM 7'-4" WIDE x 7'-0" WIRE. ONE MAT IS CALCULATED TO COVER 16 SQ. FT.

FOUNDATION MAT AND CAP  
 SCALE: 10 X GRAPHIC SCALE

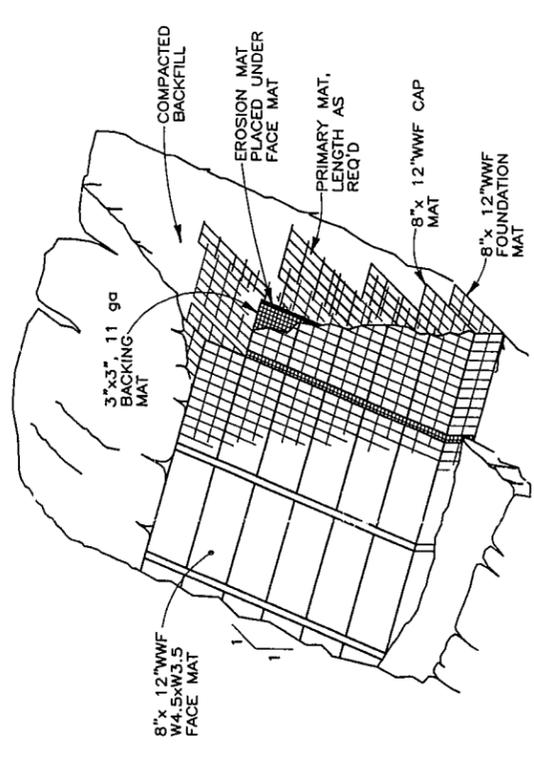
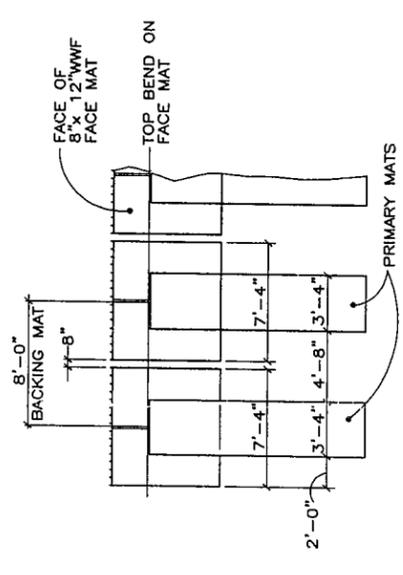


VARIABLE FACE BATTER  
 SCALE: 5 X GRAPHIC SCALE



NOTE: FACE MAT IS BENT FROM 7'-4" WIDE x 8'-0" WIRE. ONE MAT IS CALCULATED TO COVER 24 SQ. FT. ON SLOPE.

FACE MAT DETAIL  
 SCALE: 10 X GRAPHIC SCALE



PICTORIAL ELEVATION  
 NOT TO SCALE

SECTION  
 SCALE: 5 X GRAPHIC SCALE

CONSTRUCTION SEQUENCE  
 NOT TO SCALE

REV. NO.	DATE	BY	DESCRIPTION
1	5/02/95	DR	MINOR REVISIONS
2	10/24/95	DR	REVISED PRIMARY MAT SPACING
3	4/19/96	DR	MINOR REVISIONS
4	9/08/99	DR	UPDATED BORDER
5	1/10/02	DR	CHANGED WIRE SPACING, SIZES AND OTHERS. OTHER PATENT'S REMAINS (2004)

GRAPHIC SCALE	PROJ. MGR.
LINE IS 20 UNITS LONG ON ORIGINAL DRAWING	ENGINEER
0 10 20	CADD BY DR

**HILFIKER RETAINING WALLS**  
 3900 Broadway Eureka, CA 95503  
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 email: info@hilfiker.com  
 Web: http://hilfiker.com

DWG DATE	STANDARD DRAWING	PROJECT NO.
24 JULY 95	WELDED WIRE STEEPENED SLOPE	
REVISION DATE	SCALE	SHEET
10 APR 02	NOTED	1
		OF 1

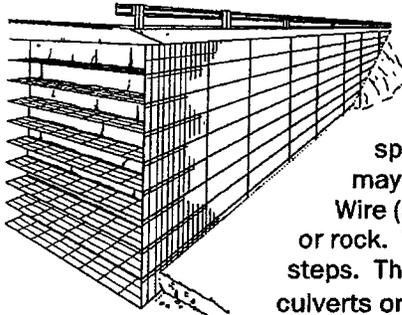
STEEP SLOPE

**APPENDIX VI**

**SOIL REINFORCEMENT SUPPLEMENTAL INFORMATION**

# HILFIKER MSE WALL SYSTEMS

## OTHER HILFIKER PRODUCTS

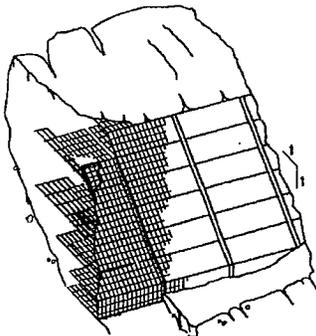
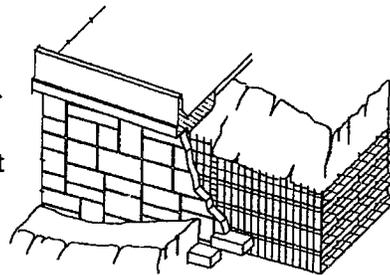


### WELDED WIRE WALL

The Hilfiker Welded Wire Retaining Wall is a flexible soil reinforcement system. It is composed of Welded Wire Mesh mats and compacted soil. Mats are supplied in 8' (2.44m) spans, and 24" (610mm) horizontal lifts. The final wall face may be vertical or battered, and may remain exposed Welded Wire (as shown) or may be covered with air-blown mortar, plants or rock. The Welded Wire Wall is adaptable to curves, angles and steps. The mats are easily cut to permit installation of penetrating culverts or pipes, or to fit special site applications.

### EUREKA REINFORCED SOIL (E.R.S.)

The Hilfiker E.R.S. Retaining Wall begins as a Welded Wire Wall, with the addition of face anchors to tie to a concrete face. After completion and settlement of the Welded Wire Wall, a solid facing is attached. This may be cast-in-place concrete, precast full-height concrete panels, or special rock or gunite as required by the project specifications. The facial treatment of this retaining wall adapts easily to almost any pattern or concept.



### HILFIKER STEEPENED SLOPE

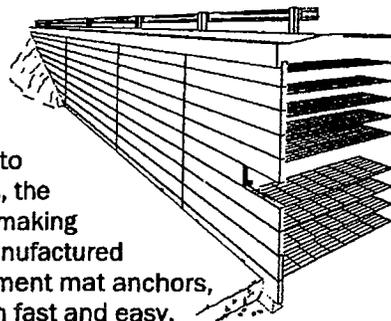
The Hilfiker Steepened Slope system is composed of Welded Wire Fabric components. The flat primary soil reinforcement mats are interlocked with bent facing mats, prefabricated to a 1:1 slope. The slope may be flattened, if desired, by stepping back each layer. Behind the facing mats are Welded Wire Fabric backing mats incorporated with erosion mat or sod.

Virtually any type of sod or vegetation that will best suit the environment may be used with this system. Low-growth, maintenance-free vegetation is typically specified.

### REINFORCED SOIL EMBANKMENT (SMOOTH FACE)

The R.S.E. Smooth Face Retaining Wall retains most of the advantages of the Hilfiker Welded Wire Wall, while providing the additional durability of precast face panels.

The concrete panels can be cast with a smooth finish, or to match a variety of architectural treatments. In most structures, the simple 12'-6" x 2'-6" (3.81m x 0.76m) standard panel is used, making all the panels interchangeable. Special panel sizes can be manufactured when required. Panels are cast with pre-installed reinforcement mat anchors, and a cantilever footing at the back face, making installation fast and easy.



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Printed by:

Date:

STEEPSLOPE

REVISED DATE	BY	DESCRIPTION
1 8/07/85	DR	MINOR REVISIONS
2 10/29/85	DR	REVISED PRIMARY MAT SPACING
3 4/08/86	DR	MINOR REVISIONS
4 4/08/86	DR	UPDATED SCHEDULE
5 4/08/86	DR	CHANGED WIRE SPACING, SIZES

PROJ. NO.	ENGINEER	DATE
HILFKER RETAINING WALLS	DR	10 APR 02

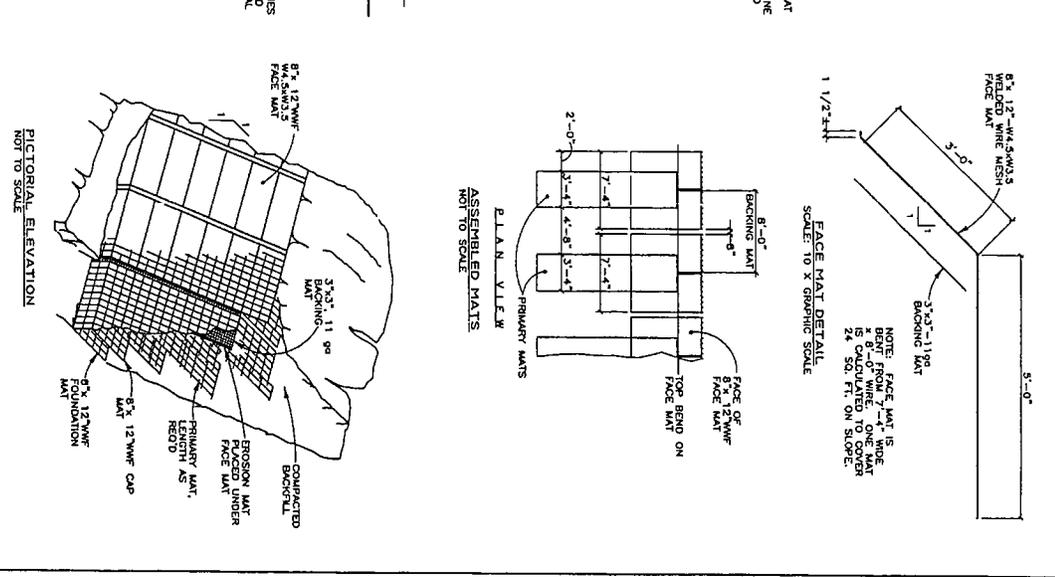
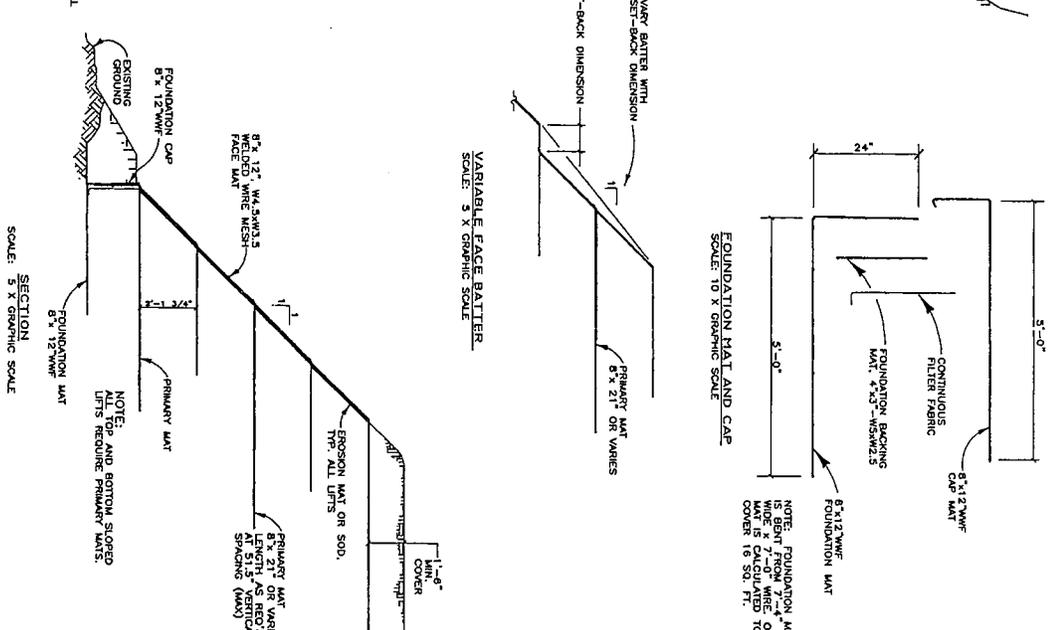
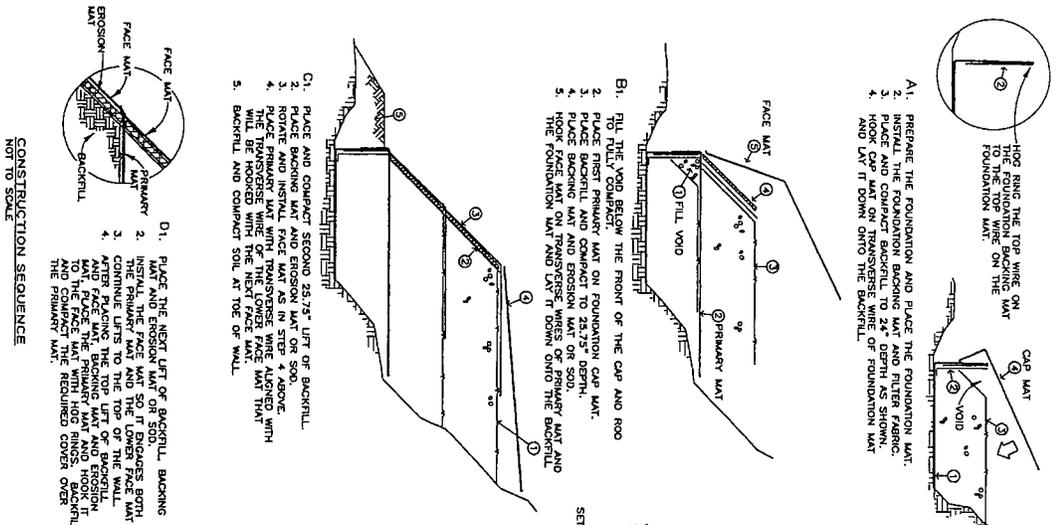
**HILFKER RETAINING WALLS**  
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 P.O. Box 5012, Emeryville, CA 94601  
 1917-453-5393, Telefax 800-762-8562  
 www.hilfker.com email: info@hilfker.com



DATE	BY	DESCRIPTION
24 JULY 85	DR	REVISION DATE
10 APR 02	DR	REVISION DATE

STANDARD DRAWING  
 WELDED WIRE STEEPENED SLOPE  
 DETAILS

PROJECT NO.	SHEET NO.
	1 OF 1

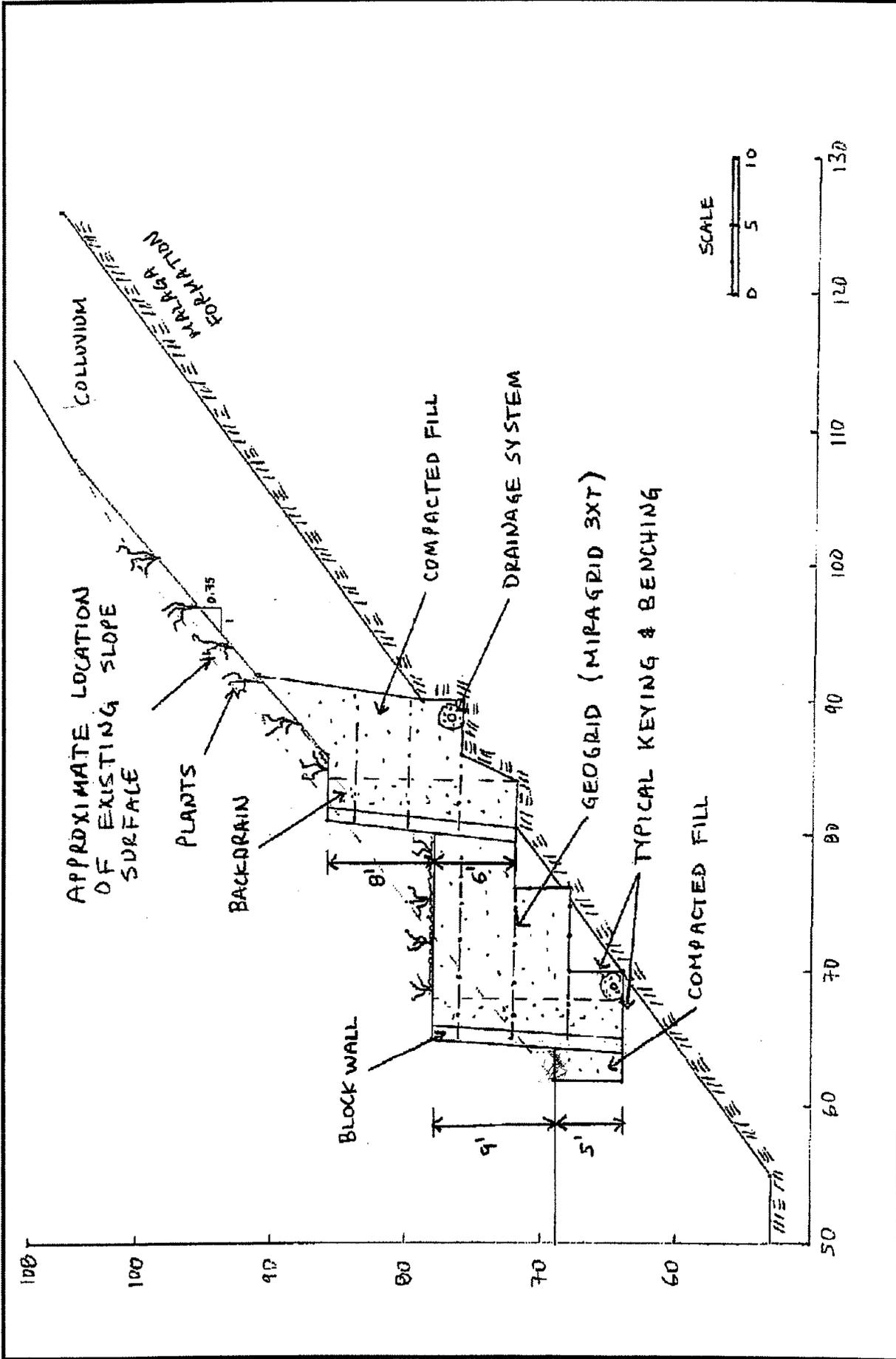


CONSTRUCTION SEQUENCE  
 NOT TO SCALE

PICTORIAL ELEVATION  
 NOT TO SCALE

## **APPENDIX VII**

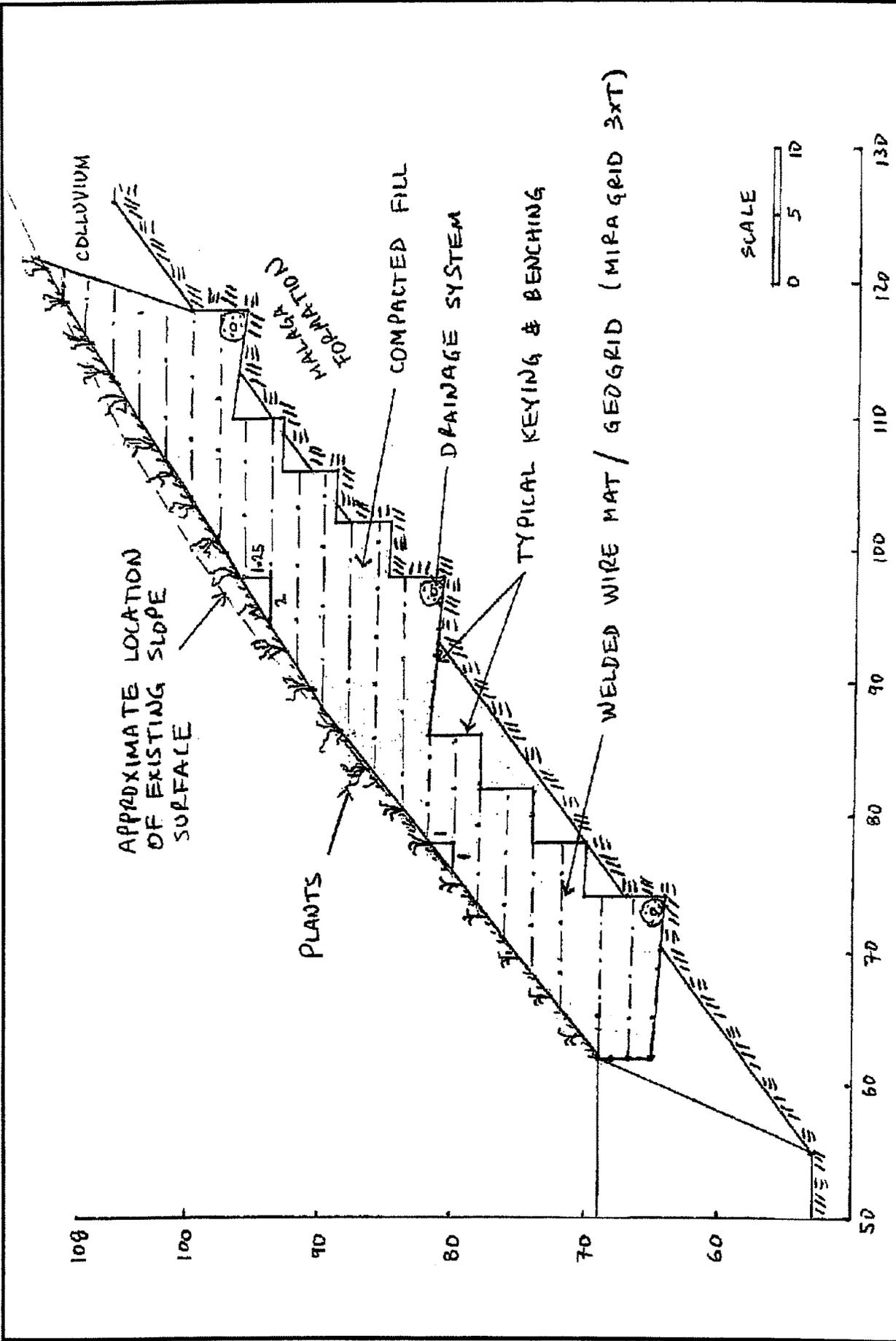
### **TYPICAL SOIL STABILIZATION CONSTRUCTION CROSS SECTIONS**



**FIGURE 3**  
 DRAWN BY: RCF  
 APPROVED BY: FHS  
 PROJECT NO: 172-43  
 DATE: 4/24/09

**MITIGATION SCHEMATIC**  
 Geotechnical Investigation Report  
 Slope Stabilization at Watteria Reservoir  
 City of Torrance, Los Angeles County, California

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 Irvine, CA 92606  
 Tel: (949) 263-8334, Fax: (949) 263-8338  
 http://www.geo-environmental.com



**FIGURE 5**  
 DRAWN BY: RCF  
 APPROVED BY: FHS  
 PROJECT NO: 172-43  
 DATE: 4/24/09

**MITIGATION SCHEMATIC**  
 Geotechnical Investigation Report  
 Slope Stabilization at Watteria Reservoir  
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